Unbounded Harmony Is Not Always Myopic: Evidence from Tutrugbu

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1. Introduction

Theoretical analyses of vowel harmony have typically divided harmony patterns into unbounded and bounded. Unbounded harmony involves spreading the harmonic feature throughout the word. Bounded harmony, on the other hand, involves spreading within a specific word-internal domain. These two are exemplified in (1-2) below. In (1), tongue root harmony spreads leftward to the edge of the word, and as a result, all mid vowels agree for the feature, [ATR]. Compare this with bounded height harmony in the romance dialect Grado, shown in (2). Height harmony in Grado, often called metaphony, is triggered by a post-tonic high vowel, and spreads leftward up to the stressed vowel but no further. In (2b), where stress is penultimate, one mid vowel undergoes raising, leaving all pre-tonic vowels unaffected by harmony. In (2c-d,) stress is antepenultimate, and two mid vowels undergo raising. Thus, the domain of harmony in Grado is defined by stress and not by the word edge, like in Yoruba.

(1) Unbounded harmony in Yoruba (Bakovic 2000)
  a. ò-gè-dè 'incantation'
  b. ɔ̀-gɛ̀-dɛ̀ 'banana/plantain'

(2) Bounded harmony in Grado (Walker 2005)
  a. benedét-o 'blessed-M.SG' c. zóven-e 'young.man-SG'
  b. benedít-i 'blessed-M.PL' d. zúvin-i 'young.man-PL'

To reiterate, unbounded harmony propagates the harmonic feature as far as possible within the word while bounded harmony, as in (2), targets a word-internal position, in this case, the stressed syllable. In addition, Wilson (2003, 2006) contends that unbounded harmony is myopic. In more concrete terms, the alternation of a given vowel depends on only the local and not global context. In Yoruba vowel harmony, high vowels do not participate in harmony. When these non-undergoers are present, as in (3), harmony spreads leftward up to the non-participating vowel. Since high vowels do not undergo harmony in Yoruba, spreading is only partial, and the initial high vowel is unaffected.

(3) Partial spreading in Yoruba (Bakovic 2000)
  a. ì-jè-rè 'a kind of seed'
  b. ì-kɛ́-rɛ́ 'name of a Yoruba town'

Crucially, in unbounded systems like Yoruba the surface realization of a given mid vowel depends on the relevant feature value of the immediately following vowel. In contrast, in the bounded harmony pattern found in Grado, the realization of mid vowel depends on both the height of the final vowel as well as the height of the preceding stressed vowel. A number of Optimality theoretic (Prince & Smolensky 1993/2004) constraints, like AGREE (Bakovic 2000) and categorical versions of ALIGN

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(McCarthy 2003) do not predict partial spreading, though. In Yoruba, as seen above, if a vowel cannot undergo harmony, vowels between the trigger and that non-undergoer still undergo harmony. However, constraints like AGREE and categorical ALIGN predict that in the presence of non-undergoers (blockers), harmony will not spread at all. This unattested "pathological" prediction is demonstrated in (4) below (see Wilson 2003 as well as Heinz & Lai 2013 for discussion). Assuming a high-ranked root-faithfulness constraint (Beckman 1997), the ranking of AGREE[ATR] >> IDENT-IO[ATR] predicts harmony, but only if no blockers, in this case high vowels, are present. This is evident in (4), where AGREE[ATR] is violated by both candidates, ID-IO[ATR] determines the winner, selecting the unattested Candidate (b), in which no spreading is preferred over partial spreading.

(4) Sour grapes harmony predicted by AGREE

Candidates	/i-ke-rɛ/	AGREE[ATR]	ID-IO[ATR]
a.	i-ke-rɛ	*	
b. ☹	i-kɛ-rɛ	*	*!

The observation that, in the presence of a blocker, partial spreading is preferred over no spreading apparently does not hold for bounded spreading, though. Walker (2010) demonstrates that in Grado, vowels between the post-tonic high vowel trigger and stressed vowel may only undergo harmony if the stressed vowel does. If the stressed vowel is low, it may not raise to [+high], and in these cases, no spreading is preferred over partial spreading. In (5a), repeated from (2d), the penultimate vowel undergoes raising because the stressed antepenult is mid. However, in (5b), the stressed antepenult is low, which prevents it from undergoing raising. This, in turn, prevents the penult from undergoing raising. Thus, the alternation of a mid vowel in Grado depends not only on the presence of a following trigger, as in Yoruba, but also on the presence of a potential non-undergoer in the preceding syllable.

(5) Non-myopic harmony in Grado (Walker 2010)
- a. zúvin-i 'young.man-M.PL'
- b. boʤánten-i 'crab right before it becomes without a shell-M.PL'

The question emerges, then, if bounded harmony can be non-myopic, as in Grado, is it possible for unbounded harmony to similarly exhibit non-myopic harmony? In this paper we argue that unbounded harmony is not ontologically myopic, presenting evidence that ATR harmony in Tutrugbu is both unbounded and non-myopic. We then analyze the pattern using local spreading plus long-distance correspondence to account for this case of non-myopic harmony.

2. Tutrugbu

Tutrugbu is a Ghana-Togo Mountain language (Kwa) spoken in southeastern Ghana. The data for this paper comes from formal elicitation as well as a documentary corpus of natural speech. The pattern of harmony demonstrated below is also evident in the closely related language, Tafi (Bobuafor 2013).

2.1. Vowel inventory

Tutrugbu has an inventory of nine oral vowels, /a ɔ o ɔ^{H} u ɛ e ɛ^{H} i/ with contrasts in height, backness, rounding, and ATR. Nasal vowels are also phonemic in the language, but they behave just like oral vowels for vowel harmony. The vowels, /ɔ^{H}/ and /ɛ^{H}/ are surface mid vowels but pattern as high vowels. There are several pieces of evidence that point to their status as [+hi] in the phonology of the language. One, /ɔ o/ trigger labial harmony but /ɔ^{H} u/ do not. Two, /a e/ undergo labial harmony, but /ɛ^{H} i/do not. See Essegbey & McCollum (2017) for further discussion on the vowel inventory as well as labial harmony. Third, in neighboring Tafi, these vowels are /ʊ/ and / ɪ/ (Bobuafor 2013). Lastly, these vowels do not pattern like /a e/ for ATR harmony, further suggesting that they are assigned a more abstract [+hi] feature. This final point will figure into the vowel harmony pattern discussed below.

2.2. ATR harmony

Tutrugbu typically uses prefixation to build morphologically complex words. Suffixation is rare, and suffixes do not generally undergo vowel harmony, so they are not discussed below. Observe the ATR pairings demonstrated by regressive harmony on noun class prefixes in (6). In (6a), prefixal /a/ alternates with /e/, while in (6b) /ɔ/ alternates with /o/. In (6c), /ɛ^{H}/ alternates with /i/, and finally, /ɔ^{H}/ alternates with /u/ in (6d). Note that /ɛ/ does not occur in affixes.

(6) ATR harmony in nouns

	Class	[-ATR]	Gloss	[+ATR]	Gloss
a.	1	a-ɲɛ^{H}	'C1-man'	e-bú	'C1-dog'
b.	3	ɔ-da	'C3-copper'	o-pétē	'C3-vulture'
c.	4	ɛ^{H}-da	'C4-copper'	i-pétē	'C4-vulture'
d.	8	bɔ^{H}-wɛ^{H}	'C8-axe'	bu-yu	'C8-war'

Noun class prefixes undergo ATR harmony, but concatenating more prefixes to a nominal root is not possible, but ,verbal morphology allows more morphological complexity. In (7), words consisting of only [+hi] prefixes show full harmony. In (7a-c), [-ATR] roots are preceded by [-ATR] prefixes while in (7d-f), [+ATR] roots are preceded by [+ATR] prefixes.

(7) Harmony on [+hi] prefixes

a.	ɛ^{H}-tɛ́^{H}-ba	'1S-NEG-come'	d.	i-tí-ɕē	'1S-NEG-grow'
b.	bɔ^{H}-tɛ́^{H}-ba	'1P-NEG-come'	e.	bu-tí-ɕē	'1P-NEG-grow'
c.	kɛ^{H}-tɛ́^{H}-ba	'C5-NEG-come'	f.	ki-tí-ɕē	'C5-NEG-grow'

In contrast to the [+hi] vowels shown above, [+low] vowels block harmony in the same contexts. Regardless of root [ATR] value, the FUT prefix and preceding prefixes all surface as [-ATR] in (8). When these forms are compared with those in (7) above, it is evident that FUT blocks harmony.

(8) Disharmony on [+low] prefixes

a.	ɛ^{H}-ba-ba	'1S-FUT-come'	d.	ɛ^{H}-ba-ɕē	'1S-FUT-grow'
b.	bɔ^{H}-ba-ba	'1P-FUT-come'	e.	bɔ^{H}-ba-ɕē	'1P-FUT-grow'
c.	kɛ^{H}-ba-ba	'C5-FUT-come'	f.	kɛ^{H}-ba-ɕē	'C5-FUT-grow'

If a high vowel prefix intervenes between a [+ATR] root and low blocking vowel, that [+hi] vowel undergoes harmony, as in (9). This partial spreading in the presence of a blocker demonstrates that Tutrugbu does not exhibit sour grapes harmony.

(9) Partial spreading to [+hi] prefixes

a.	ɛ^{H}-ba-di-wu	'1S-FUT-ITIVE-climb'
b.	bɔ^{H}-ba-di-wu	'1P-FUT-ITIVE-climb'
c.	kɛ^{H}-ba-di-wu	'C5-FUT-ITIVE-climb'

In all of the preceding examples the word-initial vowel was high. When a non-high vowel occurs in the initial syllable, low vowels do not block harmony, but rather undergo harmony. In (10d-f), [+ATR] roots spread their [+ATR] feature to the left edge of the word. Note also in (10b,e) that round vowels in the initial syllable trigger progressive labial harmony (see Essegbey & McCollum 2017).

(10) Harmony in the presence of a [-hi] initial prefix

a.	a-ba-ba	'3S-FUT-come'	d.	e-be-ɕē	'3S-FUT-grow'
b.	ɔ-bɔ-ba	'2S-FUT-come'	e.	o-bo-ɕē	'2S-FUT-grow'
c.	ka-ba-ba	'C7-FUT-come'	f.	ke-be-ɕē	'C7-FUT-grow'

In (10), all vowels agree in height, but in (11) harmony between vowels of differing heights in shown. Once again, if the initial vowel is non-high, harmony obtains throughout the word.

(11) More harmony in the presence of a [-hi] initial prefix

a.	a-tɛ́^{H}-ba-ba	‘3S-NEG-FUT-come’	d.	e-tí-be-ɕē	‘3S-NEG-FUT-grow’
b.	ɔ-tɛ́^{H}-bɔ-ba	‘2S-NEG-FUT-come’	e.	o-tí-bo-ɕē	‘2S-NEG-FUT-grow’
c.	ka-tɛ́^{H}-ba-ba	‘C7-NEG-FUT-come’	f.	ke-tí-be-ɕē	‘C7-NEG-FUT-grow’

The data above show that low vowels are only *conditional blockers.* They block harmony only in the presence of a high vowel in word-initial position. Two high vowel prefixes do not block harmony, as in (7), and, two non-high prefixes do not block harmony, as in (10-11). It is only the combination of a high initial vowel and a non-high medial vowel that blocks harmony.

In other words, the realization of a non-high prefix depends not only on the ATR value of the immediately following prefix, but also on the height feature of the initial vowel, which, as shown in (10), may be non-local. Since the surface quality of these vowels depends on potentially non-local information, harmony is non-myopic in Tutrugbu. Whereas the sour grapes prediction that falls out from AGREE in (3) involve non-myopic spreading, harmony here involves non-myopic blocking.

3. Analysis

The data in (7-11) indicate that harmony in Tutrugbu is unbounded since harmony spreads as far as possible within the word. In addition, harmony in Tutrugbu is non-myopic because conditional blocking is non-myopic. While conditional triggering, as in the sour grapes pattern shown in (4) is accounted for with a harmony-driving constraint like AGREE, the conditional blocking pattern does not fall out from the harmony-driving constraint alone. In this section we present an analysis of harmony using local spreading plus non-local correspondence (Rose & Walker 2004). The analysis presented below construes ATR harmony as two processes in Tutrugbu: a local ATR spreading harmony that targets high vowels only, and a long-distance correspondence-based harmony that is sensitive to the featural content of the initial-syllable vowel.

3.1. ATR spreading

As demonstrated in (7) and (9), high vowels undergo harmony without reference to the height of the initial-syllable vowel. We account for this using the constraints in (12-15) below. In (12), SPREAD-L[+ATR] motivates leftward [+ATR] spreading in opposition to IDENT-IO[ATR] in (13), which militates against harmony. We assume that [+ATR] is the spreading feature because suffixes are [-ATR], and when disharmony obtains in the language, [+ATR] roots co-occur with [-ATR] affixes, as in (8).

(12) SPREAD-L[+ATR] — assign a violation to every [-ATR] vowel preceding a [+ATR] vowel (Padgett 1995).

(13) IDENT-IO[ATR] — assign a violation to every input-output correspondent pair that disagree for the feature [ATR] (McCarthy & Prince 1995).

Since SPREAD constraints do not impose locality on assimilation they can drive long-distance spreading across non-undergoers. This type of transparency in unattested in Tutrugbu ATR harmony (although see (11b,e) for instances from labial harmony). To curtail transparency, we invoke a constraint on gapped representations, *GAP[ATR].

(14) *GAP[+ATR] — assign a violation to every sequence of [+ATR] that is not syllable-adjacent (Archangeli & Pulleyblank 1994).

To differentiate low vowels, which often block harmony, from high vowels, which always undergo harmony, we introduce, IDENT-IO[LOW]. IDENT-IO[LOW], in tandem with the assumption that all affixes are underlyingly [-ATR], prevents underlying /a/ from surfacing as [e] or [o].

(15) IDENT-IO[LOW] assign a violation to every input-output correspondent pair that disagree for the feature [low] (McCarthy & Prince 1995).

Given these four constraints and the ranking, *GAP[+ATR] >> IDENT-IO[LOW] >> SPREAD-L[+ATR] >> IDENT-IO[ATR], we can account for harmony targeting [+hi] prefixes in (7-9). We assume a high-ranked positional faithfulness constraint banning changes to roots (Beckman 1997). This prevents roots from assimilating to the [-ATR] value of prefixes, and additionally allows for ATR disharmony, which although rare, occurs in some polysyllabic roots. In these cases, the leftmost vowel of the root determines the ATR feature of prefix vowels.

In (16) below, from (7d), candidate (a), with transparent harmony, is ruled out by *GAP[+ATR], while both candidates (b) and (c) are ruled out by the ranking, SPREAD-L[+ATR] >> IDENT-IO[ATR]. The candidate with full harmony, candidate (d), is optimal under this constraint ranking.

(16) Harmony on [+hi] prefixes

Candidates	/ɛ^{H}-tɛ^{H}-ɕe/	*GAP[+ATR]	ID-IO[LOW]	SPREAD-L [+ATR]	ID-IO [ATR]
a.	i-tɛ^{H}-ɕe	*!		*	*
b.	ɛ^{H}-tɛ^{H}-ɕe			*!*	
c.	ɛ^{H}-ti-ɕe			*!	*
d. ☞	i-ti-ɕe				**

The attested output is also predicted for forms like (8d), where /a/ blocks harmony, which is shown in (17). Below, the candidate with transparent /a/, candidate (a), is excluded by *GAP[+ATR]. Candidate (b), the candidate with assimilation of /a/ to [e], violates the high-ranked IDENT-IO[LOW] constraint, leaving candidate (c), the attested faithful candidate, as the winner.

(17) Blocking by a [-hi] prefix

Candidates	/ɛ^{H}-ba-ɕe/	*GAP[+ATR]	ID-IO[LOW]	SPREAD-L [+ATR]	ID-IO [ATR]
a.	i-ba-ɕe	*!		*	*
b.	i-be-ɕe		*!		**
c. ☞	ɛ^{H}-ba-ɕe			**	

This ranking correctly predicts partial spreading in cases where a high vowel occurs between a [+ATR] root and low vowel, as in (9a). As in the previous two tableaux, non-local spreading in candidate (a) and assimilation of the underlying low vowel in candidate (b) are ruled out by the two highest-ranked constraints in (18). Candidate (d) is preferred over candidate (c) because SPREAD-L[+ATR] >> IDENT-IO[ATR]. Thus, the data in (7-9) is accounted for under the present ranking.

(18) Partial spreading to a [+hi] prefix

Candidates	/ɛ^{H}-ba-dɛ^{H}-wu/	*GAP[+ATR]	ID-IO[LOW]	SPREAD-L [+ATR]	ID-IO [ATR]
a.	i-ba-di-wu	*!		*	**
b.	i-be-di-wu		*!		***
c.	ɛ^{H}-ba-dɛ^{H}-wu			***!	
d. ☞	ɛ^{H}-ba-di-wu			**	*

As seen in (19) below, this ranking wrongly predicts no harmony if both prefixes are underlyingly low. The harmony-driving mechanism must know the height of the initial prefix in order to know whether to assimilate the medial low prefix or not, and Spread-L[+ATR] cannot access this non-local featural content. We account for this by the introduction of a correspondence-based harmony that cooperates with local spreading in the language.

(19) A bad prediction: disharmony when the initial vowel is [-hi]

Candidates	/a-ba-ɕe/	*Gap[+ATR]	Id-IO[low]	Spread-L [+ATR]	Id-IO [ATR]
a.	e-be-ɕe		**!		**
b. ☹	a-ba-ɕe			**	

3.2. Correspondence

Agreement-by-Correspondence (ABC; Rose & Walker 2004; Sasa 2009; Rhodes 2012) treats harmony as correspondence rather than spreading and further assumes that non-local correspondence is possible. Vowel harmony is driven by two types of constraints in ABC, Corr constraints and VV-Id constraints. Corr constraints compel segments to correspond, and VV-Id constraints compel correspondent vowels to agree for the relevant feature. Most work in ABC uses Corr constraints to target vowels with similar features, but we utilize correspondence in a manner similar to the Anchor constraints in (McCarthy & Prince 1995) and Align constraints in (McCarthy & Prince 1993). Crucially, we propose that a Corr constraint may motivate correspondence between elements at the edge of some morpho-prosodic domain without respect to their featural similarity. Recall from above that ATR harmony depends on both the leftmost vowel of the root as well as the leftmost vowel of the word. In Tutrugbu the two edges may enter into correspondence, which compels ATR harmony.

(20) Corr-VV-L[Rt,Wd] assign a violation if the leftmost vowel of the root and the leftmost vowel of the word are not in correspondence.

In addition to an edge correspondence constraint, a VV-Id[ATR] constraint is necessary to ensure that these edgemost vowels not only correspond, but that they agree for the feature [ATR], as well. Note that correspondence is indexed by a subscript *x* below.

(21) VV-Id[ATR] assign a violation to every output correspondent vowel pair that do not agree for the feature [ATR].

If both Corr-VV-L[Rt,Wd] and VV-Id[ATR] outrank the four constraints introduced in §3.1, then we can extend the analysis to account for the data in (10-11). The example from (10d), which was wrongly predicted to surface faithfully in (19), is now properly modeled with the addition of these two constraints, exemplified in (22). The left edge of the word and root do not correspond in candidates (a-b), and these candidates are therefore eliminated. Candidate (c) violates VV-Id[ATR] because although the edgmost vowels correspond, they do not agree. Candidate (d) exhibits agreement via correspondence, but this agreement is non-local, which run afoul of *Gap[+ATR], making candidate (e), the actual output, optimal. Observe that Spread-L[+ATR] is satisfied by correspondence-based agreement in candidate (e), since Spread-L specifies only that [-ATR] vowels preceding [+ATR] vowels are dispreferred.

(22) Harmony when the initial vowel is [-hi]

Candidates	/a-ba-ɕe/	Corr-VV-L [Rt,Wd]	VV-Id [ATR]	*Gap [+ATR]	Id-IO [low]	Spread-L [+ATR]	Id-IO [ATR]
a.	e-be-ɕe	*!			**		**
b.	a-ba-ɕe	*!				**	
c.	a$_x$-ba-ɕe$_x$		*!			**	
d.	e$_x$-ba-ɕe$_x$			*!	*	*	*
e. ☞	e$_x$-be-ɕe$_x$				**		**

While the introduction of these two constraints extends the analysis to account for the data in (10-11), the data in (7-9) are problematic in the absence of some constraint to curtail harmony when the initial vowel is [+hi]. To account for this, we introduce an anticorrespondence constraint to prevent prefixal [+hi] vowels from undergoing correspondence.

(23) *CORR[+HI]$_{\text{PREFIX}}$ assign a violation to every [+hi] prefix vowel in a correspondence relation.

If *CORR[+HI]$_{\text{PREFIX}}$ outranks all other constraints, then the ranking in (22) plus this new constraint can account for all of the data in (7-11), as well as the noun class prefix data in (6). To see this, consider (24) below. Candidates (a-c) are ruled out because they violate the high-ranked anticorrespondence constraint. Candidate (d) violates IDENT-IO[LOW], and is eliminated. Candidates (e-f) are differentiated by SPREAD-L[+ATR] because candidate (e) exhibits no spreading while the winning candidate, (f), exhibits partial spreading because SPREAD-L[+ATR] >> IDENT-IO[ATR]. The necessary role of SPREAD-L[+ATR] is shown in candidates (e) and (f). Local spreading to [+hi] vowels obtains regardless of initial vowel height, and is furthermore subject to locality, as is typical of spreading processes, unlike the CORR and VV-ID constraints also used in the analysis.

(24) Partial spreading in the presence of a [-hi] blocker

Candidates	/ɛ^{H}-ba-dɛ^{H}-wu/	*CORR [+HI]$_{\text{PFX}}$	CORR–L [RT,WD]	VV-ID [ATR]	*GAP [+ATR]	ID-IO [LOW]	SPREAD-L [+ATR]	ID-IO [ATR]
a.	ɛ$^{H}_{x}$-ba-dɛ^{H}-wu$_{x}$	*!		*			***	
b.	i$_{x}$-ba-dɛ^{H}-wu$_{x}$	*!			*		**	*
c.	i$_{x}$-be-di-wu$_{x}$	*!				*		***
d.	i-be-di-wu		*			*!		***
e.	ɛ^{H}-ba-dɛ^{H}-wu		*				***!	
f. ☞	ɛ^{H}-ba-di-wu		*				**	*

Independent evidence for this anticorrespondence constraint comes from labial harmony (Essegbey & McCollum 2017). Most roots are monosyllabic, but a static co-occurrence restriction is evident among disyllabic verb roots. If both vowels are of the same height, then they both agree for [rd], which is shown in (25). If the two root vowels do not agree in height, then [rd] may freely occur in either position.

(25) Root-internal [rd] vowel co-occurrence[1]

	[+rd]	Gloss		[-rd]	Gloss
a.	lɔkɔ	'take'	e.	g͡bǎna	'marry'
b.	ɕogo	'grow'	f.	béle	'finish'
c.	tuku	'carry'	g.	b^{h}ɛ^{H}tɛ́^{H}	'do'
d.	tsuru	'rub'	h.	mīnī	'lick'

Among prefixes, though, high vowels neither trigger nor undergo harmony, demonstrated in in (26). In (26a-b), the [+hi] 1P prefix does not trigger assimilation of the following vowel regardless of its height. In (26c), the [+hi] NEG prefix doesn't undergo harmony from a [-hi] trigger, and in (26d), we see that NEG is transparent, since the [-hi] FUT prefix undergoes harmony across the intervening [+hi] vowel.

(26) Non-participation of [+hi] prefixes in labial harmony

a.	bu-tí-ɕē	'1P-NEG-grow'	c.	ɔ-tɛ́^{H}-ba	'2S-NEG-come'
b.	bɔ^{H}-ba-ba	'1P-FUT-come'	d.	ɔ-tɛ́^{H}-bɔ-ba	'2S-NEG-FUT-come'

Same-height labial harmony obtains for both high and non-high vowels within roots but not among prefixes. Among prefixes, only [-hi] vowels trigger and undergo harmony. One way to model this is by

[1] No instances of Cɔ^{H}Cɔ^{H} were found in our corpus of 115 disyllabic verbs.

using a CORR[αHI] constraint to motivate correspondence for vowels that share the same height feature, in line with Rose & Walker's (2004) proposal that similarity drives correspondence. Alongside such a constraint, *CORR[+HI]$_{PREFIX}$ prevents [+hi] prefixes from participating in harmony.

4. Discussion

This paper has addressed two issues for vowel harmony, one empirical and one theoretical. Empirically, we have presented evidence that non-myopic harmony is not only attested in bounded harmony systems, like Grado metaphony, but also in unbounded harmony systems, like ATR harmony in Tutrugbu. On the theoretical side, we have modeled non-myopic blocking in Tutrugbu using Agreement-by-Correspondence modified in two ways: one, indexation to morpho-prosodic edges, and two, the existence of anticorrespondence constraints. The analysis accounts for the fact that the surface realization of medial non-high vowels depends on the [ATR] value of the following vowel as well as the height feature of the initial-syllable vowel. Further, although Tutrugbu exhibits conditional blocking rather than the conditional triggering that characterizes "sour grapes" harmony, these data suggest that the non-myopic predictions made by constraints like AGREE are perhaps not so pathological after all.

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