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*Overshoot in licensing-driven harmony**

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Kaplan (2018a) argues for a positive and gradient version of positional licensing in Harmonic Grammar. A chief difference between this formalism and standard positional licensing is that it predicts that harmony whose goal is to place a feature in a licensing position may overshoot its target by extending beyond the licensing position. Centralisation harmony in Tudanca Montañés bears out this prediction: though harmony triggered by a final vowel typically stops at the stressed syllable, under particular circumstances it extends into the pretonic domain. Positive gradient positional licensing is indispensable in an account of this. It plays a central role in a gang effect that drives overshoot, an interaction that cannot be replicated with standard versions of positional licensing.

1 Positional licensing and overshoot

One of the central functions of positional licensing (PL; Itô 1988, Goldsmith 1989, Lombardi 1994, Steriade 1995, Zoll 1997, 1998a, b, Crosswhite 2001, Walker 2004, 2005, 2011) is to trigger assimilation between elements in licensing and non-licensing positions. For example, in Tudanca Montañés (Penny 1978), a Romance variety spoken in Spain, final high vowels become centralised, and this centralisation propagates to the stressed vowel, as shown in (1).[1]

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[1] Penny (1978) remains the only empirical source for Tudanca Montañés, but Hualde (1989) is the foundational analytical treatment of Tudanca Montañés harmony. I provide Hualde's glosses of Penny's data where possible, and my characterisation of the data also follows Hualde's. Transcriptions have been converted to IPA; in particular, [ɪ ɛ ɔ ʊ æ] represent the centralised counterparts of [i e o u a]. Other work on Tudanca Montañés includes Kaze (1989), Flemming (1994), Hualde (1998), Walker (2004, 2006) and Blumenfeld (2006), all of whom rely on either Penny (1978) or Hualde (1989), and none of whom addresses the focus of the present analysis, pretonic centralisation in the language.

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(1)

	High final vowels		*Non-high final vowels*	
a.	ˈpɪntʊ	‘male calf’	ˈpinta	‘female calf’
	seˈkælʊ	‘to dry him’	seˈkalo	‘to dry it (mass)’
b.	ˈkæræbʊ	‘tawny owl’		
	oˈrɛgænʊ	‘oregano’		
	antiˈgwɪsɪmʊ	‘very old’		
	raˈkɪtɪkʊ	‘meagre’		

The forms on the left in (1) illustrate centralisation; the ones in (b) have closely related forms with non-high final vowels that show that the stressed vowels are not underlyingly centralised. In a formalism like the one developed by Walker (2011), the PL constraint in (2) – to be modified below – is responsible for stressed vowel harmony. (I follow Hualde 1989 in assuming that [−ATR] is the feature that encodes centralisation. The constraint in (2) is very similar to the one that Walker 2004, 2006 adopts for Tudanca Montañés.)

(2) License([−ATR], *ó*)
Assign one violation mark for each [−ATR] feature that does not coincide with some stressed syllable.

In Tudanca Montañés, this constraint is satisfied by spreading [−ATR] to the stressed syllable, and faithfulness ensures that harmony does not go beyond that target, as in (3).

(3)

/seˈkalu/	License([−ATR],*ó*)	Ident[ATR]
a. seˈkalʊ	*!	*
☞ b. seˈkælʊ		**
c. sɛˈkælʊ		***!

Only candidates showing final vowel centralisation are considered here. The cause of the final vowel’s centralisation is treated more fully in §2.1. As Walker (2011) documents, other languages exhibit an array of other strategies for satisfying PL; I will not address those possibilities here.

In Kaplan (2018a), I show that, while PL provides a satisfactory account of Tudanca Montañés-like harmony in Optimality Theory (OT; Prince & Smolensky 1993), it is deeply pathological in Harmonic Grammar (HG; e.g. Legendre *et al*. 1990). Because satisfying PL can require potentially many faithfulness violations (if the position that is the target of harmony is distant from the trigger), PL under HG predicts unattested patterns in which harmony occurs at short distances, but is blocked or altered by the accumulating faithfulness violations at longer distances. To address these defects, I argue for the formalism in (4).

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(4) LICENSE([−ATR], *σ́*)
Assign +1 for each [−ATR] feature that coincides with some stressed syllable. Assign +1 for each additional syllable that [−ATR] coincides with.

There are two noteworthy properties that distinguish (4) from the more standard formalism in (2). First, it is positive: instead of penalising unlicensed features, it rewards those that are licensed. Second, it is gradient: whereas (2) assigns the same penalty to all unlicensed elements, PL's assessment of candidates under (4) varies according to the number of positions that the relevant feature appears in. The reward assigned by this constraint increases as [−ATR] spreads to more positions. This gradience is central to resolving the pathologies that Kaplan (2018a) is concerned with, and positivity addresses certain problems introduced by gradience (Kimper 2011).

Positivity in turn introduces the 'infinite goodness' problem (Prince 2007, Kimper 2011, 2016): constraints that reward a configuration motivate infinite epenthesis of that configuration – in the present case, harmonic vowels – to maximise the reward. Kimper puts forth the only remedy for this problem I am aware of: serial derivations do not suffer from infinite goodness, because epenthesis and harmony must occur on separate steps, and, without the reward for harmony, there is no motivation for epenthesis in the first place. Kaplan (2018a) argues that for this reason the formalism in (4) requires serialism, but because that issue is tangential to present concerns, I use simpler parallel analyses here. Nothing of substance hinges on this choice: essentially, instead of harmony occurring in one fell swoop, a serial analysis targets one vowel at a time, with the same crucial constraint interactions that are present under parallel analyses.

A central question in work on licensing-based patterns concerns harmony in non-licensing positions: if a licensing constraint requires [F] to appear in the stressed syllable (or some other prominent position) to enhance [F]'s salience, why do other positions harmonise too? For example, in Tudanca Montañés, harmony targets non-final posttonic vowels in addition to the stressed syllable (e.g. [ˈkæræbʊ] in (1)); if stress is the target, why incur these additional faithfulness violations? For Walker (2011), the answer is partly contiguity of feature domains: non-licensing positions harmonise to avoid a discontiguous [−ATR] span, a desideratum enforced not by positional licensing but by other constraints.[2] But in other cases, Walker argues that PL's prominence-enhancement imperative is fulfilled not by targeting a particular prominent position, but by targeting all possible positions – what she calls 'maximal licensing'. Jiménez & Lloret (2007) and Lloret & Jiménez (2009) cast these options in a gradient light: the prominence enhancement achieved by maximal

[2] Some harmony patterns analysed by Walker do show discontiguous harmony, so positional licensing itself must be compatible with both arrangements. See Kaplan (2018a) for details about how the formalism in (4) accommodates both types of harmony.

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licensing exceeds the enhancement that comes from targeting a single prominent position, because it places the feature both in that prominent position and in as many other positions as possible. This gradience is captured by (4), which first requires harmony on the stressed syllable and, once that condition is met, rewards harmony in other positions.

The end result is that POSITIVE GRADIENT POSITIONAL LICENSING (henceforth PG-PL; this formalism is distinguished from traditional PL in tableaux with a 'PG' prefix) encourages the restricted element to seek membership not just in the licensor, but in all other positions too, because each position that the element coincides with earns + 1 from PL. This arrangement yields harmony on the penultimate vowel in forms like [ˈkæræbʊ] and [oˈɾɛgænʊ], but it also causes harmony to overshoot the stressed vowel target, as (5) shows. ☜ and ☟ mark the intended and incorrect winners respectively. As long as w(LICENSE) > w(IDENT) – a necessary arrangement to produce the expected harmony – it is always profitable to find additional targets for harmony.

(5)

/oˈɾeganu/	PG-LICENSE([−ATR],*ó*) 3	IDENT[ATR] 2	$\mathcal{H}$
☜ a. oˈɾɛgænʊ	+3	−3	3
b. oˈɾɛganʊ	+2	−2	2
☟ c. ɔˈɾɛgænʊ	+4	−4	4

What should be done about the overshoot in (5)? Should PG-PL be modified so that it does not reward harmony that extends beyond the licensor, or should we introduce new constraints that disfavour overshoot? This paper argues for the latter. In particular circumstances, to be discussed in §2.1, centralisation harmony in Tudanca Montañés extends into the pretonic domain when a pretonic vowel is adjacent to a labial consonant (e.g. [pɪˈjɪhkʊ] 'pinch'). These patterns are easily obtained under PG-PL, but not with overshoot-free versions of PL. The analysis developed below establishes two gang effects (Pater 2009) that produce the correct extent of harmony in all cases. The first gang effect rectifies the problem in (5): in the normal case, lower-weighted constraints gang up on PG-LICENSE to halt harmony at the stressed syllable. The second gang effect is responsible for overshoot, which occurs upon the convergence of two independent motivations for centralisation (PG-LICENSE and a constraint favouring centralisation next to labials): these two constraints gang up on the constraints that usually block pretonic harmony.

Overshoot in Tudanca Montañés therefore has important theoretical consequences. It provides further support for PG-PL beyond the pathology-avoidance properties discussed by Kaplan (2018a), and it provides evidence that the proper way to prevent overshoot where necessary is through constraints that counter PL's incentive for overshoot, not by eliminating that incentive.

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2 Centralisation in Tudanca Montañés

2.1 Sources of centralisation

The five vowels of Tudanca Montañés, /i e a o u/, surface as their centralised counterparts under two circumstances. First, as we saw in (1), high vowels centralise in word-final position. This centralisation is plausibly a final-syllable weakening effect; see Barnes (2006) for an examination of such phenomena. Barnes' survey of final vowel weakening includes a variety of processes from other languages that are comparable to centralisation in Tudanca Montañés, such as laxing of all final vowels and raising (i.e. centralisation) of /a/. More evidence that centralisation in Tudanca Montañés is a form of weakening is supported by the fact that final centralised vowels in the language are subject to PL, which functions to enhance features' prominence – i.e. their strength (Walker 2011). The vowels subject to PL, then, are just those that are most in need of prominence enhancement. Final vowel centralisation in Tudanca Montañés may therefore be driven by a constraint against final high [+ATR] vowels – call it *[+high, +ATR]#.

As we have seen, final centralised vowels trigger regressive harmony that extends to all vowels up to and including the stressed vowel. The data in (1) illustrates this with final /u/. Final /i/ is somewhat more complex, because in this position /i/ neutralises with /e/; both /i/ and /e/ surface word-finally as something 'ranging in height from mid to high and including [ə] and [i]' (Hualde 1989: 778). The two vowels remain distinct, however, in that final /i/ triggers centralisation harmony, but final /e/ does not. Hualde (1989: 778) provides the examples in (6) to illustrate the point. In (a), harmony emanates from the underlying final /i/, but no harmony results from the final /e/ in (b).[3]

(6) a. *Final* /i/

/abɾi/	ˈæbɾə	'open!'
/meti/	ˈmɛti	'put in!'
/komi/	ˈkɔmə	'eat!'

b. *Final* /e/

/abɾe/	ˈabɾə	'opens'
/mete/	ˈmeti	'puts in'
/kome/	ˈkomə	'eats'

For transparency I henceforth use examples with final /u/. The neutralisation of /i/ and /e/, the variation they exhibit and the fact that neutralised vowels that come from /i/ but not /e/ trigger harmony pose interesting analytical problems, but I will not pursue them here.

Hualde (1989: n. 3) contrasts [tiˈɾælʊ] 'to throw him/it (MASC)' with [ˈtɪɾælʊ] 'throw it (MASC)!' to show that stress is indeed the target of harmony. The placement of stress in this pair dictates the extent of harmony. It falls in a three-syllable window at the right edge of the word, and the examples given so far illustrate the effects of centralisation on

[3] These transcriptions match Hualde (1989): neither he nor Penny (1978) indicates final vowel centralisation in these examples, though it presumably occurs in at least (6a), as suggested by the harmonic stressed vowels.

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penultimate stress (the final and stressed vowels centralise) and antepenultimate stress (the unstressed penultimate vowel also centralises). Evidence concerning word-final stressed high vowels is difficult to find; based on the example ['tu] 'you (SG)', Hualde (1989: n. 4) assumes that such vowels do not centralise. Pending further evidence, I set such examples aside.

The harmony seen in the data above bears the hallmarks of a PL-driven process, in that a feature surfaces only when it attains membership in a prominent position but (if it must spread to gain that membership) does not spread beyond that position. Broadly speaking, these traits are characteristic of the systems presented in Walker (2011); in fact, the centralisation harmony that we have seen so far is simply an example of what Walker calls indirect licensing systems.

Centralisation is also caused by labial consonants.[4] In the pretonic domain, mid vowels adjacent to a labial consonant centralise, as shown in (7a), but other vowels do not normally centralise in this context, as in (b).

(7) *Labial-adjacent centralisation*

a. *Mid vowels*

mɛˈɲika	'pinky'
gwɛˈbeɾa	'egg-basket'
bɔˈnuka	'weasel'
mɔɾˈθija	'blood sausage'
rɔmiˈɾia	'pilgrimage'

b. *Not with non-mid vowels*

piˈjihkos	'pinches'
pinˈtaa	'painted (FEM)'
buˈhanos	'worms'
punˈtaa	'stitch'
paˈsaɾ	'to pass'
maˈranos	'pigs'

c. *Non-mid vowels with harmony*

pɪˈjɪhkʊ	'pinch'
ehpɪˈnæθʊ	'spinal cord'
mʊˈrɪjʊ	'stone'
bʊˈhænʊ	'worm'
mæˈrænʊ	'pig'
tæmˈbʊhʊ	'short fat person'
pʊɲeˈtæθʊ	'punch'

d. *Mid vowels with harmony*

pɛˈrʊʧʊ	'little dog'
bɛˈhʊʧʊ	'old person'
bɛˈrækʊ	'boar'
rɛmˈjɛndʊ	'patch'
sɔˈbækʊ	'armpit'
mɔˈkɪjʊ	'snot'
pɔˈtɾʊkʊ	'colt'

However, these non-mid vowels do centralise when centralisation harmony triggered by a final high vowel also occurs, as in (7c). For completeness, (d) shows that mid vowels also centralise under these circumstances.

The last example in (7c) shows that while centralisation harmony is a prerequisite for pretonic non-mid vowel centralisation, the non-mid vowel need not be adjacent to the harmony domain. It appears that harmony can skip over pretonic vowels to target a labial-adjacent vowel.

[4] Cross-linguistically, a similar process occurs in Tibetan, where [p] causes a preceding /a/ to raise (Dawson 1980: 11, Tournadre & Dorje 2003: 443). (Thanks to Ryan Bennett for bringing this to my attention.) Hualde (1989: n. 10) mentions other languages in which labials are claimed to show comparable influence on vowels. I am not aware of any convincing phonetic motivation for centralisation triggered by labials.

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This, however, does not mean that labial-adjacent vowels are licensors for [−ATR], either instead of the stressed vowel or in addition to it. We have seen that [−ATR] spreads through intervening vowels to reach the stressed vowel, but here an intervening vowel is skipped over: stressed and labial-adjacent vowels are treated differently. (An explanation for this asymmetry is provided in §2.2.3.) Further evidence against labial-adjacent vowels being licensors comes from the fact that harmony occurs in their absence. This is unlike canonical licensing-based systems, where harmony fails if the licensor cannot be reached (Walker 2011).

Hualde (1989) characterises what he calls 'labial-induced' centralisation as a property of the pretonic domain, and, while Penny (1978) does not provide conclusive evidence for its (in)activity in tonic and post-tonic syllables, examples such as [ˈmeti] 'puts in' (6b), [ˈkomə] 'eats' (6b) and [gwɛˈbeɾa] 'egg-basket' (7a) suggest that labials do not cause stressed vowels to centralise. Furthermore, [rɔmiˈɾia] 'pilgrimage' (7a) and [pʊŋeˈtæθʊ] 'punch' (7c) show that labial-induced centralisation is not confined to the immediately pretonic syllable. In sum, labial-induced centralisation is restricted to pretonic (but not necessarily immediately pretonic) syllables, and it targets non-mid vowels only when centralisation harmony is also present in the word.

A cursory glance at the data suggests a tempting but ultimately incorrect alternative generalisation: harmony simply has a three-syllable window, and only appears to target the stressed syllable when we look at disyllables and forms with antepenultimate stress. However, as we have already seen, the pair [tiˈɾælʊ] and [ˈtɪɾælʊ] show that harmony is sensitive to stress shifts. Likewise, examples such as [seˈkælʊ] and [pʊŋeˈtæθʊ] 'punch' show that the three-syllable window cannot be the correct analysis. On the other hand, these forms are consistent with the characterisation put forth here (which mirrors Penny 1978 and Hualde 1989): harmony targets the stressed syllable and only goes beyond that position when there is a labial-adjacent pretonic vowel. Even more conclusive evidence would come from a word with antepenultimate stress, a final high vowel and a labial-adjacent non-mid pretonic vowel. The three-syllable-window analysis predicts no harmony on the pretonic vowel, but the PL-with-overshoot analysis predicts that this vowel should harmonise. Unfortunately, Penny provides only phonemic transcriptions for such words, so it is impossible to say how they surface.

By now, the relevance of Tudanca Montañés to the question of PL-induced overshoot is obvious: when a non-mid pretonic vowel is adjacent to a labial, centralisation harmony extends to it, overshooting the stressed-vowel target. In doing so, it deviates from the normal pattern, wherein harmony halts at the stressed syllable. While pretonic vowels do not generally harmonise, and labial-adjacent non-mid vowels do not generally centralise, the pattern in (7c) emerges when those two situations converge. This state of affairs is tailor-made for a gang effect in HG: the grammar generally blocks both overshoot and labial-induced centralisation on non-mid vowels, but PG-PL and the constraint responsible for labial-

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induced centralisation (to be introduced in §2.2.2) gang up to produce overshoot that satisfies both constraints at once. Modifications to PG-PL that prevent it from triggering overshoot undermine this arrangement.

2.2 Analysis

Overshoot in Tudanca Montañés reflects the combined effects of two separate centralisation processes: final vowel-initiated harmony and labial-induced centralisation. This section develops analyses of these processes, and shows that when those analyses are combined, they predict the overshoot seen in (7c). The analysis of final vowel-initiated harmony in §2.2.1 is broadly similar to the OT-based analysis developed by Walker (2004, 2006), though because overshoot is tangential to her concerns, the analyses differ in substantial ways.

2.2.1 *Centralisation harmony*. Outside of the situations discussed in the previous section, Tudanca Montañés has no centralised vowels, and *[−ATR] thus outweighs IDENT[ATR]. Final high vowels centralise as a result of *[+high, +ATR]#; for perspicuity I exclude this constraint and candidates that violate it from tableaux, and assume that it is so highly weighted as to be inviolable.

The harmony initiated by a final centralised vowel is the product of a PL constraint requiring [−ATR] to coincide with the stressed syllable. To expand upon the brief analysis presented in §1, in conventional terms, this constraint would look something like (8a). This builds on (2) by specifying that [−ATR] is subject to the licensing requirement only when it appears on a high vowel; this prevents the labial-adjacent mid vowels in (7a) from triggering harmony.[5] The PG-PL counterpart of this constraint is given in (8b).

(8) a. LICENSE($[-\text{ATR}]_{[+\text{hi}]}$, *ó*)
Assign one violation mark for each [−ATR] feature on a [+high] vowel that does not coincide with some stressed syllable.

b. PG-LICENSE($[-\text{ATR}]_{[+\text{hi}]}$, *ó*)
Assign +1 for each [−ATR] feature on a [+high] vowel that coincides with some stressed syllable. Assign +1 for each additional syllable that [−ATR] coincides with.

This constraint conflicts with both IDENT[ATR] and *[−ATR]. When its weight is greater than the sum of their weights, it triggers harmony, as shown in (9).

[5] In Walker's (2011) theory, the feature subject to PL can be restricted in this way, so that it must coincide with a licensor only if it is in a marked context. The specification [−ATR, +high] is indeed marked, because the two features make antagonistic articulatory demands (Archangeli & Pulleyblank 1994): [−ATR] calls for tongue retraction and [+high] requires an advanced tongue. If [ATR] is not the proper feature for capturing centralisation, the reasoning still holds, because centralisation and [+high] make opposing demands.

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(9)

/ˈkarabu/	PG-License 8.5	*[−ATR] 6	Ident[ATR] 1	$\mathcal{H}$
a. ˈkarabʊ		−1	−1	−7
☞ b. ˈkæræbʊ	+3	−3	−3	4.5
c. ˈkærabʊ	+2	−2	−2	3

Weights used throughout this analysis were derived with the assistance of OT-Help (Staubs *et al.* 2010); those in (9) anticipate additions to the analysis introduced below.[6] They are one possible arrangement that satisfies the requirement in (10).

(10) w(PG-License) > w(Ident[ATR]) + w(*[−ATR])

Each position that harmony targets increases the form's harmony score, so spreading to both the stressed vowel and the unstressed posttonic vowel in (9) is advantageous. This also means that harmony does not stop at the stressed syllable. This is obviously good for overshoot, but currently we predict overshoot everywhere, as in (11).

(11)

/oˈɾeganu/	PG-License 8.5	*[−ATR] 6	Ident[ATR] 1	$\mathcal{H}$
☞ a. oˈɾɛgænʊ	+3	−3	−3	4.5
b. ɔˈɾɛgænʊ	+4	−4	−4	6

Some constraint that interrupts harmony at the stressed syllable is necessary. In Kaplan (2018b), I argue that 'asymmetric CrispEdge' is the proper constraint for this purpose. CrispEdge constraints (Itô & Mester 1999) penalise elements that have membership in multiple prosodic units of a particular type. For example, Itô & Mester suggest that CrispEdge[σ] rules out gemination by preventing syllables from sharing features. Walker (2011) uses CrispEdge extensively in her accounts of licensing-driven phenomena to confine features to the licensing position: CrispEdge([round], σ), for example, prevents a single [round] feature from having an association with multiple syllables. This formalism makes use of an elaboration of CrispEdge proposed by Walker (2001) and Kawahara (2008), whereby CrispEdge penalises only specific features (in this case [round]) that are shared between units. Kaplan extends this constraint family with a version of CrispEdge that is asymmetrical, in the sense that it penalises feature-sharing in one direction only. For Tudanca Montañés, CrispEdge prevents the stressed syllable from sharing its [−ATR] feature with a syllable to its left, as in (12).

[6] Given information about candidates and their violation profiles, OT-Help finds a set of weights, if one is possible, that produces the correct outputs. For details about how it does this, see Potts *et al.* (2010).

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(12) CrispEdge-L([−ATR], *σ́*)
For each syllable to the left of the stressed syllable, assign −1 if it shares a [−ATR] feature with the stressed syllable.

The stressed syllable is permitted to share [−ATR] with a syllable to its right: that is just the posttonic harmony Tudanca Montañés exhibits.[7] See Kaplan (2018b) for arguments that (12) is superior to other conceivable means of halting harmony at the licensor, such as symmetric CrispEdge and Ident[ATR]$_{\text{pretonic}}$. With this constraint (abbreviated CrispEdge-L in (13) and below) added to the system, harmony is confined to the stressed and posttonic syllables.[8]

(13)

/oˈɾeganu/	PG-License 8.5	*[−ATR] 6	CrispEdge-L 4.5	Ident[ATR] 1	$\mathcal{H}$
☞ a. oˈɾɛgænʊ	+3	−3		−3	4.5
b. ɔˈɾɛgænʊ	+4	−4	−1	−4	1.5

CrispEdge-L, *[−ATR] and Ident[ATR] create a gang effect: together they rule out pretonic harmony when the penalties they assign for this harmony (one violation from each constraint) counteract the reward earned from PG-License (one reward). The sum of their weights must therefore be greater than the weight of PG-License. But because CrispEdge-L does not penalise posttonic harmony, the conditions that gave us (9) persist: *[−ATR] and Ident[ATR] cannot gang up on PG-License on their own. Avoiding the penalty for CrispEdge-L by assuming that the initial vowel in candidate (b) hosts a [−ATR] feature distinct from the feature on the remaining vowels is counterproductive: this also removes the reward from PG-License earned by that vowel.

Of course, pretonic harmony can be avoided in (13) if CrispEdge-L outweighs PG-License – no gang effect is needed. But this is incompatible with the weights needed to produce overshoot; see §2.2.3, and in particular the weighting requirements in (21) below. Essentially, PG-License participates in a gang effect that overcomes constraints penalising overshoot (including CrispEdge-L), and this is not possible if CrispEdge-L outweighs PG-License.

We now have a full account of licensing-driven harmony in Tudanca Montañés, with the exception of overshoot. The necessary weighting

[7] CrispEdge-L([−ATR], *σ́*) is gradient in that its penalty increases as [−ATR] spreads to more syllables to the stressed syllable's left. See Kaplan (2018b) and §2.2.3 below for a justification of this arrangement.

[8] With CrispEdge-L's inclusion in the analysis, clarification of a representational point is warranted. Except where explicitly noted, I assume that all [−ATR] vowels in a candidate share a single multiply linked [−ATR] feature. If the string of [−ATR] vowels is not contiguous, as in [pʊɲeˈtæθʊ], then either the lone [−ATR] feature skips the disharmonic vowel, or two distinct but coindexed [−ATR] features are present. The latter is in the spirit of Walker's (2011) notion of 'feature chains': essentially, two coindexed features count as a single feature.

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conditions are given in (14). Harmony is driven by PG-LICENSE, and the remaining constraints – most importantly CRISPEDGE-L – prevent overshoot by ganging up on PG-LICENSE. PG-LICENSE is the most highly weighted constraint in the analysis (a status it will maintain throughout), but its effects are suppressed when harmony violates constraints that together outweigh PG-LICENSE.

(14) a. w(PG-LICENSE) > w(IDENT[ATR]) + w(*[−ATR])
b. w(IDENT[ATR]) + w(*[−ATR]) + w(CRISPEDGE-L) > w(PG-LICENSE)

These conditions give us one half of the second gang effect, which will produce overshoot in Tudanca Montañés: PG-LICENSE cannot produce overshoot on its own, as we have just seen, but when teamed up with another constraint that is satisfied by overshoot (to be introduced immediately below), it can overcome the anti-harmony pressure of CRISPEDGE-L, *[−ATR] and IDENT[ATR].

We turn now to the source of the other half of the overshoot-producing gang effect, labial-induced centralisation.

2.2.2 *Labial-induced centralisation.* Recall that labial-induced centralisation occurs when a pretonic mid vowel is adjacent to a labial consonant, as in (7a); the process affects non-mid vowels only in overshoot contexts, as in (7c). As I noted above, the phonetic motivation of labial-induced centralisation is not immediately apparent, but the facts of Tudanca Montañés point to two constraints, both of which prohibit sequences of a labial and a [+ATR] vowel (in either order). One constraint, *LAB-$[+\text{ATR}]_{\text{mid}}$, holds only for mid vowels, and the other, *LAB-$[+\text{ATR}]_{\text{V}}$, holds for all vowels. These are defined formally in (15). Recall that there is some evidence that labial-induced centralisation occurs only pretonically; the constraints below therefore hold only for the pretonic domain.[9]

(15) a. *LAB-$[+\text{ATR}]_{\text{mid}}$
Assign −1 to each pair of adjacent segments that includes a [+labial] consonant and a pretonic [−high, −low, +ATR] vowel.
b. *LAB-$[+\text{ATR}]_{\text{V}}$
Assign −1 to each pair of adjacent segments that includes a [+labial] consonant and a pretonic [+ATR] vowel.

Four constraints are relevant to labial-induced centralisation absent harmony: the two in (15), as well as *[−ATR] and IDENT[ATR]. The latter two constraints discourage centralisation (though IDENT[ATR]

[9] It may be wiser to achieve this restriction through constraint interaction – perhaps with unrestricted versions of the constraints in (15) and higher-weighted positional faithfulness (Beckman 1999) that limits their reach – but because questions remain about the precise nature of labial-induced centralisation, I choose a more straightforward, if simplistic, approach.

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does so only when vowels are underlyingly uncentralised). Both *Lab-[+ATR] constraints penalise labial-adjacent uncentralised mid vowels, and therefore together must outweigh the summed weights of *[−ATR] and Ident[ATR], as indicated in (16a).[10] Only *Lab-[+ATR]$_{V}$ motivates centralisation of non-mid vowels, so *[−ATR] must outweigh it, in order to prevent these vowels from centralising. We cannot rely on Ident[ATR] to block non-mid centralised vowels: Ident[ATR] makes the wrong choice for rich-base inputs that contain centralised non-mid vowels. In fact, this means that *[−ATR] must outweigh not just *Lab-[+ATR]$_{V}$, but also Ident[ATR]. This is captured in (16b).

(16) a. w(*Lab-[+ATR]$_{mid}$) + w(*Lab-[+ATR]$_{V}$) > w(Ident[ATR]) + w(*[−ATR])
b. w(*[−ATR]) > w(*Lab-[+ATR]$_{V}$) + w(Ident[ATR])

The tableaux in (17) show weights that meet these conditions. The weights for *[−ATR] and Ident[ATR] are preserved from the previous section. In (17a), the *Lab-[+ATR] constraints trigger centralisation of the mid vowel. In the other two tableaux, the labial-adjacent vowel is high, and therefore *Lab-[+ATR]$_{mid}$ is inactive. In (17b), *Lab-[+ATR]$_{V}$ would have to overcome both *[−ATR] and Ident[ATR] to produce centralisation, but it cannot. And in (17c), *Lab-[+ATR]$_{V}$ and Ident[ATR] cannot team up to force a violation of *[−ATR].

(17) a.

/boˈnuka/	*Lab-[+ATR]$_{mid}$ 8	*[−ATR] 6	*Lab-[+ATR]$_{V}$ 4	Ident [ATR] 1	$\mathcal{H}$
i. boˈnuka	−1		−1		−12
☞ ii. bɔˈnuka		−1		−1	−7
b. /piˈjihkos/					
☞ i. piˈjihkos			−1		−4
ii. pɪˈjihkos		−1		−1	−7
c. /pɪˈjihkos/					
☞ i. piˈjihkos			−1	−1	−5
ii. pɪˈjihkos		−1			−6

To summarise, we now have accounts of centralisation harmony minus overshoot (§2.2.1) and labial-induced centralisation minus the influence of harmony (this section). The next section fills in the missing pieces in these analyses, which are actually the same missing piece: when harmony and labial-induced centralisation converge on a vowel that neither would ordinarily target, the vowel centralises. The combination of the two

[10] This, then, is a third potential gang effect. But with the weights used here, there turns out to be no actual ganging up: *Lab-[+ATR]$_{mid}$ outweighs *[−ATR] and Ident[ATR] on its own.

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existing constraint/weight sets establishes a gang effect that predicts overshoot in exactly the right places.

2.2.3 *Overshoot*. As is clear from (13) and (17b), neither PG-LICENSE nor *LAB-[+ATR]$_V$ triggers centralisation of pretonic vowels on its own: the former cannot overcome *[−ATR], IDENT[ATR] and CRISPEDGE-L, while the latter is blocked by *[−ATR]. But the sum of the weights of PG-LICENSE and *LAB-[+ATR]$_V$ exceeds the summed weights of *[−ATR], IDENT[ATR] and CRISPEDGE-L. Consequently, PG-LICENSE and *LAB-[+ATR]$_V$ create a gang effect: when pretonic centralisation satisfies both PG-LICENSE and *LAB-[+ATR]$_V$, the analysis predicts that harmony will occur. Simultaneous satisfaction of those constraints occurs when (i) harmony is present (so extending it to a pretonic vowel increases PG-LICENSE's reward), and (ii) the pretonic vowel is labial-adjacent (so centralising it satisfies *LAB-[+ATR]$_V$). This is exactly the situation in which overshoot occurs. The tableau in (18) shows this result.

(18)

/ehpi'naθu/	PG-LIC 8.5	*LAB-[+ATR]$_{mid}$ 8	*[−ATR] 6	CRISP EDGE-L 4.5	*LAB-[+ATR]$_V$ 4	IDENT [ATR] 1	$\mathcal{H}$
a. ehpi'naθʊ			−1		−1	−1	−11
b. ehpi'næθʊ	+2		−2		−1	−2	−1
☞ c. ehpɪ'næθʊ	+3		−3	−1		−3	0
d. ɛhpɪ'næθʊ	+4		−4	−2		−4	−3

Centralisation of the pretonic vowel (candidate (c)) improves the form's score by 1 compared to (b), which we might think of as the 'conventional' form with no overshoot. This centralisation earns a reward from PG-LICENSE and eliminates a violation of *LAB-[+ATR]$_V$, thereby adding a total of 12.5 to (c)'s score compared to (b). This 12.5 is mitigated by a total of −11.5 from *[−ATR], CRISPEDGE-L and IDENT[ATR], for a net gain of 1.

In other situations the (non-mid) pretonic vowel is either not labial-adjacent (comparable to (13)) or does not appear in a word with harmony (17b), so one of the score-improving factors – reward from PG-LICENSE or satisfaction of *LAB-[+ATR]$_V$ – does not apply, while the violations of *[−ATR], and in some cases also IDENT[ATR] and CRISPEDGE-L, remain. The result is a net decrease in the candidate's score (again, compared to the candidate that is identical except that it lacks centralisation of the particular vowel in question). Furthermore, it is not simply the possibility of satisfying both PG-LICENSE and *LAB-[+ATR]$_V$ within a single word that instigates pretonic harmony: those constraints must be satisfied by a single vowel, because the gang effect they produce is sufficient to overcome just one violation of each of *[−ATR], IDENT[ATR] and CRISPEDGE-L.

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We can also see in (18) the motivation for gradient CrispEdge-L. Were this constraint to assign −1 no matter how many pretonic syllables shared the stressed syllable's [−ATR], candidate (d)'s score would increase by 4.5, and it would win.

The analysis also correctly deals with overshoot on vowels that are not immediately pretonic. An example of this sort is given in (19). The evaluation is identical to (18); the location of the target of overshoot is immaterial, because nothing in the analysis requires a contiguous harmony domain.

(19)

/pʊɲeˈtaθu/	PG-Lic 8.5	*Lab-[+ATR]$_{mid}$ 8	*[−ATR] 6	Crisp Edge-L 4.5	*Lab-[+ATR]$_{V}$ 4	Ident [ATR] 1	$\mathcal{H}$
a. pʊɲeˈtaθʊ			−1		−1	−1	−11
b. pʊɲeˈtæθʊ	+2		−2		−1	−2	−1
☞ c. pʊɲeˈtæθʊ	+3		−3	−1		−3	0
d. pʊɲɛˈtæθʊ	+4		−4	−2		−4	−3

The winner in (19) provides an interesting contrast with [oˈɾɛgænʊ] from (13). In both forms, harmony targets a specific position – a pretonic labial-adjacent vowel or the stressed vowel – while making different choices regarding the unstressed vowels encountered along the way. In [pʊɲeˈtæθʊ], harmony skips over the immediately pretonic vowel, but in [oˈɾɛgænʊ], the penultimate vowel harmonises. Examining why the grammar makes different choices in these forms helps clarify when and how the analysis generates (dis)contiguous harmony domains. PG-License encourages harmony in both the immediately pretonic vowel in [pʊɲeˈtæθʊ] and the penultimate vowel in [oˈɾɛgænʊ]. In the latter only *[−ATR] and Ident[ATR] stand in harmony's way, and because the combined weights of these two constraints is less than the weight of PG-License, the penultimate vowel harmonises. In [pʊɲeˈtæθʊ], however, harmony on the immediately pretonic vowel additionally violates CrispEdge-L, and as we have seen, PG-License cannot trigger harmony when in conflict with all three of *[−ATR], Ident[ATR] and CrispEdge-L. PG-License outweighs each of these constraints, but they gang up to block pretonic harmony. The analysis therefore predicts contiguous posttonic harmony (where only *[−ATR] and Ident[ATR] discourage harmony), but discontiguous pretonic harmony (where CrispEdge-L is also relevant). This arrangement is compatible with various representational assumptions concerning discontiguous harmony; see note 8.

Recall the generalisation from Jiménez & Lloret (2007) concerning the relationship between maximal licensing and PL-driven harmony that targets a single position: the former disperses the feature in question as widely as possible, enhancing the feature's prominence in a way that builds on the effects of the latter. The current analysis formalises this view: harmony always achieves a minimal level of prominence

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enhancement by targeting the stressed syllable, and where possible it attains a greater level of enhancement, sometimes with the aid of *Lab-[+ATR]$_V$. In other words, we can explain why PG-PL would seek harmony on non-licensing positions, even going so far as to overshoot its stressed-vowel target. This additional harmony provides more (or perhaps a different kind of) prominence enhancement than is provided by the stressed syllable itself.

To summarise, the analysis of Tudanca Montañés harmony exploits a gang effect in which *Lab-[+ATR]$_V$ and PG-License gang up on *[−ATR], CrispEdge-L and Ident[ATR] to trigger overshoot on labial-adjacent vowels. We can therefore add (20) to our running list of weighting requirements.

(20) w(PG-License) + w(*Lab-[+ATR]$_V$) > w(Ident[ATR]) + w(*[−ATR]) + w(CrispEdge-L)

Our other gang effect blocks pretonic harmony outside the proper overshoot contexts. *[−ATR], CrispEdge-L and Ident[ATR] gang up on PG-License to rule out overshoot when PG-License does not have the help of *Lab-[+ATR]$_V$.

Collecting all of the weighting requirements from the foregoing sections – (14), (16) and (20) – gives (21). Examination of (18) shows that all of these conditions are met. I verified with OT-Help that the analysis successfully produces centralisation harmony without overshoot, centralisation of pretonic mid vowels and overshoot involving labial-adjacent non-mid vowels, all while correctly handling rich-base inputs with illicit centralisation.

(21) a. w(PG-License) > w(Ident[ATR]) + w(*[−ATR])
b. w(Ident[ATR]) + w(*[−ATR]) + w(CrispEdge-L) > w(PG-License)
c. w(*Lab-[+ATR]$_{mid}$) + w(*Lab-[+ATR]$_V$) > w(Ident[ATR]) + w(*[−ATR])
d. w(*[−ATR]) > w(*Lab-[+ATR]$_V$) + w(Ident[ATR])
e. w(PG-License) + w(*Lab-[+ATR]$_V$) > w(Ident[ATR]) + w(*[−ATR]) + w(CrispEdge-L)

PG-PL provides a simple account of overshoot in Tudanca Montañés, where PG-PL's propensity to harmonise beyond the licensing position becomes an asset. As (22) shows, without it, we lose the result from (18). This tableau illustrates the point with traditional positional licensing (which penalises unlicensed features rather than rewarding licensed ones, and offers no incentive for overshoot). Neither candidate under consideration violates License, and, as before, *Lab-[+ATR]$_V$ cannot overcome *[−ATR] on its own. Pretonic centralisation now trades a single violation of *Lab-[+ATR]$_V$ for one violation of *[−ATR] – a bad trade.

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CrispEdge-L and Ident[ATR] add further penalties.[11] The same result would obtain under PG-PL if that formalism were modified to not reward overshoot: both candidates would earn +2 from such a constraint, so the intended winner would gain no advantage.[12]

(22)

/ehpi'naθu/	Lic 8.5	*Lab-[ATR]$_{mid}$ 8	*[−ATR] 6	Crisp Edge-L 4.5	*Lab-[ATR]$_{V}$ 4	Ident [ATR] 1	$\mathcal{H}$
☞ a. ehpi'næθʊ			−2		−1	−2	−18
b. ehpɪ'næθʊ			−3	−1		−3	−25.5

OT-Help shows that this set of constraints cannot produce forms like [ehpɪ'næθʊ] when PL does not motivate overshoot. The problem lies in a weighting contradiction. If *Lab-[+ATR]$_{V}$ is to trigger labial-induced centralisation without help from PL, it must overcome *[−ATR] (and, depending on the input, Ident[ATR]): w(*Lab-[+ATR]$_{V}$) > w(*[−ATR]) + w(Ident[ATR]). But if it is to be prevented from triggering centralisation, as in (17b), the opposite relationship is necessary: w(*[−ATR]) + w(Ident[ATR]) > w(*Lab-[+ATR]$_{V}$). PG-PL resolves the contradiction by providing further motivation for pretonic centralisation in exactly the right contexts.

3 Alternatives

It is worth considering what it would take to save the analysis in (22). For example, we might add one of Walker's (2011) maximal licensing constraints. This constraint would assign one violation for each position that the restricted element does not coincide with. (It differs from PG-PL in that PG-PL first requires the licensor to harmonise, and absent that, rewards nothing.) Because maximal licensing encourages [−ATR] to spread to all positions, it can provide the needed boost to *Lab-[+ATR]$_{V}$, just as PG-PL did in (18). The point is made in (23), which adds a maximal licensing constraint to (22). MaxLic assigns −1 for each vowel that does not bear [−ATR], and it provides the correct outcome as long as its weight is greater than 7.5 but less than 11.5. Under those conditions, it establishes the necessary gang effect with *Lab-[+ATR]$_{V}$, but cannot overcome *[−ATR], CrispEdge-L and Ident[ATR] on its own. (*Lab-[+ATR]$_{mid}$ is omitted for reasons of space. It assigns no penalties.)

[11] The violations of CrispEdge-L and Ident[ATR] can be avoided if, respectively, the [−ATR] feature on the pretonic vowel is distinct from the one in the stressed syllable or if the pretonic vowel is underlyingly centralised. These manipulations are inconsequential, because of *[−ATR].

[12] This is not a trivial undertaking. As Kaplan (2018a) observes, rewarding only positions between the trigger and the licensor requires PG-PL to have access to the input: it must know where the harmonising feature originated, which is power not typically granted to markedness constraints.

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Of course, changes to the weights of other constraints are necessary now that MaxLic provides additional incentives for harmony, but the point is that maximal licensing is available as a substitute for overshoot-inducing PG-PL.

(23)

/ehpi'naθu/	Lic 8.5	MaxLic 8	*[−ATR] 6	Crisp Edge-L 4.5	*Lab-[+ATR]$_V$ 4	Ident [ATR] 1	$\mathcal{H}$
a. ehpi'næθʊ		−2	−2		−1	−2	−34
☞ b. ehpɪ'næθʊ		−1	−3	−1		−3	−33.5
c. ɛhpɪ'næθʊ			−4	−2		−4	−37

But this merely replicates the effect of PG-PL, and confirms that PG-PL is correct to encourage overshoot. Furthermore, it relegates to mere happenstance the fact that posttonic and pretonic harmony both involve centralisation. They are driven by different constraints; why should they operate on the same feature? PG-PL unifies them.

Other ways of salvaging (22) are conceivable. We might explicitly require labial-adjacent vowels to centralise when the final or stressed vowel is centralised, or we might search for some other constraint unrelated to PL that favours the correct forms in those tableaux. In both cases we end up introducing a new constraint whose sole role is to produce a result that PG-PL provides for free. The second option loses the connection between labial-induced centralisation and centralisation harmony, a connection retained only by stipulation in the first option.

A final possibility (explored by Kaplan 2017) is to replace Ident[ATR] with Dep[−ATR], a move that at first seems to reveal an avenue for an analysis with non-overshoot PL. As (24) shows, whereas Ident[ATR] penalises each vowel that acquires [−ATR], Dep merely penalises the introduction of the feature; spreading it to other positions gets a free pass.

(24)

/ehpi'naθu/	*Lab-[+ATR]$_V$ 2	Dep[−ATR] 2	License 1	*[−ATR] 1	$\mathcal{H}$
a. ehpi'næθʊ	−1	−1		−2	−6
☞ b. ehpɪ'næθʊ		−1		−3	−5
c. ɛhpɪ'næθʊ		−1		−4	−6

Dep and *[−ATR] together outweigh *Lab-[+ATR]$_V$, so *Lab-[+ATR]$_V$ cannot trigger [−ATR]-epenthesis on its own (see (25)). But when *[+ high, +ATR]# triggers epenthesis of [−ATR] on a final high vowel, *Lab-[+ATR]$_V$ can be satisfied without violating Dep again. Effectively, *Lab-[+ATR]$_V$ piggybacks on posttonic harmony – exactly the result we want. I confirmed with OT-Help that, given inputs with no centralised vowels, this analysis correctly produces harmony, labial-induced centralisation and overshoot.

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(25)

/piˈjikos/	*Lab-[+ATR]$_V$ 2	Dep[−ATR] 2	License 1	*[−ATR] 1	$\mathcal{H}$
☞ a. piˈjihkos	−1				−2
b. pɪˈjihkos		−1		−1	−3

Unfortunately, problems arise with rich-base inputs like /pæˈsaɾ/, with [−ATR] vowels in illicit positions (cf. [paˈsaɾ] in (7b)). With this input, the faithful candidate wins, as shown in (26).

(26)

/pæˈsaɾ/	*Lab-[+ATR]$_V$ 2	Dep[−ATR] 2	License 1	*[−ATR] 1	$\mathcal{H}$
☞ a. pæˈsaɾ				−1	−1
☞ b. paˈsaɾ	−1				−2

We have a weighting contradiction. Whereas *[−ATR] must outweigh *Lab-[+ATR]$_V$ in (26), it must not do so if the immediately pretonic vowel of [ehpɪˈnæθʊ] is to be centralised, as we can see from a comparison of candidates (a) and (b) in (24).

The contradiction does not arise with PG-PL. The same analysis that correctly handled /ehpiˈnaθu/ in (18) also generates [paˈsaɾ] from /pæˈsaɾ/ in (27).

(27)

/pæˈsaɾ/	PG-Lic 8.5	*Lab-[+ATR]$_{mid}$ 8	*[−ATR] 6	Crisp Edge-L 4.5	*Lab-[+ATR]$_V$ 4	Ident [ATR] 1	$\mathcal{H}$
a. pæˈsaɾ			−1				−6
☞ b. paˈsaɾ					−1	−1	−5

In (27), *[−ATR] forces decentralisation of the initial vowel, because its weight exceeds the sum of the weights of *Lab-[+ATR]$_V$ and Ident [ATR]. As we saw before, *Lab-[+ATR]$_V$ cannot trigger – or in this case, preserve – centralisation without the help of PG-License.

A more substantial departure from the analysis developed in the preceding section would involve abandoning positional licensing altogether. Perhaps harmony is driven by a constraint that simply motivates leftward spreading of [−ATR], and the cessation of harmony at the stressed syllable is caused by CrispEdge, misleadingly giving the impression that this position is the target of spreading. Harmony reaches the pretonic domain only when it also satisfies *Lab-[+ATR]$_V$, as in the PG-PL analysis. But with harmony untethered from the stressed syllable, this analysis predicts unbounded harmony whether or not the stressed vowel is involved. For example, pretonic mid vowels that centralise because they are labial-adjacent are predicted to trigger harmony on other pretonic vowels. Words with the necessary configuration exist – e.g. /abeˈjana/ ‘hazelnut’ (Penny 1978: 75) – and while Penny gives no surface forms for any that

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I am aware of, he makes no mention of labial-adjacent vowels initiating harmony.

Finally, the analyses of Flemming (1994) and Blumenfeld (2006) treat harmony in Tudanca Montañés as a foot-bounded process. For example, Blumenfeld adopts an AGREE constraint requiring all vowels in a foot to harmonise. The stressed syllable and all following syllables are taken to comprise a foot, so once centralisation is introduced in the final vowel, preceding vowels up to and including the stressed vowel must harmonise. Obviously, because harmony extends beyond this foot in overshoot, a foot-based analysis does not provide adequate empirical coverage. Reconciling the analysis with overshoot would be difficult: the proposed foot must extend beyond the stressed syllable, but only in the presence of a labial consonant – an unlikely factor in assigning metrical structure. Worse, this foot must be discontiguous, to handle [pʊɲeˈtæθʊ]. The upshot is that centralisation shows no evidence of being a foot-constrained process.

4 Conclusion

Centralisation in Tudanca Montañés has important consequences for our understanding of positional licensing in HG. It exhibits the overshoot that PG-PL predicts, and analysis proves elusive without PG-PL. That is, PG-PL offers the only satisfactory account of centralisation.

A hallmark of PL-driven harmony is that it is bounded on one side by a licensing position. But Tudanca Montañés shows that this does not always hold: the harmonising feature can extend beyond the licensing position. Crucially, this occurs only under particular circumstances, and the situations in which harmony stops at the licensor reveal that harmony is in fact a consequence of PL. Traditional PL must cope with overshoot by introducing new constraints that motivate overshoot independently of the rest of the harmony, but overshoot is a natural consequence of PG-PL.

The PG-PL analysis developed here rests on two gang effects, one of which is directly responsible for overshoot. Because OT does not allow gang effects in the absence of some mechanism such as Local Constraint Conjunction (e.g. Smolensky 1993), Tudanca Montañés would seem to provide evidence for HG over OT more generally. But because traditional PL does not cause the same pathologies in OT that it introduces in HG, gradient PL seems unnecessary for OT, and this difference between the frameworks likely makes a careful comparison of OT-and HG-based approaches more complex than simply observing that only one of them easily supports gang effects.

Tudanca Montañés may reveal the advantages of PG-PL particularly clearly, but other harmony systems exhibit comparable patterns. For example, ATR harmony in Eastern Andalusian (Jiménez & Lloret 2007, Lloret & Jiménez 2009, Lloret 2018) is triggered by a final lax vowel and targets the stressed syllable, with other positions – including pretonic

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syllables – optionally harmonising as well. The work just cited and Walker (2011) take harmony up to and including the stressed syllable to be driven by a traditional PL constraint, while overshoot in the pretonic domain comes from a separate maximal licensing constraint – much like the alternative analysis of Tudanca Montañés rejected in §3. As argued in that section, PG-PL unifies these two harmony imperatives. Because harmony stops at the stressed syllable under some circumstances in Tudanca Montañés and Eastern Andalusian, we have clear evidence that it is driven by PL, and that the overshoot in both languages is predicted by PG-PL. To this set we can add the other harmony systems that Walker (2011) identifies as being driven by maximal licensing. These systems invariably target entire words, and the relevance of PL is evident from the fact that harmony seems to be motivated by the same consideration that drives more familiar licensing-based harmony – namely prominence enhancement for marked elements. Perhaps these systems are also the product of PG-PL's overshoot, and are distinguished from Tudanca Montañés and Eastern Andalusian by the absence of CrispEdge to halt harmony at the licensor. Tudanca Montañés, then, hardly presents the only harmony system that bears out PG-PL's predictions.

The success of this approach provides new support for positive constraints beyond, for example, Kimper's (2011) demonstration that they escape pathologies introduced by certain kinds of negative constraints. In the current situation, positive constraints do not simply sidestep overgeneration; they provide coverage of a phenomenon that is otherwise elusive. Likewise for gradient constraints: the gradient reward from PG-PL is central to the account of overshoot, indicating that despite concerns about gradience (McCarthy 2003), it can be advantageous under certain circumstances.

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