

Jingulu Vowel Harmony as Weak-Trigger Licensing

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1 Introduction

Jingulu,¹ an Aboriginal language of northern Australia, exhibits a pattern of vowel harmony which falls outside the typology predicted by classic models of harmony. Among its peculiarities are its sensitivity to morphological conditions on trigger vowels, and its being an affixed-controlled system—a positional asymmetry which some theories predict should not be possible (though recent work has thoroughly documented the existence of such systems; see Krämer 2003 and Walker 2005, 2010). But affix-control and morphological quirks determining whether a vowel triggers harmony seem normal in comparison to Jingulu’s defiance of classification with regard to harmonic blocking effects; to some extent the system resembles dominant-recessive systems (see Baković 2000, Krämer 2003, and Nevins 2010) in that a single feature value $[\alpha F]$, in this case $[+high]$, induces agreement while its inverse $[-\alpha F]$, in this case $[-high]$, is overpowered and never triggers harmony. But while true dominant-recessive patterns apply throughout an entire word unless blocked by some additional feature (say $[F_2]$, such that $[F] \neq [F_2]$), Jingulu $[+high]$ harmony is blocked by $[+high]$ vowels in the root (Pensalfini 2002).

This paper aims to account for the process within the framework of Optimality Theory (Prince & Smolensky 1993; henceforth OT). I will first examine the difficulties of doing so caused by the system’s defiance of classification within the known vowel harmony typology, and will ultimately propose an account which relies on the notion of weak-trigger licensing (see Walker 2005, 2010), and the establishment of a bounded harmonic domain via Lexicon Optimization for the Obligatory Contour Principle.

¹Ethnologue (2010) and van der Hulst & Smith (1985) use the transcription *Djingili*. According to Ethnologue, alternative transcriptions include “Chingalee, Chunguloo, Djingila, Djingulu, Jingali, Jingulu, Lee, Tchingalee, [and] Tjingilu”. I use *Jingulu* in accordance with Pensalfini (2002, 2003).

2 The Data

The Jingulu vowel inventory contains three phonemes, /a, i, u/. Jingulu harmony is induced by a small set of affixes directly aligned to the right edge of the root. These include the feminine and vegetable gender markers (FEM and VEG), as well as several verbal agreement and mood suffixes. The members of this set all contain a high vowel /i/ or /u/, which induce harmony in Jingulu’s sole non-high vowel /a/. Suffixes containing /a/ never trigger harmony. Assimilated root vowels universally surface as [i] rather than [u], even when /u/ is the trigger vowel (Pensalfini 2002).

Pensalfini (2002) points out that the set of harmony-triggering suffixes does not form a natural class, and has long troubled researchers, who have often simply labeled harmony-triggering suffixes as [+vowel harmony], completely *ad hoc*. He attempts to resolve the issue by classifying these suffixes as inflectional syntactic heads within the framework of Distributed Morphology (Halle & Marantz 1993), providing morphosyntactic evidence to support the claim. Since this paper focuses solely on the phonological component of harmony, I will accept this account although it raises the important question of how much syntax is visible to phonology.

Harmony can affect an indefinite number of underlyingly low root vowels, so long as they form a root-final string. The “spreading” is blocked by the presence of a high vowel (or string of high vowels), shielding all /a/s to the left of the blocker from assimilation. The data below illustrate the phenomenon.

(1) *Jingulu Vowel Harmony*

a. *All the way to the left edge*

- | | | | |
|-------|--|---|--------------------------------------|
| (i) | /bardarda - rni/
younger brother - FEM | → | [birdirdi-rni]
‘younger sister’ |
| (ii) | /ngaja - mindi - yi/
see - 1.D.INC - FUT | → | [ngijimindi-yi]
‘we will see’ |
| (iii) | /ngarrabaja - wurru - nu/
tell - 3.PL - PST | → | [ngirribiji-wurru-nu]
‘they told’ |

b. *Harmony stopped by blocking high vowels*

- | | | | |
|-----|------------------------------|---|-------------------------------|
| (i) | /warlaku - rni/
dog - FEM | → | [warlaku-rni]
‘female dog’ |
|-----|------------------------------|---|-------------------------------|

(ii)	/ngamurla - rni/ big - FEM	→	[ngamurli-rni] ‘big (FEM)’
(iii)	/ankila - rni/ cross cousin - FEM	→	[ankili-rni] ‘female cross cousin’
(iv)	/kunyarrba - rni/ dog - FEM	→	[kunyirrbi-rni] ‘female dog’
(v)	/mamambiyaka - mi/ soft - VEG (from Pensalfini 2002)	→	[mamambiyikimi] ‘soft (VEG)’

Examples in (1a) exhibit harmony ranging over the entire root. In (1b.i), the root-final /u/ simultaneously satisfies the harmony requirement and acts as a blocker, preventing the appearance of *[wirliku-rni]. The additional examples illustrate partial harmonization of the root, with blocking preventing maximal extension of [i] all the way to the left edge.

3 An OT Analysis

Approaches to vowel harmony in OT have typically utilized the AGREE and/or ALIGN constraint families (Baković 2000, Krämer 2003, Sasa 2009). OT can straightforwardly model what serialist derivational systems treat as feature “spreading” or “copying”, as well as the harmony-blocking phenomenon known as opacity,² but runs into difficulty with vowels that are “transparent” to harmony. As will be discussed in the following section, the blocking effect in Jingulu is not a case of vocalic opacity, nor a case of vocalic transparency, but poses a similar challenge for OT grammars.

Affix-controlled harmony systems such as those found in Jingulu, Pulaar (see Krämer 2003), and Veneto Italian (see Walker 2005), represent an additional issue that OT must confront. By privileging affix vowels over root vowels, languages such as these subvert Prince & McCarthy’s (1995) hypothesis of the universal meta-ranking $\text{FAITH}_{\text{Root}} \gg \text{FAITH}_{\text{Affix}}$. Pensalfini (2002) makes note of this, but suggests that the meta-ranking might be saved should functional syntactic heads be grouped along with the root as a prominent position visible to the phonology. I will remain

²The term *opacity* here does not refer to the general phonological quandry of so-called counter-feeding and counter-bleeding in serialist theories, but to a frequent phenomenon in which certain vowels block the spread of harmony and proceed to spread their own disharmonic feature value.

agnostic as to Jingulu’s implications for the meta-ranking and the syntax-phonology interface, and will simply assume that LICENSE is somehow able to overcome or ignore it.

Whatever the precise mechanism of Jingulu harmony, one can account for the quality of raised /a/s quite simply. Since a harmonized /a/ surfaces as [i] and never [u], even in the presence of a triggering /u/, IO-IDENT(round) must dominate IO-IDENT(back). This ranking states that, when forced to make a choice, the Jingulu phonology prioritizes a vowel’s roundness over its backness. Although the two constraints are not in direct competition, Jingulu’s lack of a high, back, unrounded vowel entails that /a/ cannot raise without losing two of its features. Since /a/ shares backness with /u/ and unroundedness with /i/, it favors the latter when forced to assimilate. However, the additional constraints used for harmony, presented in the sections below, cannot be ranked with regard to these faithfulness constraints, since the harmony-inducing constraint need only be able to change vowels for $[\pm\text{high}]$. Since IO-IDENT(round) and IO-IDENT(back) cannot be incorporated into the larger ranking without additional evidence, they will not be shown in the remainder of the analysis.

3.1 What Jingulu Harmony Cannot Be

Jingulu vowel harmony has no precise correlate in another well-attested language. To some degree, it resembles so-called dominant-recessive harmony, in which a single specification of a feature causes assimilation throughout an entire harmony domain, while the inverse value of the same feature does not. For instance, in Kinande, the presence of a $[+\text{ATR}]$ vowel causes all vowels in the harmony domain to surface as $[+\text{ATR}]$ if possible (Archangeli & Pulleybank 1994, Krämer 2003, Nevins 2010). Vowels valued for $[-\text{ATR}]$, the “recessive” value, avoid neutralization only in the absence of $[+\text{ATR}]$, the “dominant” feature value. Since $[+\text{high}]$ in Jingulu induces harmony, while $[-\text{high}]$ does not, it is tempting to analyze the pattern as dominant-recessive. However, the blocking effect in examples under (1b) renders such an explanation implausible. According to the logic of dominant-recessive systems, the presence of the dominant feature is predicted to *induce* harmony, and never to block it.

The blocking effect of (1b) also resists characterization as harmonic opacity, which Krämer (2003) shows can easily be dealt with via faithfulness and agreement constraints. Were this a case of straight-forward opacity, the blocking vowel (or vowels) would essentially stop harmony in its

tracks, and then harmonize the vowels to their left according to their specification for the harmonic feature. In other words, opacity effects involve faithful disharmonic vowels inducing harmony in their own image, while Jingulu blocking vowels do the opposite; they themselves are harmonic rather than disharmonic, and instead of serving as new harmony triggers, they guarantee disharmony.

Due to these issues, an account of Jingulu harmony using a constraint AGREE(high) as its primary mechanism cannot provide an elegant solution. Assuming that faithfulness to inflectional affixes dominates faithfulness in the root, one could formalize the exclusivity of raising as harmony via a local constraint conjunction AGREE(high) &_l *[+low], ranking it above IO-IDENT(high), which in turn would necessarily dominate AGREE(high). This successfully ensures raising, but does so to excess; it fails to predict the blocking effect, and instead predicts that entire roots will harmonize in all instances. To ensure blocking, one would need to posit a highly unmotivated constraint mandating that faithfully surfacing high vowels must *disagree* for height. This constraint would need to take the form of an implication, essentially stating “if faithful, then disagree,” a complicated requirement with neither conceptual nor functional motivation.

While an agreement account fails, the following section demonstrates that an account using weak-trigger licensing as proposed by Walker (2005, 2010) partially resolves the puzzle, in that it captures the asymmetry of dominant-recessive systems without predicting harmonization of all vowels in the word. Licensing has the additional benefit of providing compelling functional motivation for harmony, which the agreement method described above does not. However, licensing alone does not solve the issue of the blocking effect.

3.2 Weak-Trigger Licensing

Walker (2005, 2010) unifies multiple instances of similar asymmetrical, affix-driven harmony under the banner of weak-trigger licensing, a notion which posits functional grounding mandating an augmentation of perceptually weak phonetic material in grammatically salient positions. Drawing on data from Veneto Italian and other varieties of Romance, she demonstrates that certain suffixes consisting of a [+high] vowel induce raising of tonic and post-tonic mid-vowels, in a process known as *metaphony* or *parasitic licensing*. For instance, the input form /dolór-i/ ‘pains’ surfaces as [dolúr-i] in the output. To account for this, she posits a constraint family known as LICENSE (based on Zoll 1996, 1998 and Walker 2001), whose language-specific instantiations specify (a) a perceptually

weak vocalic feature in a prosodically and/or morphologically weak position, and (b) a *licensor* vowel in some prosodically and/or morphologically strong position. LICENSE constraints take the following form:

- (2) LICENSE(F, S-Pos): ‘Feature [F] is licensed by association to strong position S.’
(from Walker 2005, 2010)

The functional motivation for such a process depends largely on the perceptual weakness of the trigger. Due to the inverse correlation between sonorance and vowel height, high vowels present a perceptual difficulty which is only magnified when they occur in weak prosodic positions. It is therefore unsurprising that Jingulu shares the need for height licensing with certain varieties of Romance, among other languages. By associating high or other less perceptually identifiable vowels to a stronger position, speakers improve recognition of important grammatical information provided by the triggering affix (Walker 2005, 2010).

While the licensor (the *S-Pos* segment) in Veneto Italian is the stressed syllable, Walker provides evidence that occupants of morphologically strong positions, for instance a root or stem, can also meet the criterion of positional prominence. For instance, the Oto-Manguean language Mazahua contains certain affixes with vocalic features licensed by association to the root (Spotts 1953, Steriade 1995:160–1, Walker 2011). This is also the case in Jingulu, in which affixed inflectional syntactic heads (Infl₀s) containing a [+high] vowel require licensing to a root position. One can thus formulate the following licensing constraint for Jingulu:

- (3) LICENSE([+high]_{Infl₀}, ROOT): ‘A [+high] feature contained in an inflectional syntactic head is licensed by association to the root.’

A licensing account of Jingulu harmony does not have the shortcoming of a dominant-recessive analysis, since licensing requires only minimal changes in vowel quality. Just as Veneto Italian /dolór-i/ surfaces as the minimally distinct [dolúri] rather than the overwrought *[dulúr-i], Jingulu licensing also resists maximal extension of the sort found in non-parasitic instances of harmony. But the following question remains: how can LICENSE harmonize an unlimited string of vowels, and fail to touch vowels to the left of blocking vowels? The next section accounts for this phenomenon

as a result of Lexicon Optimization for the OCP.

3.3 Lexicon Optimization for the OCP

The harmonizing constraint **LICENSE** necessarily dominates the faithfulness constraint **IO-IDENT(high)**, which demands input-to-output faithfulness in terms of height. This partial constraint ranking is formalized below:

(4) *Partial Constraint Ranking for Jingulu Harmony*

$$\text{LICENSE}([+high]_{\text{Infl}_0}, \text{ROOT}) \gg \text{IO-IDENT}(\text{high})$$

But a constraint ranking consisting merely of **LICENSE** dominating **IO-IDENT(high)** fails to predict the harmonization of entire strings of adjacent, root-final low vowels. Rather, it has the opposite problem of rankings using **AGREE** constraints, since **LICENSE** need guarantee the association to a single $[\pm\text{high}]$ feature by two segments which each had an independent $[\pm\text{high}]$ feature in the input. The tableau below illustrates this inadequacy, showing that the ranking predicts less harmonization than is attested.³

(5)

	/L L L - T/ [lo] [hi]	LICENSE	IO-IDENT(high)
a.	L L L - T [lo] [hi]	*!	
b. ☞	L L H - T \ / [hi]		*
c.	L H H - T \ / [hi]		**!
d. ☹	H H H - T \ / [hi]		**!*

³The input form used is based on (1a.i) /bardarda - rni/ → [birdirdi - rni], but here and in all other tableaux I use *H* for ‘high vowel’, *L* for ‘low vowel’, and *T* for ‘(high) trigger vowel’. The consonantal tier is excluded for the sake of legibility. A ‘☹’ marks an actually attested output wrongfully convicted as sub-optimal.

The input in (5) contains a high vowel in a triggering position (T), and an adjacent string of low vowels with no intervening blockers. The number of vowels in the string is irrelevant, as harmony obeys no numerical limit on the range of affected segments, and can only be prevented by blockers (and of course the left edge of the word itself). Candidate (5a) fatally violates LICENSE by failing to associate the trigger to a root position. Candidates (5b-d), on the other hand, satisfy LICENSE at the cost of incurring at least one violation each of IO-IDENT(high). Candidate (5b) does so once, while (5c & d) do so twice and thrice, respectively. These two constraints in isolation are thus shown to incorrectly predict (5b) as optimal, deeming the attested output (5d) superfluously unfaithful to the input.

The deficit illustrated in (5) indicates the need for some additional mechanism to define the harmony domain. This mechanism cannot involve numerical counting, as harmony applies with no numerical consistency; the data in (1) show the harmonization of anywhere from zero to four vowels, and van der Hulst & Smith (1985) even attest words with up to seven harmonized vowels.

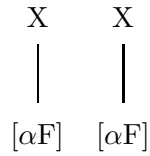
Rather, to define the scope of harmony, one must abstract away from segments, and consider the behavior of entire strings of segments with matching input height specifications. Unlike individual segments, mono-featural strings are manageable in that they seem to act as licensors *as a unit*. In any form that undergoes harmony, the root-final string and trigger will associate in the output. When this string consists of one or more /a/, there is a visible instance of assimilation. When it consists of one or more /i/ or /u/, harmony cannot be directly detected, but the association presumably occurs nonetheless to satisfy LICENSE. This differs from vacuous satisfaction, in that the feature-skeletal structure of the segmental string must change in order to satisfy the associative mandate of licensing. That is, regardless of whether harmony affects vowel quality in the output, the licensing hypothesis predicts a change in featural structure; namely, an input feature is “lost” in the output, as the root-final string and the trigger must share a height feature.

Given this generalization concerning the harmonization of root-final strings, one can view Jingu’s harmony system as the result of an Obligatory Contour Principle (henceforth OCP) effect. While the OCP was originally proposed to account for tone, it has been extended to account for subsegmental feature interactions as well (for instance, Krämer 2003 uses it to account for various intricacies of vowel harmony). For a given feature $[F]$, OCP(F) demands that no instance of $[\alpha F]$ may be adjacent to another node of $[\alpha F]$. The following diagrams illustrate an OCP violation and

its possible resolutions.

(6) *OCP violations and resolutions*

a. *OCP violated*



b. *OCP satisfied via sharing*



c. *OCP satisfied via dissimilation*

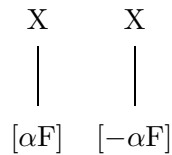


Figure (6a) presents an OCP violation, with two adjacent segments each bearing a matching specification for [F], each with an independent [F] node. In (6b), an OCP violation is avoided via feature sharing. While the segments still agree in terms of $[\pm\text{F}]$, the configuration differs from that in (6a) at the subsegmental level. Meanwhile, (6c) illustrates dissimilation, another possible resolution to an OCP violation. I hypothesize that, at least in terms of $[\pm\text{high}]$, Jingulu is a language which prefers arrangements such as that in (6b). Although the evidence for this is indirect, it is suggested by the harmony system, as will be argued below.

The three configurations presented in (6) fall out from various rankings of the following constraints: IO-IDENT(F), MAX([±F]), and OCP(F). The constraint MAX([±]) evaluates preservation of subsegmental structure, penalizing any output candidate for each “missing” feature node [±F], as compared to the input structure. It is formally defined below:

- (7) MAX([±F]): ‘Each feature node [±F] in the input must be present in the output (regardless of value).’

In Jingulu, a high ranking of OCP(high) prevents OCP violations for height. Presented with two solutions—feature sharing or dissimilation—Jingulu prefers the former, as height dissimilation is not attested. Therefore I hypothesize that Jingulu has the following constraint ranking:

- (8) *OCP vs. Faithfulness in Jingulu*
 OCP(high), IO-IDENT(high) $\gg$ MAX([±high]):

According to this ranking, Jingulu will violate MAX([±F]) rather than allow dissimilation (as would occur if ranking of MAX and IDENT were switched) or an OCP violation (as would occur if both faithfulness constraints dominated the OCP). Given an input resembling the diagram in (6a), substituting ‘high’ for ‘F’, Jingulu will select an output candidate resembling (6b).

This speculation becomes relevant to the vowel harmony system when one considers the phenomenon of Lexicon Optimization, proposed in OT’s founding document (Prince & Smolensky 1993). Paraphrasing the technical definition, Lexicon Optimization is a principle according to which the lexicon (i.e. the list of inputs) stores forms of maximally optimal structures barring evidence to the contrary. Therefore, assuming that OCP(high) dominates MAX([±high]), strings of adjacent segments sharing height values are stored in the lexicon as feature-sharing.⁴

With respect to vowel harmony, optimization of inputs for OCP(high) has the effect of pre-defining a precise domain in which harmony can apply. If LICENSE demands association with the root-final height feature, harmonization could apply to a feature-sharing string of vowels in one fell swoop. Only one additional constraint is needed to ensure that this occurs. As the ranking stands

⁴Such an assumption does not conflict with OT’s central assumption of Richness of the Base; according to Lexicon Optimization, inputs are maximally optimal due to economy of assumptions in acquisition rather than constraints acting on inputs themselves.

at the moment, IO-IDENT(high) still prevents the harmonization of more than one vowel, despite the proposed underlying feature sharing. A constraint which requires vowels to maintain their input feature associations is needed. While such a constraint has not been previously proposed to my knowledge, it follows from OT’s general notion of faithfulness, which demands identical structure in the input and output. At the subsegmental level, this amounts to the need for feature-sharing strings to continue sharing the communal feature in the output. I call this constraint FAITH-SHARE, and define it below:

- (9) FAITH-SHARE: ‘Any two adjacent segments that share a feature node [F] in the input must share an [F] node in the output.’

With FAITH-SHARE dominating IO-IDENT(high), the grammar will privilege the need for preservation of feature-sharing over the preservation of identity. Thus, with FAITH-SHARE added to the ranking, LICENSE harmonizes entire strings of vowels with the same height.

- (10) *Expanded Constraint Ranking*⁵
 LICENSE([+high]_{Infl₀}, ROOT), FAITH-SHARE $\gg$ IDENT(high) $\gg$ MAX([±high])

In the following subsection, I will demonstrate the efficacy of the above ranking.

3.4 Putting it together

The tableau in (11) illustrates a simple example of harmonization all the way to the left edge, and unlike the fiasco of (5), it correctly predicts the scope of harmony. With an input consisting of two height features—one [−high], the other [+high]—LICENSE targets the entire string of /a/s for harmony.

⁵The OCP is excluded from the above ranking, as it need only dominate MAX and cannot be ranked with regard to the other constraints without additional evidence.

(11)

	$ \begin{array}{c} / \text{ L } \text{ L } \text{ L } - \text{ T } / \\ \swarrow \quad \downarrow \quad \searrow \\ [\text{lo}] \quad \quad \text{hi} \end{array} $	LICENSE	FAITH-SHARE	IDENT(hi)	MAX($[\pm\text{hi}]$)
a.	$ \begin{array}{c} / \text{ L } \text{ L } \text{ L } - \text{ T } / \\ \swarrow \quad \downarrow \quad \searrow \\ [\text{lo}] \quad \quad \text{hi} \end{array} $	*!			
b.	$ \begin{array}{c} \text{L } \text{ L } \text{ H } - \text{ T } \\ \swarrow \quad \downarrow \quad \searrow \\ [\text{lo}] \quad \quad [\text{hi}] \end{array} $		*!	*	*
c.	$ \begin{array}{c} \text{L } \text{ H } \text{ H } - \text{ T } \\ \swarrow \quad \downarrow \quad \searrow \\ [\text{lo}] \quad \quad [\text{hi}] \end{array} $		*!	**	*
d. 	$ \begin{array}{c} \text{H } \text{ H } \text{ H } - \text{ T } \\ \swarrow \quad \downarrow \quad \searrow \\ [\text{hi}] \end{array} $			***	*

The faithful candidate (11a) fatally violates LICENSE since the trigger vowel does not share a height feature with any root vowels. Candidates (11b-d) all satisfy LICENSE, each at the cost of a MAX violation and at least one IDENT violation. Candidates (11b, c) each incur one fatal violation of FAITH-SHARE, since they break up the string of vowels which, in the input, share a height specification. Therefore, despite the fact that (11d) violates IDENT more than any other candidate, it is selected as optimal.

The tableau in (12), taking example (1b.v) as its basis, illustrates an example of the high-vowel blocking effect. The input contains a string of two /a/s adjacent to the trigger, which should therefore undergo harmony, and two /a/s shielded by an intervening /i/.

(12)

	$ \begin{array}{ccccccc} / & L & L & H & L & L & - T / \\ & \swarrow & \searrow & & \swarrow & \searrow & \\ & [lo] & & [hi] & [lo] & & [hi] \end{array} $	LIC	FTH-SHARE	ID(hi)	MAX([±hi])
a.	$ \begin{array}{ccccccc} L & L & H & L & L & - T \\ \swarrow & \searrow & & \swarrow & \searrow & & \\ [lo] & & [hi] & [lo] & & & [hi] \end{array} $	*!			
b.	$ \begin{array}{ccccccc} L & L & H & L & H & - T \\ \swarrow & \searrow & & & \swarrow & \searrow & \\ [lo] & & [hi] & [lo] & & & [hi] \end{array} $		*!	*	
c. 	$ \begin{array}{ccccccc} L & L & H & H & H & - T \\ \swarrow & & & \swarrow & \searrow & & \\ [lo] & & & [hi] & & & \end{array} $			**	**
d.	$ \begin{array}{ccccccc} L & H & H & H & H & - T \\ & & \swarrow & \swarrow & \swarrow & \swarrow & \\ [lo] & & & [hi] & & & \end{array} $		*!	***	**
e.	$ \begin{array}{ccccccc} H & H & H & H & H & - T \\ & \swarrow & \swarrow & \swarrow & \swarrow & \swarrow & \\ & & & [hi] & & & \end{array} $			***!*	***

Again, the faithful candidate (12a) is ruled out due to a LICENSE violation, while the remaining candidates are not. Candidates (12b, d) each fatally violate FAITH-SHARE by disassociating segments which shared a height feature in the input. In the case of (12b), the root-final H no longer associates to its neighbor on the left, and in the case of (12d), the initial L no longer associates to its neighbor on the right. This leaves candidates (12c, e), and the decision between the two illustrates the blocking effect at work. The losing candidate (12e) violates IDENT four times, which, in comparison to the optimal form (12c), is two times too many. The intuition here is simple: feature-sharing strings will not be broken up thanks to FAITH-SHARE, nor will they be expanded due to the superfluous strain that would impose on IDENT.⁶

Finally, the tableau in (13) illustrates the lack of visible harmony which results from a blocker at the right edge of the root.

⁶A candidate phonetically identical to the winning (12c), in but in which the underlyingly high root vowel maintains its separate [+high] feature, loses due to an OCP(high) violation, but OCP is not shown in the tableaux for the sake of simplicity.

(13)

	$\begin{array}{c} /L \quad L \quad H \quad - \quad T/ \\ \swarrow \quad \downarrow \quad \downarrow \\ [lo] \quad [hi] \quad [hi] \end{array}$	LIC	FTH-SHARE	ID(hi)	MAX([±hi])
a.	$\begin{array}{c} L \quad L \quad H \quad - \quad T \\ \swarrow \quad \downarrow \quad \downarrow \\ [lo] \quad [hi] \quad [hi] \end{array}$	*!			
b. 	$\begin{array}{c} L \quad L \quad H \quad - \quad T \\ \swarrow \quad \downarrow \quad \downarrow \\ [lo] \quad [hi] \end{array}$				*
c.	$\begin{array}{c} L \quad H \quad H \quad - \quad T \\ \downarrow \quad \downarrow \quad \downarrow \\ [lo] \quad [hi] \end{array}$		*!	*	*
d.	$\begin{array}{c} H \quad H \quad H \quad - \quad T \\ \downarrow \quad \downarrow \quad \downarrow \\ [hi] \end{array}$			*!*	**

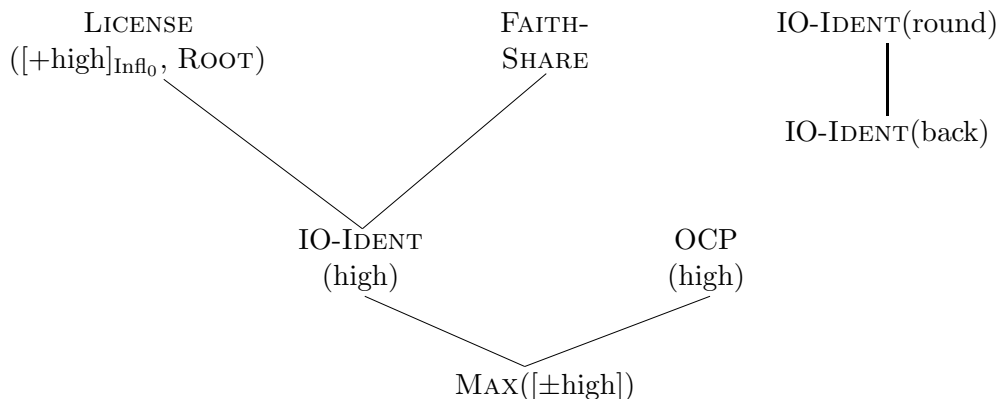
The faithful candidate (13a), as usual, fails to meet the licensing requirement. Candidate (13c) breaks up a string of [±high]-sharing vowels, and (13d) violates IDENT more than necessary. This leaves (13b) as the winner, with its single MAX violation necessary to satisfy LICENSE. It is important to note in this last case that despite their phonetic identity, candidates (13a, b) differ at the subsegmental level. This curious result is a necessary consequence of the proposed hypothesis.

4 Conclusion

The account of Jingulu vowel harmony proposed here has the advantage of foregoing reliance on underspecification, directionality, and iterativity, and need not stipulate that what surfaces as [a] lacks underlying height features. Moreover, the “rightward spreading” of harmony falls out naturally from the fact that trigger vowels appear in suffixes. Moreover, the model proposed here posits harmony in one fell swoop, rather than requiring multiple derivational steps.

Using the constraint ranking illustrated below in (14), I have demonstrated that the apparently chaotic Jingulu vowel harmony system in fact reduces to the interaction of seven markedness and faithfulness constraints. Despite its odd blocking effect and harmonic scope, it is essentially no different from other instances of parasitic licensing, such as those found in various languages across the world.

(14) *Hasse Diagram of Constraints for Jingulu Vowel Harmony*



In sum, Jingulu vowel harmony is the result of a licensing constraint demanding the perceptual augmentation of a positionally and perceptually weak feature value, along with the prioritization of feature-geometrical preservation in input-to-output mappings, and of the cross-linguistically well attested Obligatory Contour Principle. Without documentation of Jingulu, one might have doubted the plausibility of such a system on typological grounds, but the pattern falls out naturally from standard Optimality Theoretic assumptions.

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