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Precedence Faithfulness Governs Morpheme Position

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1. Introduction

Much recent work in OT has dealt with the interaction of phonological constraints and constraints on morpheme position. We know some mechanism in our phonological theory must position morphemes, and furthermore that said mechanism must be a violable constraint, else phonologically conditioned, transpositional morphologies such as those in fig. (1) would go unexplained.

(1) Transpositional Morphology

a. Kui Metathesis (Hume 2001)
/gas + pi/ → gas-pi 'to hang oneself.PST'
/lek + pi/ → lep-ki 'to break.PST'

b. Tagalog Infixation (McCarthy & Prince 1993)
/um + abot/ → um-abot 'reach for, pf., actor topic'
/um + tawag/ → t-um-awag 'call, pf., actor topic'

c. Inor Featural Infixation (Zoll 1998)
/dənəg + $_{[rnd]}$/ → dənəg^{w} 'hit.3MSG'
/kəfəj + $_{[rnd]}$/ → kəf^{w}əj 'open.3MSG'

In each case, some portion (often all) of a segmental or featural affix is dislocated from its canonical edge orientation in order to satisfy some condition on phonological well-formedness—maximization of perceptual salience in the Kui case (Hume 2001), markedness of syllable structure in

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the Tagalog case (McCarthy & Prince 1993), and prohibition of feature co-occurrence in the Inor case (Zoll 1998). In each language's grammar, the constraint that decides the basic right- or leftward orientation of the 'mobile' affix must be violated.

This paper will seek to advance the claim that faithfulness constraints construed over input precedence relations preserve basic morpheme order and are crucially violated in cases such as those in (1). We assume a standard item-and-arrangement model in which morphology is concatenative, as well as fully structured according to universal principles of morphosyntax/semantics and/or language-specific subcategorization. We further assume that the input to the phonological component encodes this morphological structure in the form of adjacency and—most importantly for our purposes—precedence relations that, by transitivity of association, are transferred to the phonological content of each morpheme. The theory we will advance here states simply that faithfulness constraints of the familiar LINEARITY family preserve this ordering of melodic content—segments, features, tones, etc.—both within and across morphemes.

(2) LINEARITY (McCarthy & Prince 1997)
S_1 reflects the precedence structure of S_2 and v.v.
If $x, y \in S_1$; $x', y' \in S_2$; $x \mathfrak{R} x'$ and $y \mathfrak{R} y'$; then $x < y$ iff $x' < y'$.

Numerous authors (McCarthy & Prince 1997, Hume 2001, among others) have relied on LINEARITY-type constraints to explain both homo- and heteromorphemic metathesis as grammatical processes. However, as fig. (3) demonstrates for two abstract morphemes (A, B) and their segmental contents (numbered), LINEARITY is in fact violated by many types of transposition across morpheme boundaries. (Violations here counted on mismatches in the sets of precedence relations at each level, input and output.)

(3) Violations for contents of two morphemes, A and B

	$/[12]_A + [34]_B/$ $A<B \therefore \{1<3, 1<4, 2<3, 2<4\}$	LINEARITY
☞	a. 12-34 *underlying order*	
	b. 1-3-2-4 *metathesis*	* 2 ≮ 3
	c. 3-12-4 *infixation*	** 1≮3, 2≮3
	d. 34-12 *order reversal*	**** 1≮3, 1≮4, 2≮3, 2≮4

As the tableau shows, the farther a morpheme—in whole or part—is 'moved' in a given candidate from its input orientation, the greater the violation of LINEARITY. Thus a single relational faithfulness constraint may gradiently[1] attract a morpheme to a position specified in the input by the morphosyntax, rather than to some morphologically or prosodically defined edge in the output.

We will argue here that the grammatical importance of LINEARITY-type constraints extends far beyond the domain of phonological metathesis, touching upon almost all aspects of surface morpheme placement.[2] The optimal candidate above demonstrates the utility of the constraint in determining the order of simple pre-/suffixal morphology; where LINEARITY for a particular morpheme is undominated, the input positioning of that morpheme will surface unaltered—whether its morphological category be prefix, suffix, or root. In the sections to come, we will consider the more complex case of infixation as it is instantiated both segmentally (§2) and featurally (§4.1). Along the way, we'll see that the proposed theory allows our phonological component of grammar to preserve universals of morpheme order in a manner not available to an alignment-based theory of morpheme position (§3), and finally the theory will be shown (§4) to provide a unified account of a superficially problematic type of processual morphology, Terêna Nasal Harmony (Akinlabi 1996).

2. Infixation as precedence loss

We will consider first the much-discussed case of Tagalog infixation, where a morpheme *um* occurs as a prefix with vowel initial roots (*um-abot*), but an infix with consonant initial roots (*gr-um-adwet*, **um-gradwet*). A substantial number of authors (McCarthy & Prince 1993; Zoll 1998; Orgun & Sprouse 1999; McCarthy 2002) have treated this phenomenon as a phonologically motivated case of morpheme dislocation—a prefix becomes an infix to satisfy a condition on phonological well-formedness. We will

[1] We use the term *gradient* loosely here. Properly speaking, precedence faithfulness constraints are singly violable over multiple loci of violation, rather than multiply violable over a single locus of violation; see McCarthy (2002, fn.2) for discussion.

[2] It is interesting to note that, since we construe precedence over the phonological content of morphemes, we predict that reduplicative morphemes without segmental or featural content (i.e., "RED") will not be subject to the same surface ordering restrictions as fixed-segment affixes. Nelson (this volume) reports this prediction to be borne out, with the majority of reduplicative morphemes obeying output-oriented constraints promoting lexical access to base segmentism.

follow these authors in arguing this condition to be well-formedness of syllable structure, but veer crucially from their account in taking precedence faith, rather than parochial alignment, to decide the surface position of the affix in the default case. (We will defend this preference at length in §3.)

Tableau (4) below shows the necessary ranking of Linearity with respect to NoCoda;[3] violations are counted here for segmental precedence, but note that sections to come will necessarily count violations on autosegmental precedence, as well.

(4) Tagalog *um*-infixation: /um+gradwet/ → [gru.mad.wet]

	/um+gradwet/	NoCoda	Linearity
	a. um.grad.wet	*!	
	b. gum.rad.wet	*!	** u⊀g, m⊀g
☞	c. gru.mad.wet		**** u⊀g, m⊀g, u⊀r, m⊀r
	d. grad.wu.met		*****!***** {u, m}⊀{g, r, a, d, w}

NB: Shared NoCoda violations not shown.

An obvious problem must be observed at this point, and an expansion made to our theory of precedence faith. Consider a case where NoCoda could be perfectly well satisfied by prefix-internal metathesis. As tableau (5) shows, an ungrammatical metathesis candidate outperforms infixation on Linearity, since the constraint will prefer the coda-less candidate with the least amount of heteromorphemic precedence loss *in toto.*

(5) Incorrect prediction of {NoCoda >> Linearity}

	/um+tawag/	NoCoda	Linearity
	a. um.ta.wag	*!	
☞	b. tu.ma.wag		**!
☛	c. mu.ta.wag		*

Some other mechanism must then be called upon to rule out the unattested metathesis candidate (c) above—i.e., something must prevent the alternation of infixation with morpheme-internal metathesis. We will take

[3] NoCoda ≡ “Syllables do not have codas.” (McCarthy & Prince 1993)

the mechanism in question to be a variant of LINEARITY that preserves only homomorphemic precedence between correspondent strings.

(6) HOM(omorphemic)LIN(earity)
Homomorphemic precedence relations in S_1 are preserved in S_2.
If $x, y \in S_1$; $x', y' \in S_2$; $x \Re x'$ and $y \Re y'$; **and** $\mathbf{x, y \in M}$;
then $x < y$ iff $x' < y'$.

HOMLIN preserves only those precedence relations internal to a morpheme, making no consideration of the precedence relations obtaining between segments of *distinct* morphemes. The ranking of HOMLIN over NOCODA follows from an abundance of morpheme-internal codas elsewhere in the language (Ramos 1971) and rules out the unattested metathesis case quite effectively. HOMLIN will also rule out the possibility of coda avoidance through metathesis in underived contexts; for example, in a morphologically simplex case /alsa/ → *alsa*, **lasa* ‘to rise’.

(7) Infixation ≠ Metathesis: /um+tawag/ → [tu.ma.wag], *[mu.ta.wag]

	/um+tawag/	HOMLIN	NOCODA	LINEARITY
	a. um.ta.wag		*!	
☞	b. tu.ma.wag			**
	c. mu.ta.wag	*!		

Note the special/general relationship in which HOMLIN and LINEARITY stand. We might instead propose that our theory of precedence faith contains only constraints complimentary in application, i.e., HOMLIN above and HET(eromorphemic)LIN(earity). Such a construal of relational faith would provide similar results in the Tagalog case, as well as provide a straightforward account of a particular species of metathesis discussed in Hume (2001). In the Biltine language Fur (Jakobi 1990), only morpheme-*internal* precedence is lost to avoid an illicit onset cluster, not allowed word-initially: /k + b_1a_2/ → k-a_2b_1, *b_1a_2-k ‘we drink’. We might readily account for such an alternation with a {HETLIN >> HOMLIN} ranking, since only heteromorphemic precedence is lost. However, as all the Fur examples cited by Jakobi involve prefixation of only a single-segment, it is observable (A. Prince *p.c.*) that a {LINEARITY >> HOMLIN} ranking would suffice just as well, since in all cases the numerically smallest amount of segmental material is being transposed, much as we expect when an alternation is controlled by multiply-violable LINEARITY.

3. Preservation of morphosyntactic universals

The basic workings of the approach made clear, let us consider an immediate benefit of it, found in comparison with its predecessor, parochial alignment. Previous research has taken the pre-/suffixal nature of a given morpheme to be a function of 'parochial' alignment constraints (Hammond 2000) such as those in (8).

(8) Examples of gradient, morpheme-specific alignment

ALIGN([*um*]$_{Af}$, L, Stem, L) ≡ 'The affix *um* occurs stem-initially, is a prefix' (McCarthy & Prince 1993)

ALIGN(1SG, L, Mwd, L) ≡ 'The 1st person singular morpheme is a prefix.' (Akinlabi 1996)

NOINTERVENING(*ta*; R) ≡ 'Nothing intervenes between *ta* and the right edge of the word.' (Zoll 1998)

A necessary caveat of the theory is that in fact *every* morpheme must be subject to one or more such constraints, else we might expect the conceptual implausibility of fixed-segment morphemes that simply have no edge orientation of any kind. As we will see, this results in an unfortunate consequence for universals of morpheme order such, for example, as the one below.

(9) A Universal of Nominal Structure: [Noun < Number < Case]$_{Word}$

Typological evidence suggests that a) if a nominal is overtly marked for both case and number, the number marker will always occur between the noun head and the case marker (Greenberg 1963), and b) both affixes will be suffixal (Hawkins & Gilligan 1988).[4] The result is a single statistically significant ordering of the morphemes, out of a logically possible six.

What predictions does the alignment theory make with respect to the universal? Since every morpheme effectively competes with every other morpheme for its edge-oriented position within the word or stem, factorial typology of morpheme-specific alignment predicts any of the logically possible surface arrangement of the morphemes. As a result, the universal of (9) is at best an accident, with cross-linguistically rerankable constraints in the phonological component positioning morphemes independently of

[4] Bybee (1985) argues Greenberg's universal to be a function of the semantics of the involved affixes. For formal syntactic treatments of Hawkins and Gilligan's universal, see Williams (1981) and Lieber (1992).

any morphosyntactic or semantic principles. The predictive power of any morphosyntactic/semantic theory of morpheme order is thus undermined considerably.

If we abandon the parochial alignment theory, however, and position morphemes by relational faithfulness only, this problem evaporates. Where a single morpheme order is presented to phonological evaluation by the morphosyntax, LINEARITY will prefer only the faithful candidate, even when relativized to particular morphemes.[5]

(10) A universal preserved.

	/N<Num<K/	LINEARITY$_K$	LINEARITY$_{NUM}$	LINEARITY$_N$
	N-K-Num	*	*	
	K-N-Num	**	*	*
	K-Num-N	**	**	**
	Num-K-N	*	*	**
	Num-N-K		*	*
☞	N-Num-K			

NB: Single-segment morphemes assumed for tabular clarity. K = Case, N = Noun head.

Obviously, constraints dominating LINEARITY will affect surface morpheme order, as we saw in Tagalog. The key distinction between the two theories is that, under the relational faithfulness approach, morphosyntactically conditioned morpheme order can only be perturbed in the phonological component by *phonological* constraints. In the absence of morpheme-specific alignment, there remains no purely morphological imperative to position a morpheme with respect to morphological or prosodic categories in the output string. Thus morpheme order universals will never be completely obscured through the interaction of a potentially vast set of class- or lexeme-specific alignment constraints, and designation of purely morphological information like pre-/suffixhood may be relegated safely to the input. On the strength of these observations, we will contend that precedence faithfulness constraints must supplant those of the alignment theory in all cases.

[5] The existence of *some* parochial component of the grammar is not in question here. See Urbanczyk (1996) and Itô & Mester (1999) for arguments supporting faithfulness relativized to morphemes and lexical strata. Violations of LINEARITY$_M$ are only calculated for those precedence relations in which the indexed morpheme is a term; thus LINEARITY$_K$ preserves only the {Num<K, N<K} precedence relations.

4. An empirical challenge—prediction and consequence

A fundamental distinction between the alignment and precedence faith theories is found in a formal prediction of the alignment theory that we will refer to as *morphemic bitropism*. Where ALIGN-L and ALIGN-R for a specific morpheme are undominated, the contents of the affix will appear simultaneously at both edges of some output category (Mwd, Stem, PrWd, etc.).

(11) A bitropic affix: {ALIGN-R_{AFX}, ALIGN-L_{AFX}} undominated

$$/\text{root + affix}/ \rightarrow \begin{bmatrix} \leftarrow \text{affix} \rightarrow \\ \text{ROOT} \end{bmatrix}_{\text{CAT}}$$

Precedence faith does not predict inherently bitropic morphology in this way. Each morpheme has a unique position in the input, and perturbation of input precedence only comes through interaction with phonological constraints. Thus LINEARITY, by itself, will never force a morpheme to 'spread' over another morpheme. In certain cases of harmony-inducing affixation, however, we find alternations suggestive of exactly this behavior.[6] Two well-known cases of such are found in Terêna Nasal Spread and Etsako H-tone Spread.

(12) <u>Terêna Nasal Spread</u> (Akinlabi 1996, Bendor-Samuel 1960)
Left to right spread: /$_{[nas]}$ + arine/ → ã̃r̃ĩnẽ 'sickness.1SG'
Blocked by medial obstruent: /$_{[nas]}$ + owoku/ → õw̃õ^{ŋ}gu 'house.1SG'

(13) <u>Etsako H-tone Spread</u> (Akinlabi 1996, Elimelech 1976)
Right to left spread: /a^{L}me^{L} + H/ → a^{H}me^{H} 'water.ASSOC'
Blocked by root H: /a^{L}ta^{H}sa^{L} + H/ → a^{L}ta^{H}sa^{H} 'plate.ASSOC'

In each case, a floating-feature morpheme spreads to opposite edges of the root. In Terêna (Bendor-Samuel 1960), the first-person singular (1SG) spreads from left to right over the stem. We know spreading in this case to be rightward because, where a medial obstruent blocks the spreading, nasality is unilaterally found on the left edge. Similarly in Etsako, a high tone morpheme spreads from right to left over low tones, but is blocked by

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[6] Circumfixation would be an obvious example of segmental morphology which seems to have this property. As the existence of circumfixation as such remains a somewhat contentious issue, however, we will take attested cases as neither a benefit of nor a detriment to the proposed theory.

an intervening stem high tone. Spreading in both cases occurs only in the morphological contexts shown, and the prevailing analytical intuition (Akinlabi 1996) has explained the phenomena with an appeal to morphemic bitropism.

Despite the apparent difficulty presented by these facts, we will show that the faithfulness theory advocated here actually sheds considerable light on the phenomenon, situating it analytically as both a cousin to the Tagalog infixation case and a simple subtype of those morphological processes known as Derived Environment Effects (Kiparsky 1993). In order to do this, however, we must first consider a second type of floating-feature morphology, which will serve as a useful empirical bridge between Terêna/Etsako and Tagalog.

4.1. Featural infixation

In cases of featural infixation, a floating-feature morpheme migrates away from a default docking site to produce a more phonologically well-formed structure. In the well-known case of Inor Labialization (Rose 1994, Zoll 1998), for example, a labial morpheme occurs on the rightmost non-coronal consonant, even if that consonant is not at the suffixal periphery of the root. Similarly in Japanese Mimetic Palatalization (Mester & Itô 1989, Zoll 1998), a palatal suffix appears on the rightmost coronal consonant of the stem, or else stem-initially.

(14) Inor Labialization

Labialise rightmost: /dənəg + $_{[rnd]}$/ → dənəg^{w} 'hit.3MSG'

Else rightmost non-coronal: /kəfəj + $_{[rnd]}$/ → kəf^{w}əj, *k^{w}əfəj 'open.3MSG'

(15) Japanese Mimetic Palatalization[7]

Palatalize rightmost coronal: /dosa + $_{[ant]}$/ → doša 'in large amounts'

Else palatalize leftmost C: /poko + $_{[ant]}$/ → p^{y}oko 'flip-flop'

Observe that these cases generalize analogously with the segmental infixation cases we saw in §2: in each case, some phonological well-formedness factor forces a floating-feature morpheme to 'move' away from its default docking position. In Inor, a feature co-occurrence constraint precludes segments that are simultaneously coronal and labial; in Japanese mimetics, a licensing constraint rules out complex segments word-medially (Zoll 1998). Supposing that relational faithfulness constraints hold over precedence relationships between *features* as well as entire segments

[7] Obligatory reduplication in the forms (*doša-doša*, *p^{y}oko-p^{y}oko*) has been suppressed for expository simplicity.

(Boersma 1998, Pater 1999), we can give these facts an analogous analysis: the default morphological orientation of the floating-feature morphemes is conditioned by LINEARITY, with the elsewhere behavior accounted for by the same {C_{phon} >> LINEARITY} ranking noted for Tagalog in §2.

More concretely, in Inor a feature co-occurrence constraint (*COR/LAB) dominates LINEARITY, resulting in the migration of the morpheme away from its suffixal edge, but only where failure to do so would result in a complex labial/coronal consonant. In Japanese, the featural movement is more dramatic, and reminiscent of morphemic bitropism: the palatal morpheme moves to the opposite edge of the root in the absence of a coronal docking site. Were this genuine morphemic bitropism, the relational faithfulness theory might come under serious doubt; happily, Zoll (1998) argues the 'leftward' movement in this case to result from structural licensing: complex segments, such as [p^y], are only licensed word-initially in these cases, and so we may again attribute the directionality conflict to a markedness over relational faithfulness ranking. We will further amend Zoll's results only slightly, arguing that her LICENSE constraint must in turn be crucially dominated by general HOMLIN to avoid depalatalization of lexically palatal consonants found medially elsewhere in the language.

The benefit of these machinations, in addition to explaining the facts of Inor and Japanese, are evident in consideration of the Terêna/Etsako problem. If featural morphemes are subject to precedence faith, then the pre-/suffixal orientation of, for instance, the Terêna 1SG is easily accounted for, as we will see in the next section. We will also see that the basic ranking {HOMLIN >> C_{phon} >> LINEARITY}, which we have argued for in both the Tagalog and Japanese cases, will provide a solution to the currently unexplained origin of opposite-edge spreading.

4.2. Morphemic Bitropism vs. Derived Environment TETU

As the Terêna and Etsako cases are identical in kind if not in detail, we will take the facts of Terêna to constitute a sufficient proving ground for the theory. The generalizations that concern us are once again: a) that spreading of the nasal autosegment originates at the left edge, and b) that spreading only occurs in the 1SG. We will consider each facet of the problem in turn, ultimately arguing that nasal harmony is the unmarked option in Terêna, ruled out in underived words by precedence faith.

We will assume first that the 1SG marker is a floating feature without a root node (Akinlabi 1996) and second that the morpheme is underlyingly prefixal, as suggested by the distributional facts of the morpheme in both Terêna and in related Arawakan languages (where it is realized as a prefix, /n(u)-/, Aikhenvald 1999).

How do we ensure that this subsegmental prefix surfaces at the left periphery of the root in all cases? Given the precedents established in §4.1, we argue simply that LINEARITY dominates all constraints that would force the nasal span to originate at some other edge. For example, IDENT(nasal)[8] would prefer the candidate with the least total amount of nasalization, and so must be dominated by LINEARITY, which will distinguish left- from rightward placement for the morpheme.

Crucially, we take *fusion* of phonological structure to be as detrimental to precedence as *metathesis* of phonological structure. We can see this in tableau (16) below, where in the suboptimal candidate the nasal morpheme transposes with the first four segments of the stem and fuses with the fifth, resulting in five total violations of the constraint. The optimal candidate only fuses with the first four segments, for four violations. (For presentational clarity, violations of relational faith are shown here and in tableau (18) below for precedence relations between the featural morpheme and full segments of the root; the end result is unchanged with violations counted with respect to root autosegments.)

(16) The prefixal 1SG: /$_{[nas]}$ + owoku/ → [õw̃õ^{ŋ}gu]

	/$_{[nas]}$ + owoku/	LINEARITY	IDENT(nasal)
☞	a. õw̃õ^{ŋ}gu	**** [nas] ≮ {o, w, o, k}	****
	b. owokũ	*****! [nas] ≮ {o, w, o, k, u}	*

With the prefixal origin of the nasal span controlled by relational faith, it remains to be seen how rightward spreading occurs. Observation of a simple parallel provides the answer: nasal harmony in Terêna only occurs in a derived environment, and, not coincidentally, the precedence faithfulness constraints we've discussed throughout this work distinguish derived from underived precedence. HOMLIN preserves precedence internal to morphemes; LINEARITY preserves precedence both internal to morphemes and across them. Where a ranking {HOMLIN >> C_{Phon} >> LINEARITY} obtains, active C_{phon} may be satisfied to some degree if general LINEARITY is violated and precedence is lost between distinct morphemes. Thus emergence of unmarked structure results, but *only in derived contexts*. We have already observed some effects of this—metathesis of illicit codas is

[8] IDENT(nas) ≡ "Correspondent segments have identical values for the feature [nasal].'" (McCarthy & Prince 1995)

ruled out in Tagalog, and depalatalization of lexical p^y and k^y is blocked in Japanese.

'C_{phon}' in the transpositional processes we've dealt with so far has been either a simple contextual markedness or licensing constraint, both satisfied by the avoidance of marked material in a highly localized context. Note, however, that we might instead use a constraint that precipitates unmarked structure throughout some larger domain. If that constraint is dominated by HOMLIN, and dominates LINEARITY in turn, said unmarked structure will emerge transpositionally only in a derived context. In the Terêna case, we will take the operative constraint to be that shown below, an independently motivated constraint (Walker 1998) requiring any instance of the feature [nasal] to spread to every segment of the word.

(17) SPREAD([+nasal], M) (Walker 1998)
Every occurrence of [+nasal] in a morpheme must be linked to all segments in that morpheme.

SPREAD, if undominated, would cause the nasal feature in the underived root *ari<u>n</u>e* to spread throughout the morpheme with abandon (as in failed candidate (b), below). As shown in tableau (18) however, if the markedness constraint is crucially dominated by HOMLIN, input homomorphemic precedence relations must be preserved, and featural transposition through fusion (i.e., autosegmental spreading) is ruled out. Where SPREAD dominates LINEARITY, however, fusion may occur unabated across morpheme boundaries to accommodate the markedness constraint (cand. c).

(18) Non-derived blocking; derived harmony.

	/ari<u>n</u>e/	HOMLIN	SPREAD	LINEARITY	
☞	a. ari<u>n</u>e		****		← *underived blocking*
	b. *ãr̃ĩ<u>n</u>ẽ	****			
	/$_{[+nas]}$ + arine/				
☞	c. ãr̃ĩnẽ			*****	← *derived spread*
	d. ãrine		****	*	
	e. arine		*****		

Residual details fall out from current theories of nasal harmony. Blocking of spread by a medial obstruent, as in the mapping /$_{[nas]}$ + owoku/ → *õw̃õ^{ŋ}gu*, results simply from the ranking of SPREAD with respect to the constraints of the nasal harmony scale argued for in Walker (1998). Essentially, high-ranked markedness of nasal obstruent stops and fricatives overrules SPREAD, which in turn dominates those markedness constraints prohibiting nasal vowels and approximants. The ranking of all of these constraints over IDENT(nas) will similarly ensure that only nasal sonorants will surface contrastively in the language. Under strict locality of spreading (Gafos 1996, Ní Chiosáin and Padgett 1997), gaps in the nasal span will be prohibited universally,[9] and as Akinlabi (1996) observes, prenasalization results from the restriction of nasal markedness to the release phase of an obstruent.

Before concluding, we will observe a number of advantages of the proposed account. First and foremost, we have removed several shades of the linguistically arbitrary from explanation of the Terêna phenomenon. Where, under an analysis espousing morphemic bitropism, 1SG nasalization occurs solely because of the ranking of parochial alignment constraints, the present account attributes the spreading to a basic grammatical imperative, nasal harmony, and the default prefixal orientation to, ultimately, higher principles of Terêna's morphosyntax, from which we obtain the morpheme order preserved by precedence faith. These benefits extend equally to a like account of Etsako H-tone Spread.

A second positive result comes in the approach's generality. Not only have we captured the Terêna effects with the same {HOMLIN >> C_{phon} >> LINEARITY} ranking used in analysis of Tagalog, but we take it as a further positive result that the treatment of nasal harmony espoused here parallels almost exactly that of Pater's (1999) analysis of Austronesian Nasal Substitution, wherein fusion across morpheme boundaries is conditioned by phonological markedness, *NC̥,[10] and ruled out in non-derived contexts by relational faith.

(19) Indonesian nasal substitution (Pater 1999)
derived process: /məN_1+$p_2$ilih/ → məm_{12}ilih, *mə$m_1p_2$ilih
non-derived blocking: /ə$m_1p_2$at/ → ə$m_1p_2$at, *əm_{12}at

Pater's formulation of precedence differs somewhat from the analysis proposed here, but the current formulation generalizes straightforwardly to the Austronesian cases with a {HOMLIN >> *NC̥ >> LINEARITY} ranking. In fact, if we allow for morpheme-specific LINEARITY constraints, we also solves the 'intervening affix' problem observed in Pater (2001), where nasal

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[9] As a result, it is crucial to assume here that the nasal feature of the 1SG affix either a) is indexically distinct from nasal features occurring within the root, or b) replaces (i.e., deletes) those features. Were the two nasal features to simply merge on the nasal tier, high-ranked HOMLIN would prevent spread beyond the first nasal of the stem.

[10] *NC̥ ≡ "No nasal/voiceless obstruent sequences." (Pater 1999)

substitution is blocked at a prefix/prefix boundary: /məN+pər+besar/ → *məm*$_1$*p*$_2$*ərbesar*, **məm*$_{12}$*ərbesar*. If LINEARITY for the blocking prefix *per*- dominates *NC̥, no precedence may be lost at its boundaries through fusion.

5. Conclusion

In sum, we have sought to advance familiar precedence faithfulness constraints as the arbiters of surface morpheme position. At the same time, an Emergence of the Unmarked ranking schema, {HOMLIN >> C_{phon} >> LINEARITY}, has been shown to account for facts of Tagalog, Japanese, Terêna, and Indonesian all at once. The details of each case differ vastly, yet together they form a coherent class of transpositional phenomena brought about by the interaction of precedence faith with normal phonological markedness constraints. And all this comes, crucially, at no cost to the maintenance of morphosyntactic and semantic universals of morpheme order.

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(‘ROA’ = Rutgers Optimality Archive, http://roa.rutgers.edu/)

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