Bidirectional Stress Systems[1]

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Bidirectional stress systems are binary systems that appear to exhibit a mixed directional orientation. Under standard structural assumptions (Itô and Mester 1992, McCarthy and Prince 1993), a single foot is anchored at one edge of a prosodic word while the remaining feet are oriented towards the opposite edge. In odd-parity forms, the result is an internal lapse either following the leftmost stress or preceding the rightmost stress:

(1)
a. (σ́σ)(σ́σ)(σ́σ)
(σ́σ)σ(σ́σ)(σ́σ)

b. (σσ́)(σσ́)(σσ́)
(σσ́)(σσ́)σ(σσ́)

c. (σ́σ)(σ́σ)(σ́σ)
(σ́σ)(σ́σ)σ(σ́σ)

d. (σσ́)(σσ́)(σσ́)
(σσ́)σ(σσ́)(σσ́)

In this paper, I argue that the correct characterization of the bidirectional typology is a characterization in terms of an iambic-trochaic asymmetry. Bidirectional systems are always trochaic, as in (1a,c); they are never iambic, as in (1b,d).

To predict the correct typology, I argue that INITIAL GRIDMARK (Prince 1983) and NONFINALITY (Prince and Smolenksy 1993) are the only constraints that can introduce lapse in binary systems:

(2)
a. INITIAL GRIDMARK: A foot-level gridmark occurs over the initial syllable of a prosodic word.
b. NONFINALITY: No foot-level gridmark occurs over the final syllable of a prosodic word.

Since the requirements of initial stress and final stresslessness are incompatible with iambic footing in general, the proposed analysis will be unable to produce iambic bidirectional patterns. For an initial, schematic indication of how the analysis works, consider the tableau in (3).

(3)

	INITIAL GRIDMARK	NONFINALITY	PERFECT ALTERNATION
☞ a. x _ _ x _ x _ x x x x x x x σ σ σ σ σ σ σ			*
☞ b. x _ x _ _ x _ x x x x x x x σ σ σ σ σ σ σ			*
c. _ x _ x _ x _ x x x x x x x σ σ σ σ σ σ σ	*!		
d. x _ x _ x _ x x x x x x x x σ σ σ σ σ σ σ		*!	
e. _ x _ x _ _ x x x x x x x x σ σ σ σ σ σ σ	*!	*!	*
f. _ x _ _ x _ x x x x x x x x σ σ σ σ σ σ σ	*!	*!	*

When ranked above the constraints that promote perfect binary alternation (represented here by a single constraint, PERFECT ALTERNATION), INITIAL GRIDMARK and NONFINALITY prefer the trochaic

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bidirectional patterns, (3a,b), which satisfy both constraints, to the perfect alternation pattern (3c), which violates INITIAL GRIDMARK, and the perfect alternation pattern (3d), which violates NONFINALITY. In contrast, because the iambic bidirectional patterns, (3e,f), violate both INITIAL GRIDMARK and NONFINALITY, as well as the constraints that promote perfect alternation, they are harmonically bounded by the perfect alternation patterns.

The discussion proceeds as follows. Section 1 presents the evidence for the proposed characterization of the bidirectional typology, Section 2 presents the proposed analysis, and Section 3 briefly considers two recent alternatives. Section 4 contains a summary and concluding remarks.

1. An iambic-trochaic asymmetry

Two lines of evidence support characterizing the bidirectional typology in terms of an iambic-trochaic asymmetry. First, the characterization is consistent with the typology of actually attested bidirectional patterns: all languages that have been described as bidirectional are, in fact, trochaic. The trochaic bidirectional pattern (1a), for example, can be found in Garawa (Furby 1974), Indonesian (Cohn 1989), Norwegian (Lorentz 1996), and Spanish (Harris 1983), but its iambic mirror image (1b) is unattested. Similarly, the trochaic bidirectional pattern (1c) can be found in Lenakel verbs (Lynch 1978), Piro (Matteson 1965), and Polish (Rubach and Booij 1985), but its iambic mirror image (1d) is unattested.

Since there has been some dispute recently about the languages described as having the (1a) pattern, I will briefly address the disputed cases. First, Kager (2001) cites Roca (1986) in claiming that initial dactyls in Spanish occur only when a clitic precedes a word with initial secondary stress and that they are, therefore, derived rather than basic. Native speakers that I consulted, however, do produce initial dactyls in forms without clitics – *bùrocratìzación*, *nàturalísta*, *nàturalìzación*, *ràcionalísta*, *ràcionalìzación*, *gràmaticàlidád*, for example – supporting Harris's (1983) description of the initial dactyl pattern as the basic pattern of colloquial Spanish.[2]

Second, with respect to Indonesian, Kager notes that longer forms, such as [àmerikànisási] 'Americanization' and [dèmilitàrisási] 'demilitarization', are loanwords from Dutch, and he argues that the positions of stress may have been influenced by the source language. While this is plausible, the fact remains that the combined pattern of loanwords and native words is entirely predictable. The bidirectional analysis allows us to account for this predictable pattern in the grammar, rather than stipulate it in the lexical entry of each loanword.

Finally, with respect to Garawa, Alber (2005) speculates that the positions of stress in longer forms, such as [ŋánkiřikìřimpàya] 'fought with boomerangs' and [ŋářiŋinmùkunjìnamìřa] 'at your own many', may have been influenced by morphological boundaries. While this is also plausible, the pattern is completely predictable without reference to morphological boundaries, and analyzing Garawa as a simple bidirectional system is the more straightforward approach.

I will assume, then, that each of the disputed languages is a genuine example of a bidirectional system. To my knowledge, there is no dispute about the languages described as having the trochaic (1c) pattern or about the claim that iambic bidirectional systems are unattested.

The second line of evidence supporting a characterization of the bidirectional typology in terms of an iambic-trochaic asymmetry is that it is consistent with the broader typology of basic binary patterns. *No* binary system that tolerates lapse, whether bidirectional or unidirectional, is found in mirror image trochaic and iambic versions. Among unidirectional systems, for example, the odd-parity forms of the trochaic Pintupi (Hansen and Hansen 1969) pattern have a lapse at the right edge, (σ́σ)(σ́σ)(σ́σ)σ, but the iambic mirror image with lapse at the left edge, σ(σσ́)(σσ́)(σσ́), is unattested. Similarly, the even-parity forms of the iambic Choctaw (Nicklas 1972, 1975) pattern have a lapse at the right edge, (σσ́)(σσ́)σσ, while the trochaic mirror image pattern with lapse at the left edge, σσ(σ́σ)(σ́σ), is unattested.

[2] Harris also describes a more "rhetorical" pattern of right-to-left trochees preceding the main stress, which seems to be the pattern discussed by Roca. Some, but not all, of my informants were comfortable with this pattern as well, though it was very rarely the first pattern produced for any given from. It is worth noting that comfort with – or even, in a couple of instances, preference for – the rhetorical pattern seemed to vary depending on the particular lexical item.

To summarize, two lines of evidence support characterizing the bidirectional typology as an iambic-trochaic asymmetry: the characterization is consistent with the actually attested typology of bidirectional patterns, and it is consistent with the broader typology of basic binary patterns.

2. INITIAL GRIDMARK and NONFINALITY

In the proposed account, the lapses characteristic of bidirectional systems only emerge when either INITIAL GRIDMARK or NONFINALITY dominates the constraints that require perfect binary alternation. For such an account to work, however, INITIAL GRIDMARK and NONFINALITY must be the *only* constraints in the grammar that can promote lapse in binary systems. The remaining constraints can only be capable of producing perfect alternation, so that there are no alternative mechanisms for introducing lapse. To achieve the desired restrictiveness, I follow the approach taken in Hyde (2001, 2002), departing in several respects from the standard structural assumptions (Itô and Mester 1992, McCarthy and Prince 1993).[3]

2.1. The adopted framework

The difference between the proposed and standard assumptions can best be illustrated by considering the two approaches to the Garawa-type pattern in (4) and the Piro-type pattern in (5).

(4) a. Proposed structure

```
x       x     x
x  x  x  x  x  x  x
σ  σ  σ  σ  σ  σ  σ
```

b. Standard structure

(σ́σ)σ(σ́σ)(σ́σ)

(5) a. Proposed structure

```
x     x        x
x  x  x  x  x  x  x
σ  σ  σ  σ  σ  σ  σ
```

b. Standard structure

(σ́σ)(σ́σ)σ(σ́σ)

The proposed account requires exhaustive parsing where standard accounts allow minimal underparsing. Lapse configurations created in standard accounts using an unfooted syllable are created in the proposed account using a stressless foot, as in (4a), or an amphibrach configuration produced by two overlapping feet, as in (5a). Standard assumptions do not allow stressless feet or the improper bracketing necessary for overlapping feet.

The proposal also distinguishes between prosodic heads and entries on the metrical grid. A head syllable is a foot's most prominent syllable, indicated with a vertical association line. Grid entries help to indicate relative degrees of stress through the formation of grid columns. They are indicated with an *x* above the prosodic structure. As illustrated in (4a) and (5a), foot-level gridmarks can only be associated with head syllables, but head syllables may or may not be associated with foot-level gridmarks.

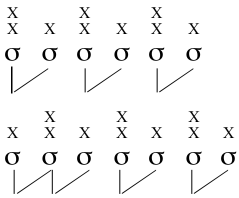
The constraints responsible for perfect alternation in the proposed account are MAPGRIDMARK, *CLASH (Liberman and Prince 1977, Prince 1983), and the Alignment constraints (McCarthy and Prince 1993) in (6c,d).

(6)
a. MAPGRIDMARK: A foot-level gridmark occurs within the domain of every foot.
b. *CLASH: For any two entries on level $n + 1$ of the grid there is an intervening entry on level n.
c. PRWD-L/R: The left/right edge of every prosodic word is aligned with the left/right edge of some foot-head.
d. HDS-L/R: The left/right edge of every foot-head is aligned with the left/right edge of some prosodic word.

[3] For an approach to bidirectional systems that is based on similar principles of initial stress and final stresslessness, but that is implemented in a different framework, see Gordon (2002). Perhaps the most significant difference between Gordon's framework and the framework adopted here is the absence of feet in the former and the subsequent loss of the ability to capture foot-based generalizations.

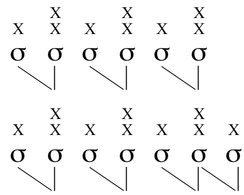
Under the structural assumptions outlined above, the constraints in (6) can only produce the four perfect alternation patterns in (7). They cannot produce patterns with lapse or clash:

(7) a.



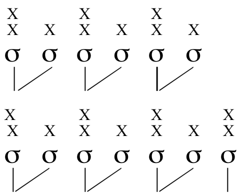
Nengone (Tryon 1967)

b.



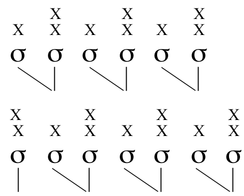
Araucanian (Echeverria and Contreras 1965)

c.



Maranungku (Tryon 1970)

d.



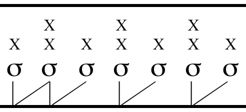
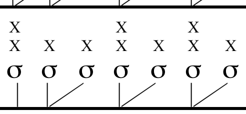
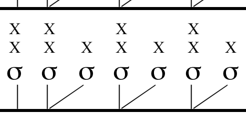
Suruwaha (Everett 1996a)

The *minimal alternation* patterns in (7a,b) have the fewest stresses possible without allowing a lapse, and the *maximal alternation* patterns in (7c,d) have the most stresses possible without allowing a clash. Each of the perfect alternation patterns is attested.

To present a clearer picture of how the proposal restricts itself to the four perfect alternation patterns when limited to the constraints from (6), the tableaux in (8) and (9) illustrate how minimal and maximal alternation harmonically bound close variations with clash or lapse.

Consider, first, the trochaic minimal alternation pattern in (8), where the most relevant constraints are HDS-L, *CLASH, and MAPGRIDMARK. Each candidate exhibits the best possible leftward foot-head alignment, given the length of the form. They maintain trochaic footing and position either a pair of overlapping feet or a monosyllabic foot at the left edge of the prosodic word. This allows the concentration of head syllables that occurs with such structures to be as near as possible to the designated edge.

(8)

σσσσσσσ	HDS-L	*CLASH	MAPGRIDMARK
☞ a. 	* *** *****		
b. 	* *** *****		*!
c. 	* *** *****	*!	

The overlapping feet of (8a) have an advantage over the monosyllabic feet of (8b,c) in this context because the resulting gridmark-sharing configuration allows every foot to have a foot-level gridmark within its domain without stressing adjacent syllables. This allows (8a), the minimal alternation candidate, to harmonically bound its close variations with clash or lapse. Notice especially how (8a) harmonically bounds the Garawa-type bidirectional pattern (8b), where a lapse follows the initial stress due to the stressless second foot. The two patterns perform equally well on HDS-L and *CLASH, but (8a) performs better on MAPGRIDMARK.

In a similar fashion, replacing HDS-L with HDS-R to promote rightward iambic footing, the mirror image iambic minimal alternation pattern would harmonically bound its close variations. I omit the additional tableau.

Next, consider the trochaic maximal alternation pattern in (9), where the relevant Alignment constraints are PRWD-L and HDS-R. Each candidate anchors a single head syllable at the left edge of the prosodic word, as required by PRWD-L. In the maximal alternation candidate (9a), HDS-R draws the remaining head syllables as far to the right as possible.[4] Since none of the head syllables are adjacent, each foot can be stressed, and overlapping feet are not necessary to avoid clash.

(9)

σσσσσσσ	PrWd-L	Hds-R	*Clash	MapGridmark
☞ a. x x x x x x x x x x x σ σ σ σ σ σ σ		** **** ******		
b. x x x x x x x x x x σ σ σ σ σ σ σ		* ** **** ******!		
c. x x x x x x x x x x x σ σ σ σ σ σ σ		* ** **** ******!	*!	
d. x x x x x x x x x x σ σ σ σ σ σ σ		** **** ******		*!

Since maximal alternation (9a) satisfies MapGridmark and *Clash and performs better on Hds-R, it harmonically bounds close variations containing clash or lapse. This includes the Piro-type bidirectional pattern (9b), whose internal lapse arises because a gridmark-sharing configuration follows a trochee. In (9b), the overlapping feet shift the final head syllable to the left, incurring an additional Hds-R violation.

In a similar fashion, replacing PrWd-L and Hds-R with PrWd-R and Hds-L, the mirror image iambic maximal alternation pattern would harmonically bound its close variations. I omit the additional tableau.

Having adopted an initial constraint set that restricts the grammar to perfect binary alternation, we can now see how it is possible to produce trochaic bidirectional systems without also producing iambic bidirectional systems.

2.2. *Introducing lapse*

Adding Initial Gridmark and Nonfinality to the constraint set frees trochaic bidirectional patterns from harmonic bounding by perfect alternation, but it does not free iambic bidirectional patterns. In (10) and (11), we see the effects of adding Initial Gridmark.

In (10), the trochaic Garawa-type pattern emerges as a variation on trochaic minimal alternation when Initial Gridmark, Hds-L, and *Clash all dominate MapGridmark.

(10)

σσσσσσσ	Initial Gridmark	Hds-L	*Clash	MapGridmark
a. x x x x x x x x x x σ σ σ σ σ σ σ	*!	* *** *****		
☞ b. x x x x x x x x x x σ σ σ σ σ σ σ		* *** *****		*
c. x x x x x x x x x x x σ σ σ σ σ σ σ		* *** *****	*!	

[4] Forms where head syllables occur more than one syllable apart cannot be considered as output candidates due the nonviolable HeadGap condition (Hyde 2002), which requires that at least one of every two adjacent syllables be a head syllable.

In (10a), INITIAL GRIDMARK's initial stress requirement negates the advantage of minimal alternation's overlapping feet. The Garawa-type bidirectional pattern (10b) emerges because its stressless second foot helps it to avoid clash while maintaining the initial stress.[5]

In contrast, in (11), we see that the mirror image iambic bidirectional pattern (11b) is still harmonically bounded.

(11)

σσσσσσσ	INITIAL GRIDMARK	HDS-R	*CLASH	MAPGRIDMARK

☞ a. `  x   x   x  `
`x x x x x x x`
`σ σ σ σ σ σ σ`
	*	* ***
		*****		

b. `  x   x     x`
`x x x x x x x`
`σ σ σ σ σ σ σ`
	*	* ***
		*****
				*

c. `  x   x   x x`
`x x x x x x x`
`σ σ σ σ σ σ σ`
	*	* ***
		*****
			*!	

Since each of the candidates violates INITIAL GRIDMARK, the constraint fails to distinguish between them, and iambic minimal alternation (11a) still harmonically bounds its variants.[6]

In (12) and (13), we see the effect of adding NONFINALITY to the constraint set. In (12), the trochaic Piro-type bidirectional pattern emerges when NONFINALITY, PRWD-L, and MAPGRIDMARK all dominate HDS-R.

(12)

σσσσσσσ	PRWD-L	NONFIN	*CLASH	MAPGM	HDS-R

a. `x   x   x   x`
`x x x x x x x`
`σ σ σ σ σ σ σ`
		*!			** ****
					*****

☞ b. `x   x     x  `
`x x x x x x x`
`σ σ σ σ σ σ σ`
					* ** ****
					*****

c. `x   x   x x  `
`x x x x x x x`
`σ σ σ σ σ σ σ`
			*!		* ** ****
					*****

d. `x   x   x    `
`x x x x x x x`
`σ σ σ σ σ σ σ`
				*!	** ****
					*****

NONFINALITY's final stresslessness requirement excludes the maximal alternation candidate (12a), allowing the bidirectional pattern (12b) to emerge. Since (12b) retracts its final head syllable to create a gridmark-sharing configuration, it avoids final stress while also avoiding clash or a stressless foot.[7]

In contrast, the addition of NONFINALITY to the constraint set does not allow the iambic mirror image bidirectional pattern (13b) to emerge as a variation on iambic maximal alternation:

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[5] The minimal alternation pattern (10a), found in Nengone, would emerge under the ranking HDS-L, MAPGRIDMARK, *CLASH >> INITIAL GRIDMARK. The (10c) pattern, found in Passamaquoddy (LeSourd 1993), would emerge under the ranking HDS-L, INITIAL GRIDMARK, MAPGRIDMARK >> *CLASH.

[6] The patterns in (11b,c) are both unattested.

[7] The maximal alternation pattern (12a), found in Maranungku, would emerge under the ranking (PRWD-L >>) HDS-R, MAPGRIDMARK >> NONFINALITY. The (12d) pattern, found in Pintupi, would emerge under the ranking (PRWD-L >>) HDS-R, NONFINALITY >> MAPGRIDMARK. The pattern illustrated in (12c) is harmonically bounded by (12b) and is unattested.

(13)

σσσσσσσ	PRWD-R	NONFIN	*CLASH	MAPGM	HDS-L
☞ a. $\begin{array}{ccccccc} x & & x & & x & & x \\ x & x & x & x & x & x & x \\ \sigma & \sigma & \sigma & \sigma & \sigma & \sigma & \sigma \end{array}$		*			** **** ******
b. $\begin{array}{ccccccc} & x & & & x & & x \\ x & x & x & x & x & x & x \\ \sigma & \sigma & \sigma & \sigma & \sigma & \sigma & \sigma \end{array}$		*			* ** **** ******!
c. $\begin{array}{ccccccc} & x & x & & x & & x \\ x & x & x & x & x & x & x \\ \sigma & \sigma & \sigma & \sigma & \sigma & \sigma & \sigma \end{array}$		*	*!		* ** **** ******!
d. $\begin{array}{ccccccc} & & x & & x & & x \\ x & x & x & x & x & x & x \\ \sigma & \sigma & \sigma & \sigma & \sigma & \sigma & \sigma \end{array}$		*		*!	** **** ******

In (13), since each of the candidates violates NONFINALITY, the constraint fails to distinguish between them, and iambic maximal alternation (13a) still harmonically bounds its variants.[8]

Given an appropriately restrictive framework, then, we have seen that INITIAL GRIDMARK and NONFINALITY allow the theory to produce trochaic bidirectional systems without also allowing it to produce iambic bidirectional systems. This is the desired result.

3. Alternative approaches

We now turn briefly to two recent alternatives: Kager's (2001) Lapse Licensing approach and Alber's (2005) Asymmetrical Alignment approach. Both are based on the standard structural assumptions.

According to Kager (2001), internal lapse configurations of the type found in bidirectional systems always occur next to the primary stress, and it is this generalization that his Lapse Licensing approach is designed to capture. The simplest way to produce bidirectional patterns under the Lapse Licensing approach is to require that both edges of the prosodic word coincide with the edge of a foot. When this requirement is satisfied, regardless of whether footing is iambic or trochaic, odd-parity forms will contain an internal lapse configuration of the type found in bidirectional systems.

The particular position of the internal lapse within an odd-parity form is determined by the LAPSE-AT-PEAK constraint ("lapse must be adjacent to the primary stress") and the position of the head foot. The result is four different bidirectional patterns:

(14) a. $(\acute{\sigma}\underline{\sigma)\sigma}(\grave{\sigma}\sigma)(\grave{\sigma}\sigma)$ b. $(\sigma\grave{\sigma})(\sigma\grave{\sigma})\underline{\sigma(\sigma}\acute{\sigma})$
c. $(\grave{\sigma}\sigma)(\grave{\sigma}\underline{\sigma)\sigma}(\acute{\sigma}\sigma)$ d. $(\sigma\acute{\sigma})\underline{\sigma(\sigma}\grave{\sigma})(\sigma\grave{\sigma})$

If the head foot is the leftmost foot, as in the trochaic (14a) and the iambic (14d), LAPSE-AT-PEAK positions the lapse after the leftmost stress. If the head foot is the rightmost foot, as in the trochaic (14c) and the iambic (14b), LAPSE-AT-PEAK positions the lapse before the rightmost stress.

There are two problems with these predictions. First, Lapse Licensing incorrectly predicts the existence of iambic bidirectional systems, ignoring the observation that such systems are unattested. Second, the Lapse Licensing approach was designed to capture a claim that appears to be mistaken, resulting in the undergeneration of an attested pattern. The claim that internal lapses always occur next to a primary stress is contradicted by Indonesian, Norwegian, and Spanish, where lapse configurations regularly occur between secondary stresses. Since lapse can only be licensed next to a prominent position, such as a primary stress or the edge of a prosodic word, the Lapse Licensing approach cannot produce this pattern.

It is worth noting that the undergeneration of Indonesian, Norwegian, and Spanish presents a significant difficulty for McCarthy's (2003) Constraint Categoricality Hypothesis, which relies heavily on the success of Lapse Licensing to support the claim that the power of gradient Alignment is unnecessary for producing binary stress systems. For these languages, there seems to be no obvious

[8] The patterns in (13b-d) are unattested.

alternative to gradient Alignment, since it is necessary to establish the directional orientation of nonperipheral feet without the aid of an edge, peak, or other prominent position to license lapse.[9]

Alber's (2005) position on the bidirectional typology is somewhat more restrictive. Bidirectional systems, whether iambic or trochaic, must position head feet at the right edge of the prosodic word, and any feet remaining must be oriented towards the left edge. This means that the lapse that arises in odd-parity forms always occurs next to a primary stress near the right edge of the word.

The constraints most relevant for producing bidirectional systems in the Asymmetrical Alignment approach are ALLFEETL ("the left edge of every foot is aligned with the left edge of a prosodic word") and LEFTMOST/RIGHTMOST ("the left/right edge of every prosodic word coincides with the left/right edge of a head foot"). When RIGHTMOST positions the head foot at the right edge of the prosodic word, and ALLFEETL aligns the remaining feet towards the left, a lapse configuration precedes the rightmost stress in odd-parity forms. This results in the (15a) pattern with trochaic footing and the (15b) pattern with iambic footing.

(15) a. $(\grave{\sigma}\sigma)(\grave{\sigma}\underline{\sigma)\sigma}(\acute{\sigma}\sigma)$ b. $(\sigma\grave{\sigma})(\sigma\grave{\sigma})\underline{\sigma(\sigma}\acute{\sigma})$

Asymmetrical Alignment cannot, however, produce the mirror image bidirectional systems where an internal lapse follows the leftmost stress. Although the LEFTMOST constraint could anchor a head foot at the left edge of the prosodic word, given the absence of an ALLFEETR constraint, there is no way to isolate the head foot by aligning the remaining feet to the right.

Asymmetrical Alignment has undergeneration and overgeneration problems similar to those of the Lapse Licensing approach. The stress patterns of Spanish, Indonesian, and Norwegian are all counterexamples to the claim that the isolated foot is always the head foot. Since Asymmetrical Alignment has no mechanism for isolating nonhead feet, however, it cannot produce these languages. The same systems, plus Garawa, are also counterexamples to the claim that the isolated foot always occurs at the right edge of the prosodic word. Since it has no way to isolate a foot at the left edge, Asymmetrical Alignment cannot produce initial dactyls, regardless of the position of the primary stress. Finally, since it does not take into account the iambic-trochaic asymmetry characteristic of bidirectional systems, Asymmetrical Alignment incorrectly predicts the existence of an iambic bidirectional pattern.

4. Summary and conclusion

Although the set of bidirectional patterns is fairly small, it occupies an important position in current debates about the direction of metrical stress theory. Since the treatment of bidirectional systems provides one of the sharpest areas of contrast among recent proposals, they can give us a clearer indication of which direction to take. In this paper, I have argued that the correct characterization of the bidirectional typology is a characterization in terms of an iambic-trochaic asymmetry. Bidirectional systems are always trochaic; they are never iambic. Not only is this characterization consistent with the typology of actually attested bidirectional patterns, it is also consistent with the iambic-trochaic asymmetries found in the broader typology of basic binary patterns.

To predict the correct typology for bidirectional systems, I argued that INITIAL GRIDMARK and NONFINALITY are the only constraints that can introduce lapse in binary systems. Since the demands of initial stress and final stresslessness are incompatible with iambic footing in general, the proposal can introduce lapse in trochaic systems but not in iambic systems. For such an approach to work, however, it is necessary to adopt an appropriately restrictive framework where there are no alternative mechanisms for introducing lapse.

Finally, I briefly examined two alternative approaches, Lapse Licensing and Asymmetrical Alignment, which have similar problems of overgeneration and undergeneration. Both incorrectly predict the existence of iambic bidirectional patterns, and both incorrectly predict the nonexistence of an important trochaic bidirectional pattern – the initial dactyl pattern. The shortcomings of the Lapse Licensing approach in this area are especially significant. Since Lapse Licensing is a key component of

[9] Khalka Mongolian (Walker 1997), Buriat Mongolian (Walker 1997), and Banawá (Buller, Buller and Everett 1993, Everett 1996a,b) are additional examples of stress systems that cannot be handled under the Constraint Categoricality Hypothesis. See Hyde (2007) for a brief discussion.

recent arguments supporting the Constraint Categoricality Hypothesis, the difficulties encountered by the former seriously undermine the latter.

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