Squibs and Discussion

Tone Circles and Contrast Preservation
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This squib investigates a type of circular chain shift, known as a tone circle, found in dialects of the Min language of the Sino-Tibetan family, specifically the Xiamen dialect. Tone circles are problematic for classical Optimality Theory (OT), leading many researchers to conclude that they are instances of paradigmatic replacement. I argue that tone circles are indeed phonological processes. Thus, an enrichment of the theory beyond that of classical OT is required. I discuss how a solution along the lines of contrast preservation (Łubowicz 2003) can fill the gap. I hasten to add that Łubowicz's theory excludes the possibility of circular scenarios that do not exhibit any neutralization of contrasts. In line with this prediction, Xiamen does exhibit neutralization. The analysis sketched here exploits Łubowicz's proposals and, without making any changes to her theory, is capable of explaining the Xiamen tone circle.

The squib is organized as follows. Section 1 discusses Xiamen tone sandhi. Section 2 argues that tone circles are active phonological processes. Section 3 discusses tone circles as optimal solutions to contrast preservation. Section 4 offers a brief conclusion.

1 Xiamen Tone Sandhi

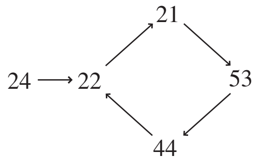
Xiamen, like many Southern Min languages, exhibits what has become known as a tone circle. Sandhi tones appear in nonfinal position within the tone sandhi domain. Citation tones appear in final position of the tone sandhi domain or in isolation.[1] (1) gives some examples of tone sandhi in Xiamen, where the underlying tone is italicized and the sandhi tone is boldfaced (Chen 1987). The tone sandhi are summarized in (2), which clearly shows their circular nature. The numbers refer to ‘‘tone letters’’ as described by Chao (1930): 5 represents the highest pitch level, and 1 represents the lowest pitch level.

Thanks to Elan Dresher, Keren Rice, and two anonymous *LI* reviewers for helpful comments. All errors are my own.

[1] We will not be concerned with the characterization of the sandhi domain. See Chen 1987, Lin 1994.

(1) a. we-*24* 'shoe' we-**22** tua-21 'shoe laces'
b. wi-*22* 'stomach' wi-**21** pih-22 'stomach ailment'
c. ts'u-*21* 'house' ts'u-**53** ting-53 'roof top'
d. hai-*53* 'ocean' hai-**44** kih-24 'ocean front'
e. p'ang-*44* 'fragrant' p'ang-**22** tsui-53 'fragrant water'

(2) *Citation and sandhi tones in Xiamen* (Chen 1987)

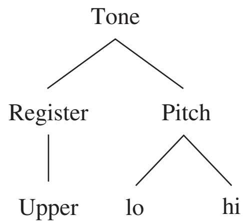


Early attempts to analyze this process relied on highly unnatural rules or stipulations (Wang 1967, Yip 1980), which led some researchers to suggest that the pattern of tone sandhi is paradigmatic. The fact that so many Southern Min languages exhibit similar or identical tone circles suggests that a systematic explanation is in order. In fact, two recent works (Hsieh 2005, Mortensen 2002) have proposed OT analyses relying on antifaithfulness constraints (Alderete 2001). The current proposal appeals to contrast preservation, which does not rely on ad hoc rules or on antifaithfulness constraints. The key difference between the contrast preservation approach and the rule-based and antifaithfulness approaches concerns the motivation for the chain shift. The contrast preservation approach admits only circular chain shifts that achieve some sort of neutralization, whereas the other approaches do not have this restriction. We shall see that the Xiamen tone circle does exhibit neutralization spurred on by a high-ranking markedness constraint.

Let us begin with the representation of tone. Most analyses assume a register feature that bisects the tonal space into the Upper and Lower registers, and a pitch feature, designated [hi] or [lo], that fine-tunes the pitch of the tone within the register.[2] The two most widely debated representations for contour tones are the contour tone unit (CTU) (Bao 1999, Yip 1980, 1989) and the tone cluster (Duanmu 1990, 1994). For simplicity, I assume a CTU approach; however, the ensuing discussion is compatible with either approach. CTU analyses typically assume a single register feature and a branching pitch feature to represent a contour tone. Example (3a) represents a high-rising tone. The branching Pitch node indicates that the tone moves from the low end of the Upper register to the high end. I use the abbreviated form in (3b) throughout.

[2] See Yip 1995 for a survey of proposals on the representation of tone.

(3) a.



b. [U, lh]

Abstracting away from the feature-geometric representations and concentrating only on the feature content of the tones, I suggest a plausible set of features for Xiamen tones in (4).

(4) 44 – [U, h] 24 – [U, lh][3]
22 – [L, h] 21 – [L, hl] 53 – [U, hl]

In the next section, I argue that a phonological approach to Xiamen tone sandhi is on the right track and that other approaches are not.

2 Tone Circles Are Phonological

As mentioned above, one of the earliest phonological analyses of Xiamen tone sandhi was given by Wang (1967), who proposed the *SPE*-type rule in (5) to explain the tone sandhi facts.

(5) $[\alpha \text{ high}, \beta \text{ fall}] \rightarrow [\beta \text{ high}, -\alpha \text{ fall}]$

The unnaturalness of this rule has been used to suggest that the Xiamen tone circle is not an active phonological process and is best considered a paradigmatic replacement (Schuh 1978) or arbitrary substitution (Anderson 1978). Tsay and Myers (1996) consider tone circles a morphological rather than phonological process. Specifically, they argue that the citation and sandhi tones are allomorphs learned as pairs. Under this approach, any pairing of tones should be possible. However, as Hsieh (2005) points out, both native and borrowed words pattern consistently with respect to the Xiamen tone circle.

Hsieh (1970) and Wang (1995) report that native speakers do not execute tone sandhi consistently for nonce words. They take this as evidence against the psychological reality of the tone sandhi circle as a phonologically active component of the grammar. Hsieh (2005)

[3] As [24] is the only rising tone in the inventory, there is no a priori way to determine if it is an Upper or Lower register tone. Although Cheng (1968) and Yip (1989) essentially claim it is a Lower register tone, Chen (1987) and Lin (1994) tacitly assume it is an Upper register tone. I follow Chen and Lin and assume it is an Upper register tone. An *LI* reviewer points out that in a closely related dialect, Longxi, this tone is transcribed as [14], clearly placing it in the Lower register; however, this tone has an allotone, [25], which is arguably an Upper register tone. Although there is no strong empirical basis for considering [24] an Upper or Lower register tone, the analysis sketched here, if it turns out to be correct, provides theory-internal evidence that it is an Upper register tone.

counters this claim on two fronts. Applying sandhi to the nonce words presented to speakers in the Hsieh 1970 study would result in an actual word in the language under consideration, so Hsieh (2005) argues that speakers may be reluctant to apply sandhi to a nonce word if it results in a real word. Wang controls for this by employing phonotactically impossible (but tonotactically possible) words, which can never result in a real word upon applying sandhi. Again, subjects do not reliably execute sandhi. Hsieh (2005) argues that since there is no set of candidates to compare such nonce words with, the tone sandhi cannot be computed. However, since phonological processes do seem to be active in nonce words in many of the world's languages (Berko's (1958) famous *wug* test, for example), one is hesitant to adopt an argument that would deny outright the applicability of phonological processes to nonce words. I believe a more important problem with this approach is that test subjects are being asked to execute phonological processes on phonotactically impossible words. Thus, from the arguments presented above, I conclude that results from Wang 1995 may be inconclusive.[4] It should be noted that the current approach evaluates contrasts between possible but not necessarily existing words of the language.

Theory-internal arguments against phonological explanations of the Xiamen tone circle rely on the inadmissibility of circular chain shifts in classical OT. Circular chain shifts are difficult to capture under a classical OT approach (in the sense of Prince and Smolensky 1993, 2004).[5] Indeed, it has been argued that circular chain shifts are categorically ruled out in this framework (Łubowicz 2003, Moreton 2004). Moreton argues that only markedness can cause a change in a representation. Thus, circular chain shifts in which A changes to B and B changes to A are problematic. The first change (A → B) is possible only if A is more marked than B, and the second change (B → A) is possible only if B is more marked than A, resulting in a contradiction. Circular chain shifts, it would appear, are not possible in any version of OT in which faithfulness and markedness constraints are the only violable constraints (as in classical OT as illustrated here). It is not clear, however, that faithfulness and markedness are the only types of constraints available to Universal Grammar. As mentioned above, Alderete (2001) has argued for the existence of antifaithfulness constraints. In the current approach, I exploit a family of contrast preservation constraints proposed by Łubowicz (2003). Thus, once one admits the possibility of expanding classical OT beyond the standard repertoire of faithfulness and markedness constraints, several avenues

[4] Perhaps what is needed is a set of phonotactically nonce words, whose sandhi forms are also nonce forms. This would most closely mirror the original *wug* test, as both *wug* and *wugs* are nonce forms.

[5] Kirchner (1996) notes that chain shifts in general are difficult to capture under an OT framework. He proposes a solution to a vowel chain shift found in Nzbi, which makes use of local conjunction and distantial faithfulness. He admits, however, that such an approach cannot be carried over to the Xiamen tone circle.

become available for a phonological explanation of tone circles. Specifically, I argue here that PreserveContrast constraints coupled with markedness can account for tone circles that involve neutralization.

Finally, from a typological perspective, Moreton (2004:159) asserts that tone circles are peculiar to this closely related set of dialects, suggesting that the extreme rarity of tone circles is evidence that they are not a phonological reality. Furthermore, on the basis of its similarity to the tone circle in the very closely related language Longxi, Chen (2000:42–45) suggests that the Xiamen tone circle is a historical accident.[6] He observes that the tone circles of both Xiamen and Longxi are identical in terms of Middle Chinese tone categories, from which he concludes that the pattern found in modern Xiamen is not phonological, but the result of historical accident. Mortensen (2002), however, describes tone circles in two other languages, Jingpho and A-Hmong, which are not related to the Min dialect family, and were never in contact with the languages in that family. The existence of tone circles in languages unrelated to Xiamen strongly suggests that circular chain shifts are not a historical accident but a phonological reality.

In this section, I have refuted many of the arguments against the position that tone circles are phonological. Classical OT does not permit circular shifts of any kind, and the contrast preservation account does not allow circular shifts that do not exhibit any kind of neutralization. The Xiamen tone circle, however, does show some neutralization: namely, the rising tone /24/ is absent from the set of sandhi tones. I exploit this fact and argue that the tone circle is kick-started by a high-ranked markedness constraint militating against rising tones. In the next section, I outline how the Xiamen tone circle can be thought of as an optimal solution to contrast preservation.

3 A Contrast Preservation Approach to Xiamen Tones

Łubowicz (2003) proposes a family of contrast preservation constraints. Descriptively, she proposes that when a contrast is destroyed by a neutralization process, there is a tendency for it to be replaced by a different contrast. I propose that tone circles arise as a result of preserving contrast among tonal features and markedness. Łubowicz splits Eval into two stages. Stage I consists of two families of constraints, PreserveContrast and tokenized markedness; stage II consists of generalized faithfulness constraints. Furthermore, candidates do not consist of individual tokens, but of scenarios that illustrate transformation patterns. Briefly, a scenario is a minigrammar that shows mappings among phonological representations in an ‘‘all at once’’ fashion. Alternative scenarios show different configurations of the phonological representations and how they are connected. Sce-

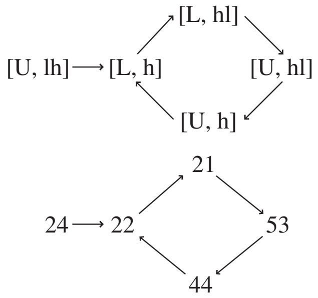
[6] Thanks to an *LI* reviewer for pointing out Chen’s discussion.

narios are shown in the tableaux later in this section and in example (6). (See Łubowicz 2003 for more details.)

3.1 PreserveContrast Constraints

PreserveContrast output (PC_{OUT}) constraints count one violation for every output that fails to maintain a contrast for a given feature. The scenario for Xiamen tones, shown in (6), incurs one violation for the pitch feature. The tone [L, h] incurs one violation for PC_{OUT}(Pitch) because there is a loss in contrast in the pitch feature from the two input tones. Note, however, that the constraint PC_{OUT}(Register) is not violated by this scenario. The two input tones to [L, h] do not contrast for the register feature. Since [L, h] is the only tone with more than one input, this is the only place in the scenario where violations of this type of constraint can be found.

(6)



Łubowicz (2003) also introduces input and relational PC constraints. Since the current discussion does not make use of these constraints, I refer the reader to Łubowicz for details about them.

3.2 Tokenized Markedness

Maddieson (1978) states that no language has contour tones without having level tones. Also, falling tones are much more common than rising tones crosslinguistically. We expect, then, to find markedness constraints that penalize contour tones and, in particular, rising tones. Yip (2001), on the basis of a large literature survey, posits the following markedness constraints: *Contour, *Rise, *Fall, *High, and *Low, where *Rise universally outranks *Fall and *High universally outranks *Low. Chen (2000:131–134) posits a similar markedness hierarchy (*Rise $\gg$ *High $\gg$ *Fall $\gg$ *Low). I assume here that *High is violated only by [U, h] (44 in Xiamen).

In this framework, tokenized markedness constraints tally violations cumulatively. Each output that violates a markedness constraint scores one violation for every input that maps onto it. In the Xiamen example, *Rise is fully satisfied since there are no input tones that map to a rising tone. *Contour and *Fall score two violations each since there are two input tones that map to a falling—hence, contour—tone. See tableau 2 and related discussion for examples.

3.3 Faithfulness

As mentioned, faithfulness constraints in Łubowicz's theory are evaluated at stage II of Eval. Only the most optimal candidates from stage I are considered at stage II. Given the large amount of transformation in the Xiamen tone circle, it is clear that it will score several violations of faithfulness constraints. Therefore, we must show that more faithful candidates are blocked at stage I.

3.4 Analysis

Yip (2002) notes that it is characteristic of Southern Min tone circles to have an output set that is less marked than the input set, indicating that neutralization has taken place. In fact, to the extent that the analysis proposed here is correct, tone circles with no neutralization should be impossible. I have not encountered any such tone circle in the literature.[7] In the Xiamen tone circle, the high-rising tone does not appear in the output set, and the target of neutralization is the low-level tone, which is relatively unmarked. I exploit these facts in the forthcoming analysis of the Xiamen tone circle.

Of the PC family of constraints discussed above, only PC_{OUT}(Register) is fully satisfied by the winning candidate (i.e., the Xiamen tone circle). PC_{OUT}(Pitch) scores one violation for the pair /U, h/ and /U, lh/, which both map to [L, h]. Comparing the actual scenario to a scenario with no movement shows that *RISE must be ranked above PC_{OUT}(Pitch). Consider a scenario with some movement (the least amount needed to satisfy *RISE).

(7) [L, hl]

[U, lh] ⟶ [L, h] [U, hl]

[U, h]

Here, the only shift is from [U, lh] to [L, h]. As a result, both PC_{OUT}(Register) and PC_{OUT}(Pitch) score one violation each, thus establishing the ranking of PC_{OUT}(Register) over PC_{OUT}(Pitch). These results are shown in tableau 1, where the arrows indicate the input and output tones. Lack of an arrow emanating from a tone indicates that it maps to itself.

Now, if we consider more scenarios in which /22/ maps to [21], /21/ to [53], and so forth, we can begin to understand how the circular scenario is the optimal candidate. Consider tableau 2, where the candidate scenarios are numbered for ease of reference. This tableau shows that scenario 1 is the optimal candidate once we consider the tokenized markedness constraints *CONTOUR and *HIGH. Considering candidate 2, we see that it violates the highly ranked constraint PC_{OUT}(Register); and considering the next most faithful candidate, 3, we see that it

[7] Thanks to an *LI* reviewer for making this point clear.

Tableau 1

Scenarios	*RISE	PC_{OUT} (Register)	PC_{OUT} (Pitch)
☞ 24 ⟶ 22 ↗ 21 ↘ 53 ↙ 44 ↖ 22			*
24 ⟶ 22; 21; 53; 44		*!	*
24; 22; 21; 53; 44	*!		

Tableau 2

	Scenarios	*RISE	PC_{OUT} (Register)	PC_{OUT} (Pitch)	*CONTOUR	*HIGH
1	☞ 24 ⟶ 22 ↗ 21 ↘ 53 ↙ 44 ↖ 22			*	**	*
2	24 ⟶ 22; 21; 53; 44		*!	*	**	*
3	24 ⟶ 22 ↗ 21; 53; 44			*	***! (2 for /21/ and 1 for /53/)	*
4	24 ⟶ 22 ↗ 21 ↘ 53; 44		*!		*** (2 for /53/ and 1 for /21/)	*
5	24 ⟶ 22 ↗ 21 ↘ 53 ↙ 44			*	**	**! (1 for /53/ mapping to /44/ and 1 for /44/ mapping to itself)
6	24; 22; 21; 53; 44	*!			***	*

violates *CONTOUR three times, whereas the intended candidate violates this constraint only twice. The next most faithful candidate, 4, also incurs a fatal violation by PC_{OUT}(Register). Candidate 5 violates the constraint *HIGH twice, while the winning candidate violates it only once.

In total, there are 5^5 or 3,125 possible scenarios for the five tones in the Xiamen tone circle. Obviously, I cannot discuss all of them here, nor can I offer a detailed solution at this time. However, many competing scenarios can immediately be discarded by high-ranking constraints such as *RISE. Instead, I have shown that the position that circular scenarios are categorically ruled out by OT is too strong. What constitutes an admissible scenario must ultimately depend on the types of features under consideration and how they interact with each other. Crucially, a circular scenario as described here must be kick-started by a high-ranking markedness constraint. The discussion in this section shows that there are enough constraints with few or no violations that circular scenarios such as the Xiamen tone circle may be optimal under a contrast preservation approach.

4 Conclusion

In this squib, I have argued against two major claims concerning circular chain shifts. First, I argued that the Xiamen tone circle is a phonologically active circular chain shift, rather than a morphological or paradigmatic replacement. Second, I demonstrated that tone circles, while unexplained by classical OT, can be accounted for in an OT framework bolstered by contrast preservation, as long as the tone circle involves neutralization (as is the case for Xiamen). Although I did not present a detailed solution, I suggested that the Xiamen tone circle can be analyzed as an optimal scenario to a contrast preservation family of constraints.

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Licensing Configurations: The Puzzle of Head Negative Polarity Items

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1 Introduction

It is generally assumed within the Principles-and-Parameters framework that dependencies between functional categories and the lexical elements they enter into licensing or checking relations with require c-command and/or specifier-head configurations. This is, for example, the standard account of agreement and Case.

Similarly, in the context of negation and negative polarity items (NPIs), most syntactic accounts assume that licensing of the latter by the former involves either c-command (1) or a specifier-head relation (2).

(1) a. I didn't meet anyone.
b. I gave no one anything.
(Barss and Lasnik 1986)

(2) ɦətta waɦəd ma-ža
even one NEG-came.3MS
'*Anyone didn't come.'

The debate has been over whether one condition is sufficient (i.e., specifier-head relation with overt or covert NPI movement to NegP; Haegeman 1995).[1]

Most well-studied cases where the NPI is in a higher position than the negative licenser (i.e., is neither in a specifier-head relation with negation nor c-commanded by it) involve situations where the

[1] The issues surrounding NPIs are complex, ranging from whether a particular element in a language is indeed an NPI to whether the restrictions on licensing are syntactic, semantic, or pragmatic. For syntactic accounts, the issues have revolved around the structural conditions on the licensing of NPIs and the levels of representation or points in the derivation where licensing takes place. See Linebarger 1987, Laka 1990, Mahajan 1990, Ladusaw 1992, Moritz and Valois 1994, Progovac 1994, Uribe-Echevarria 1994, Benmamoun 1997, and Zanuttini 1997, among many others.