

An Optimality Theoretic Analysis of Rising Changed Tones in Taishanese

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Taishanese is a member of the Siyi sub-branch of the Yue branch of the Sinitic languages. As described by *Taishan Fangyin Zidian* (2006), Taishanese has five phonemic tones: three level tones (55, 33, 22) and two falling tones (32, 21). Cheng (1973) describes a so-called “changed tone” process where the tonal contour of the underlying tones can be modified. Depending on the morphological or syntactic context, one of two processes can occur: a level or falling tone becomes a rising tone; or a level tone becomes a falling tone. The present work focuses on the former type of changed tone where a rising tone, which is otherwise not present in Taishanese, can be realized.

In the present study, Taishanese tone letter 5 will be represented as H (a tone with the features [+high tone][-low tone][+modify]), tone letter 3 as M (a tone with the features [-high tone][-low tone][-modify]), and tone letter 2 as L (a tone with the features [-high tone][+low tone][+modify]). This is based on the system proposed by Wang (1967) and Woo (1969).

Early work on rising changed tones in Taishanese, such as in Cheng (1973), claimed that the process was not phonologically motivated but mostly syntactically and morphologically motivated. Moreover, according to Cheng (1973), only a limited number of words, which are mostly nouns, can undergo this process. However, Him (1980) suggests that the rising changed tone in Taishanese may be the result of an operative process where rises can occur systematically, based on an analysis of related languages. Using evidence from field recordings collected from two native Taishanese speakers (one of the Taishan dialect and one of the Kaiping dialect), I argue that a subset of occurrences of rising changed tones – namely, those that occur as the result of two adjacent level tones – are in fact phonologically motivated in Taishanese.

Some examples are shown below (the superhigh tone is represented with the tone letter 7):

Open	Long-Checked	Nasal Coda	Short-Checked
k ^w _i ²² k ^w _o ⁵⁵⁷ <i>if only</i>	kian ³³ t ^h iat ⁵⁵⁷ <i>surprised</i>	t ^h en ²² kiŋ ⁵⁵⁷ <i>foreground</i>	top ⁵⁵ mun ³³⁷ *top ⁵⁵⁷ mun ³³ <i>essay</i>
fuo ⁵⁵⁷ hoi ⁵⁵ <i>inferno</i>	juek ⁵⁵⁷ hou ⁵⁵ <i>to agree to</i>	kiŋ ⁵⁵ kaŋ ⁵⁵ *kiŋ ⁵⁵⁷ kaŋ ⁵⁵ <i>hidden motive</i>	suk ⁵⁵ ɬiu ⁵⁵ *suk ⁵⁵⁷ ɬiu ⁵⁵ <i>to shrink</i>

I present an optimality theoretic analysis (Prince and Smolensky, 1993) where I model rising changed tones through the variable ranking of constraints. The data shows a distinction between “long-checked” syllables (containing a diphthong and an obstruent coda) and “short checked” syllables (containing a monophthong and an obstruent coda). In addition, I propose that a rising tone is the result of the insertion of a superhigh tone that associates with the rightmost mora in a syllable. In this case, superhigh tones are expressed by the features [+high tone][+modify]. Moreover, the data shows that there are three general patterns of rising

changed tones in Taishanese: 1) short-checked syllables, which never rise; 2) syllables with nasal codas, which typically can rise except in the case where there is a syllable with a nasal coda with a high level tone followed by another syllable with a high level tone; and 3) open syllables and long-checked syllables, which will always rise given that it is the rightmost maximal level tone. The constraints that I propose are mostly drawn from analyses of related languages, but my analysis shows the need for a constraint restricting consecutive level tones of any kind which is distinct from the obligatory contour principle which only prevents consecutive occurrences of the same tone. Taishanese presents an example of a language that requires both of these constraints which interact to produce rising changed tones in the language.

Although some work has been done on the phonological system of Taishanese in the past (Cheng, 1973; Him, 1980), limited work has been done on the language since then. The present study is important in that it uses modern phonological theory to reassess previous claims made about Taishanese. Moreover, this analysis seeks to provide new insights into a constraint-based approach to analyzing tone by investigating this understudied language. Another important contribution of this study is bringing to light the application of optimality theory to a language with a phonetically realized superhigh tone.

Citations

Cheng, T. (1973). The Phonology of Taishan. *Journal of Chinese Linguistics*, 1(2), 256-322.

Retrieved from <http://www.jstor.org/stable/23749797>

Him, K. (1980). Semantic-Tonal Processes in Cantonese, Taishanese, Bobai, and Siamese / 广东, 台山, 博白及暹罗语中有关意义的变调现象. *Journal of Chinese Linguistics*, 8(2), 205-240.

Retrieved from <http://www.jstor.org/stable/23753490>

Prince, A., & Smolensky, P. (1993). *Optimality Theory: Constraint Interaction in Generative Grammar*. Technical Report #2 of the Rutgers Center for Cognitive Science, Rutgers University.

Taishan Fangyin Zidian. (1st ed.). (2006). Changsha, Hunan, China: Hunan Jiaoyu Chubanshe.

Wang, W. (1967). The phonological features of tone. *International Journal of American Linguistics*, 33(2), 93-105.

Woo, N. (1969). *Prosody and Phonology*. PhD Dissertation. MIT.

Understanding the Role of Social Salience in the Dialectal Contact of U.S. Spanish

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Recent studies have revealed strong patterns of structural continuity between Spanish as spoken in the United States and varieties of the language as spoken in Latin America and Spain. While such studies have observed increases in the rates of variables such as subjunctive mood use, preverbal subject placement and the appearance of personal pronouns, these changes have been shown to occur according to structural considerations that speakers maintain as they move across time and space (Otheguy & Zentella 2012; Raña-Risso 2014; Barrera Tobón 2014; Erker & Otheguy 2016). My work departs from this perspective to consider how such guided change occurs with variables existing on different levels of linguistic structure and with different degrees of social salience within a single set of speakers. I examine the variables of personal pronoun usage, grammatical subject position and syllable-final /s/ reduction in the sociolinguistic interviews of 14 Spanish speakers from the Spanish in Boston Corpus conducted between 2014-2018 under the direction of Professor Daniel Erker at Boston University (NSF-funded BCS-1423840). My hypothesis is that while usage of low-salient syntactic variables will show evidence of the cross-regional trends observed in past studies of U.S. Spanish, i.e. higher use of pronouns and preverbal subjects, the high-salient phonological variable will show widely variable behavior regardless of time spent in the U.S. as speakers constantly (re)negotiate its meaning and use in diasporic Latinx urban communities.

I analyze to what extent variable behavior changes between newcomer and non-newcomer U.S.-exposure groups using *comparative variationist* methodology (Rickford & McNair-Knox 1994; Poplack & Levey 2010; Torres Cacoullos & Travis 2011). I perform this analysis on the level of both rates and constraints: while the former approach looks at how speaker rates of variable usage vary according to exposure to the U.S., the latter uses logistic and linear regression analysis to observe how independent linguistic and social variables and their levels guide such variation. This two-step analysis will show whether life in U.S. predicts an increase or decrease in variable usage, as well as examine if such changes occur according to structural considerations shared between newcomer and non-newcomers, or due to a restructuring of such considerations. The analysis of social variables for each dependent variable will then be conducted within a nine-speaker subgroup of speakers with Salvadoran heritage in order to better control for region of origin in describing possible social distributions of variables' usage in Boston Spanish.

A central question in this analysis will be, if such restructuring occurs, what variable-value hierarchies appear to be modified by exposure group and why? One of the reasons this study is interested in the crossroads of dependent variables existing levels of linguistic structure (i.e. syntax vs phonology) and with different levels of social salience is to test the proposal of Labov & Eckert (2017) that social meaning more readily attaches to concrete rather than abstract levels of language. As the authors explain, the consequence of this idea is that a variable phonetic structure within a phonological system is more fit to convey social meaning as opposed to a phonological or syntactic variable phenomenon, which require listeners to recognize abstract patterns. A natural extension of this proposal which will be examined in this study is, in the case of accommodation or the "Vineyarder effect" (i.e. the accentuation of difference), whether such phenomenon occurs within independent variables closer to the surface level of linguistic structure. An important aspect of this analysis will be exploring definitions of what exactly terminology such as "concrete" and "surface level" refers to as opposed to abstraction.

The value of this study is thus two-fold: by working with multiple dependent variables, I will provide an in-depth analysis of co-variation and help develop methodologies to look for evidence of structural convergence and divergence in cases of dialectal contact; and by examining syntactic and phonological variables together, I will explore the question of how linguistic structures guide patterns of language change. This study furthermore will empirically analyze the proposal of Erker (2017) that while low-salient variables will behave according to the model of sociolinguistic coherence (Labov 1973), high-salient variables will behave according to a system of sociolinguistic bricolage (Eckert 2008). Importantly, this contrast of Labov's and Eckert's approach to language variation is not meant to imply they are somehow opposed, but to continue the work of Erker as well as that of Oushiro and Guy (2015) who seek to explain how these two levels of sociolinguistic analysis are intimately related.

References:

- Barrera-Tobón, C. (2013). Contact-Induced Changes in Word Order and Intonation in the Spanish of New York City Bilinguals, 1-201.
- Eckert, P. and Labov, W. (2017), Phonetics, phonology and social meaning. *J Sociolinguistics*, 21: 467-496. doi:10.1111/josl.12244
- Eckert, Penelope. (2008). Variation and the indexical field. *Journal of Sociolinguistics*, 12:453-476.
- Erker, D. (2017). Contact, Co-Variation, and Sociolinguistic Saliency: What Mister Rogers Knows about Language Change. *University of Pennsylvania Working Papers in Linguistics*, 23(2), 68.
- Erker, D., & Otheguy, R. (2016). Contact and coherence: Dialectal leveling and structural convergence in NYC Spanish. *Lingua*, 172-173, 131-146.
- Labov, W. (1973). *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.
- Otheguy, R., & Zentella, A. (2012). *Spanish in New York : Language contact, dialectal leveling, and structural continuity* (Oxford studies in sociolinguistics). Oxford; New York: Oxford University Press.
- Poplack, Shana & Levey, Stephen (2010). Contact-induced grammatical change: A cautionary tale. In Peter Auer & Jürgen Erich Schmidt (eds.), *Language and space: An international handbook of linguistic variation (vol. 1): Theories and methods*, 391–419. Berlin: Mouton de Gruyter.
- Oushiro, Livia, and Gregory Guy. "The Effect of Saliency on Co-Variation in Brazilian Portuguese." *University of Pennsylvania. Working Papers in Linguistics*, vol. 21, no. 2, 2015, p. 155.
- Rana Risso, R. (2014). *A Corpus-based Sociolinguistic Study of Subject Pronoun Placement in Spanish in New York.*, 74(09), Dissertation Abstracts International, A: The Humanities and Social Sciences, Vol.74(09).
- Rickford, J. & McNair-Knox, F. "Addressee- and Topic-Influenced Style Shift: A Quantitative Sociolinguistic Study." *Sociolinguistic Perspectives on Register*, edited by Douglas Biber, and Edward Finegan, Oxford University Press, Incorporated, 1994.
- Torres Cacoullos, R., & Travis, C. (2011). Testing convergence via code-switching: Priming and the structure of variable subject expression. *International Journal of Bilingualism*, 15(3), 241-267.

Fortition in ASL Phonology: A Diachronic Study

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Sign languages, like all languages, undergo phonological reduction to increase articulatory ease and decrease articulatory effort (Napoli et al. 2014). In both aural and visual modalities, language users try to minimize the amount of energy they expend through “mass, acceleration, or distance travelled” (Napoli & Sanders, forthcoming). In American Sign Language (ASL), reduction of various kinds has been well-documented in casual or fast speech (Padden & Perlmutter 1987, Tyrone & Mauk 2010), compound formation, and grammaticalization (see Lepic 2016 for discussion).

However, some ASL signs have seemingly increased in the amount of effort required to produce them: a few signs that were once documented as using only one hand, can now be articulated with two hands. The conditions of this process, which I call Weak Add, have yet to be adequately identified. Frishberg (1975), the only paper I have found to directly investigate this issue, proposed that signs articulated at the body tend to become two-handed, potentially to ease perception—but more recent work on ASL etymology (Supalla & Clark 2014, Shaw & Delaporte 2015) has challenged this analysis.

Examining 14 dictionaries compiled at various periods throughout the development of ASL, as well as dictionaries of Old French Sign Language (a major early influence on ASL) and other scholarship on ASL etymology, I found 37 two-handed forms that can be said with confidence to have evolved from one-handed signs. Of these, 22 had a new non-dominant hand with multiple different parameters from the pre-existing dominant hand. The added phonological information, which was not predictable from the etyma, largely increased difficulty of perception in these signs. I propose that the second hand in these signs was instead added to increase iconicity, a factor well known to shape the evolution of signs (Lepic et al. 2016, Shaw & Delaporte 2015). The remaining 15 two-handed forms are not all articulated at the torso (as Frishberg predicts) and their etyma also have few phonological commonalities. I propose instead, based on their shared syntactic and semantic features, that these forms contain a fossilized emphatic morpheme.

All 15 forms, despite their differing etyma, added their weak hand in the same way: via reflection of the dominant hand across the midsagittal plane, combined with a glide of the non-dominant hand away from the signer when the result of reflection would be impossible or phonologically dispreferred. This doubling of the dominant hand is still known as a derivation strategy in a handful of signs to create a more emphatic form (e.g. *THANK-YOU* / *THANK-YOU-VERY-MUCH*), though its use may now be lexically restricted. All the historical forms I found to have undergone doubling were verbs and adjectives with emotional content that could be intensified (e.g. *ANGRY*, *BRAG*, *HAPPY*), and comprised only signs which could function as verbs and adjectives, like all modern signs documented to use doubling for emphasis.

Doubling for emphasis has never been acknowledged before as a morpheme of ASL. However, a morpheme with identical phonology and near-identical semantics has been observed in German Sign Language (DGS), where it increases the intensity and offensiveness of taboo

terms (Loos et al. 2019). Because DGS and ASL are unrelated, doubling as emphasis may have iconic origins. In ASL, it may be the one-handed allophone of a documented morpheme, e.g. “intensive” aspect (Klima & Bellugi 1979: Chapter 11), or it may have fallen out of use and be frozen in a few lexical forms.

The apparent fortition of historically doubled signs may be due to lexical replacement of the unmarked forms by the emphatic forms. The loss of the intensified meaning which must accompany this lexical replacement can be attributed to hyperbolic overuse. When a word (here, and intensified sign e.g. REALLY-DETEST) is used hyperbolically often, its meaning weakens, causing it to be used even more often (Campbell 2013:231). The original non-emphatic form can correspondingly weaken, and eventually become so weak that it stops being used. This process has been observed in lexicalized diminutives in various languages, e.g. German *Mädchen*.

Bibliography:

- Campbell, Lyle. 2013. Semantic Change and Lexical Change. *Historical Linguistics* (An Introduction), 221–246. NED-New edition, 3. Edinburgh University Press.
- Frishberg, Nancy. 1975. Arbitrariness and Iconicity: Historical Change in American Sign Language. *Language* 51(3). 696.
- Klima, Edward S. & Ursula Bellugi. 1979. *The Signs of Language*. Harvard University Press.
- Lepic, Ryan. 2016. The great ASL compound hoax. *Proceedings of the High Desert Linguistics Society Conference* 11.
- Lepic, Ryan, Carl Börstell, Gal Belsitzman & Wendy Sandler. 2016. Taking meaning in hand: Iconic motivations in two-handed signs. *Sign Language & Linguistics* 19(1). 37–81. doi:[10.1075/sll.19.1.02lep](https://doi.org/10.1075/sll.19.1.02lep).
- Loos, Cornelia, Jens-Michael Cramer & Donna Jo Napoli. 2019. The linguistic sources of offense of taboo terms in German Sign Language. *Cognitive Linguistics* 30(4).
- Napoli, Donna Jo & Nathan Sanders. Forthcoming. Iconicity and biomechanics in the historical reconstruction of sign languages. 28.
- Napoli, Donna Jo, Nathan Sanders & Rebecca Wright. 2014. On the linguistic effects of articulatory ease, with a focus on sign languages. *Language* 90(2). 424–456.
- Padden, Carol A. & David M. Perlmutter. 1987. American Sign Language and the Architecture of Phonological Theory. *Natural Language & Linguistic Theory* 5(3). 335–375.
- Shaw, Emily & Yves Delaporte. 2015. *A Historical and Etymological Dictionary of American Sign Language*. Gallaudet University Press.
- Supalla, Ted & Patricia Clark. 2014. *Sign Language Archaeology: Understanding the Historical Roots of American Sign Language*. Gallaudet University Press.
- Tyrone, Martha E. & Claude E. Mauk. 2010. Sign Lowering and Phonetic Reduction in American Sign Language. *Journal of phonetics* 38(2). 317–328.

The Codex Aubin: Nahuatl Texts in Post-Conquest Mexico

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The Codex Aubin, a Nahuatl-language pictorial codex, is an early record of the Aztec scribal tradition in the period succeeding the Spanish conquest of the Valley of Mexico (British Museum Collection Database; Princeton University Library). A handwritten account of Mexica history and legend, the codex is framed as a traditional continuous year annal and is illustrated true to pre-Hispanic tradition; however, adopting European conventions of the printed book (Rajagopalan, 2019), it is written in Roman script and printed on Spanish *octavo* paper (Paxton & Cicero, 2017). An artifact of Mexico's early colonial period, the codex is a valuable archival record of Nahuatl as it was spoken and written in a time of increasing Spanish influence; it also represents the reformulation of indigenous epigraphic and historiographic traditions in light of competing European conventions. In this work, we survey two primary aspects of the Codex: loanwords in the language of the text, and the use of the Nahua glyphic script.

Firstly, we consider the language of the Codex Aubin, taking particular note of lexical loans and their morphological incorporation. Presumed from available evidence to have been written between the 1560s and the early 1600s (Rajagopalan, 2019), the Codex spans a period of rapid linguistic change, a transitional stage between Classical Nahuatl and heavily Spanish-incorporating modern Nahuatl. We find occasional loanwords early in the text, particularly in religious domains, (for instance in the phrase “*indiablo inhuitzilpochtli*” (*folio 5*), adopting the Spanish word “*diablo*” (devil) to describe the Aztec tutelary deity Huitzilpochtli) which increase in frequency and latitude as the text progresses; later in the text, first-person accounts from the scribe also contribute examples that may approximate less formal speech varieties. Timekeeping and religious terminology rapidly approach European forms, for instance a heading later in the text providing a date: “*Ynotlacat mariaton domingo a xxv dias del mes de febrero de 1585 (folio 31)*,” and grammatical incorporation of Spanish loanwords and particles with Nahuatl morphemes increases significantly (as with the article ‘*in*’ in the first example and the diminutive suffix *-ton* applied to the name ‘*maria*’ in the second.)

However, despite strong colonial influences, the Codex Aubin remains an authentic record grounded in indigenous pictorial and cartographic traditions. The text's numerous and relatively understudied glyph inscriptions provide a valuable corpus to add to the existing body of knowledge surrounding Aztec pictorial writing; evidence is found for a multivalent usage of glyphs as logograms, pictograms, and syllabograms throughout the codex. Existing scholarly hypotheses contest the extent of pre-Hispanic phoneticism (Lacadena, 2008; Whitaker, 2009), variously asserting the script to be



Figure 1: The name Don Antonio de Mendoza, transcribed with the monkey or “ozomatli” glyph representing the phonetic value **OZA**, along with the cattail reed glyph “tollan” representing **TO**. (Princeton University Library)

extensively syllabic or pictographic in nature. We analyze the text in the light of these claims, in particular examining the list of precolonial and colonial rulers it presents. In particular, Spanish-language names of post-conquest regents and viceroys are also transcribed in glyphs, providing yet unexamined examples of the phoneticity of the Aztec writing system (see Fig. 1) and facilitating attempted translations of some glyphs using frameworks established by prior authors (Lacadena, 2008; Whitaker, 2009). Logographic glyphs predominate in names of *tlaoque* (pre-conquest rulers), apparently regularized, while the glyph transliterations of Spanish-language names are mostly phonetic, and differ significantly to those found in other codices. The codex’s glyphs may reflect a number of hypotheses on the extent of pre-Hispanic phoneticism in Nahuatl writing; as such, we seek to explore the possible implications of this work to current scholarship in the field.

This work thus provides fresh insight into the post-Conquest linguistic and epigraphic landscape of the Valley of Mexico, and captures nascent changes in indigenous systems of language use and representation. Most interestingly, it provides a number of yet unexamined examples of phonetic usage of Nahuatl glyphs side-by-side with corresponding text in Spanish, allowing one to attempt plausible translations and well as further elucidate the pictographic, logosyllabic, and logographic utilization of the Aztec writing system.

References

- British Museum Collection Database. Am2006, Drg 31219, www.britishmuseum.org/collection. British Museum, 1880. Online. 11/19/2019.
- Codex Aubin, Garrett Mesoamerican Manuscripts, no. 1, Manuscripts Division, Dept. of Rare Books and Special Collections, Princeton University Library.
- Paxton, M., & Cicero, L. S. (2017). *Constructing power & place In Mesoamerica: Pre-hispanic paintings from three regions*. Albuquerque: University of New Mexico Press.
- Lacadena, A. (2008). Regional Scribal Traditions: Methodological Implications for the Decipherment of Nahuatl Writing. *The PARI Journal*, 8(4), 1-22.
- Rajagopalan, A. H. (2019). *Portraying the Aztec past: The Codices Boturini, Azcatitlan, and Aubin*. Austin, TX: University of Texas Press.
- Whittaker, G. (2009). The principles of Nahuatl Writing. *Göttinger Beiträge Zur Sprachwissenschaft*, 16, 47-81.