

UNDERAPPLICATION OF STRESS CLASH RESOLUTION: THE ROLE OF MORPHOLOGICALLY DERIVED ENVIRONMENTS*

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Morphological derivation has a profound effect on stress clash resolution in Muruwari. Muruwari is a quantity sensitive language that does not permit stress clash in most contexts. However, in three-syllable morphologically derived words with a heavy monosyllabic base (e.g. /maan+kuli/), stress clash occurs between the initial and penultimate syllables. This is the only context in the language where stress clash is permitted, resulting in an underapplication of stress clash resolution. It appears as though stress clash is permitted across the morpheme boundary, and thus the underapplication is the result of the morphologically derived environment. In order to account for this, a new constraint has been proposed: *CLASH[TAUTOMORPHEMIC].

1. Introduction

Muruwari is the nearly extinct language of the Muruwari, an Australian aboriginal tribe. According to Oates (1988:39), “stress is non-phonemic...but its position is governed by rules which are related to both phonological and morphological processes.” In most contexts, stress falls in a regular, predictable way. However, there are contexts in which stress falls in such a way as to appear opaque, such as the occurrence of stress clash in certain morphologically derived words.

Muruwari is a quantity sensitive language which bans stress clash in most contexts. In monomorphemic words and morphologically derived words¹ with a polysyllabic root, the heavy syllable is the only one that receives stress (e.g., (2), (3)). In morphologically derived words with heavy monosyllabic roots, stress falls on the heavy syllable and the following syllable, resulting in stress clash between the initial and penultimate syllables (e.g., (4)). As a result, we have a case of underapplication of stress clash resolution: stress clash should be resolved in this context as it is in the other derived context, and yet it is not.

In §2, I will present the stress facts of Muruwari which pertain to words with heavy syllables, in both morphologically derived and non-derived contexts. In §3, the preliminary constraints and hierarchy will be given to account for the stress clash resolution (and underapplication thereof). The application of these constraints and the hierarchy in the three contexts of interest here will be shown in §4, and finally in §5 the solution to account for the underapplication of stress clash resolution will be given with the final constraints and ranking. In order to account for this opaque stress clash resolution, a pre-existing constraint will need to be modified so as to permit stress clash in this specific context.

* I would like to thank Daniel Dinnsen and Ashley Farris-Trimble for all their help with this paper and the previous paper from which this was developed. Any faults are my own.

¹ For the purposes of this paper, I will be focusing on three-syllable words with one heavy syllable.

2. Stress facts

2.1 Non-morphologically derived contexts

Contexts without heavy syllables are presented here so as to give a more complete picture of the stress phenomena in Muruwari. To begin with, both primary and secondary stress occur in the language. In a non-derived word without heavy syllables, primary stress falls on the first syllable (e.g., (1a)). Secondary stress falls on the penultimate syllable in words containing four or more syllables (e.g., (1b, c)). If the word is comprised of three or fewer syllables, then secondary stress does not occur (e.g., (1a)). This can be seen in the examples below (stressed syllables are in bold for ease in reading):

(1) Non-morphologically derived words without heavy syllables

- | | | |
|----|---|------------------|
| a. | [(kút .ju)ru] | ‘waddy for emus’ |
| b. | [(ngú .rra)(wà.ra)] | ‘a flood’ |
| c. | [(ká .rra)ka(rràn .ti)] | ‘mirage’ |

The data here imply that degenerate feet are not favored in this language. If degenerate feet were permitted in Muruwari, the final syllable of (1a) would receive stress as well. However, since this is not the case, we must assume that feet must be parsed into binary units (hence, no degenerate feet).

The data here also imply that feet are trochaic (initial syllable has prominence); this needs to be the case in order for stress to fall on the initial and penultimate syllables in (1b). It appears from the data in (1c) as though stress lapse is permitted in this language, if we assume trochaic feet.

Muruwari is a quantity sensitive language, where stress falls on syllables containing long vowels, as seen in the following examples. It is important to note that coda consonants are not moraic²:

(2) Non-derived words with heavy syllables

- | | | |
|----|--------------------------|------------------|
| a. | [pa. láa] | ‘plain’ |
| b. | [tháa .ta] | ‘big’ |
| c. | [pu. rráa .ka] | ‘brolga’ |
| d. | [thi. náa .ni.pu] | ‘he is standing’ |

Examples (2a) and (2b) show that there is no extrametricality in this language, since stress falls on the final and initial syllables, respectively. It is more important to stress a heavy syllable than to parse every syllable, as seen in (2d) which has two unparsed syllables, the initial and final.

Example (2d) also indicates that stress clash is disfavored in this language. If stress clash were permitted, then the last two syllables would be parsed into their own foot, so as to

² Were coda consonants moraic, a word such as /yan+tipu/ would pattern in the same way as /maan+tipu/ with stress clash occurring across the morpheme boundary. We would also expect the monomorphemic word /kiyan/ to receive stress on the final syllable rather than the initial, as in (2a).

have as many syllables as possible parsed into a binary foot (e.g., thi(naa)(ni.pu)). Since this is not the case, we can comfortably state that stress clash is disfavored in this language.

2.2 Morphologically derived contexts

At this point, we may now turn our attention to the effect of morphological derivation on stress in this language. Here we are only focusing on those morphologically derived words with a heavy syllable in the base.

(3) Polysyllabic roots with a heavy syllable

- | | | |
|-------------------|-------------------------|---------------------|
| a. /kiiwa + ngka/ | [kíi .wang.ka] | ‘in the deep water’ |
| b. /thaata+ngku/ | [tháa .tang.ku] | ‘the big one’ |

(4) Monosyllabic root with a heavy syllable

- | | | |
|-----------------|------------------------|-----------------------|
| a. /maan+kuli/ | [máan .kù.li] | ‘we will take it’ |
| b. /puul+kunja/ | [púul .kù.nja] | ‘I will pull it down’ |

As we can see from just a quick glance, certain generalizations established from non-derived words do not hold up here. Those morphologically derived words with a heavy polysyllabic base behave in the same way as their non-derived counterparts, with stress falling only on the heavy syllable, with one last syllable remaining unparsed. Words with a monosyllabic heavy root, on the other hand, receive primary stress on the first syllable (the heavy syllable) and secondary stress on the second syllable. In this context, both feet are binary (the first under a moraic analysis, the second in syllabic) so degenerate feet are not an issue; however, the striking feature here is the presence of stress clash, which in all other contexts is not permitted in Muruwari.

The question here is why clash occurs when the root is monosyllabic but not when the root is polysyllabic. It seems that in Muruwari it is acceptable to have stress clash across a morpheme boundary but not tautomorphemically. Also, it is more important to parse every syllable into a bound foot than it is to prevent stress clash, so long it is not occurring tautomorphemically.

3. Preliminary constraints³ and hierarchy

We must now come up with a constraint hierarchy to account for the stress phenomena mentioned above.

First of all, the constraint WEIGHT TO STRESS PRINCIPLE is assumed to be high ranking as the language is quantity sensitive:

(5) WEIGHT TO STRESS PRINCIPLE: Heavy syllables are stressed

Another high ranking constraint is RHTYPE=T:

³ These constraints come from Kager (1999).

(6) RHTYPE=T: Feet have initial prominence

This constraint is necessarily high ranked, so that the word /thinaanipu/ receives stress on the antepenultimate syllable only, as in *thi(náa.ni)pu*. If this constraint were not highly ranked, stress would fall on the antepenultimate and ultimate syllables, as in *(thi.náa)(ni.pù)*.

As the focus of this problem is stress clash resolution, the constraint *CLASH obviously must play a role.

(7) *CLASH: No stressed syllables are adjacent

This constraint must be used alongside the constraints FTBIN and PARSE-SYL, as the language necessitates that syllables be parsed into binary feet.

(8) FT-BIN: Feet are binary under moraic or syllabic analysis

(9) PARSE-SYL: Syllables are parsed into feet

FTBIN must be ranked higher than PARSE-SYL as degenerate feet are disfavored in Muruwari. The interaction of these constraints will be seen in the next section.

4. Application of constraints and ranking

4.1 Non-morphologically derived contexts

To see the interaction of the proposed constraints, we look first at the tableau of /thinaanipu/:

(10) Tableau 1: /thinaanipu/

/thinaanipu/ 'he is standing'	WEIGHTTO- STRESS	RHTYPE=T	FT-BIN	*CLASH	PARSE- SYL
a. \curvearrowright thi(náa.ni)pu					**
b. (thi.náa)(ni.pù)		*!			
c. thi(náa)(ni.pu)				*!	*
d. (thi.naa)(ni.pu)	*!				
e. thi(náa.ni)(pù)			*!		*

Thus we can see that the current ranking correctly eliminates all candidates other than the attested output. For the sake of simplicity and space, the constraints WEIGHTTOSTRESS, FT-BIN and RHTYPE=T will be left out of future tableaux. For the purposes of this paper, the constraints *CLASH and PARSE-SYL are the most important; violations of the undominated constraints will be noted if necessary.

For the sake of consistency, this ranking must be applied to a three syllable monomorphemic word, as seen in the following tableau. The importance of PARSE-SYL is highlighted as it crucially eliminates candidate c., which violates it twice. Candidate b. violates *CLASH, as well as the higher ranked FTBIN.

(11) Tableau 2: /purraalka/

/purraalka/ ‘brolga’	*CLASH	PARSE-SYL
a. ☞ pu(rráal.ka)		*
b. (pú)(rràal.ka)	*!	
c. pu(rráal)ka		**!

4.2 Morphologically-derived contexts

Now that we have looked at non-derived contexts, that is to say monomorphemic words, we may now turn our attention to morphologically derived words. We will begin with those that contain polysyllabic roots, as they pattern with their monomorphemic counterparts. We will then take a closer look at those with monosyllabic roots, as it is in this context that we find the underapplication of stress class resolution.

4.2.1 Polysyllabic roots

As has been previously stated, morphologically derived words with polysyllabic roots follow the same stress pattern as their monomorphemic counterparts; that is to say, they receive stress on the heavy syllable and nowhere else in the word. We therefore assume that the previously established constraint hierarchy will provide the attested output as the winning candidate. This can be seen in Tableau 3:

(12) Tableau 3: /kiiwa + ngka/

/kiiwa + ngka/ ‘in the deep water’	*CLASH	PARSE-SYL
a. ☞ (kíi.wang)ka		*
b. (kíi)(wàng.ka)	*!	

Here we see that candidate b. is correctly eliminated by *CLASH, thus leaving candidate a., the attested output, as the winning candidate. Thus, the previously established constraint ranking provides us with the attested output as the winning candidate, as was assumed.

4.2.2 Monosyllabic roots

Morphologically derived words with monosyllabic roots do not behave in the same way as their polysyllabic counterparts. Rather than receive stress only on the heavy syllable, they receive stress on both the initial and penultimate syllables, thus resulting in stress clash. We see in the following tableau that the current constraint hierarchy fails to provide the attested output as the winning candidate:

(13) Tableau 4: /maan + kuli/

/maan + kuli/ 'we will take it'	*CLASH	PARSE-SYL
a. \rightarrow (máan.ku)li		*
b. \rightarrow (máan)(kù.li)	*!	

The winning candidate here has the same stress pattern as is found in morphologically derived words with polysyllabic roots. Candidate b. is the attested output, but it is eliminated by the high ranked constraint *CLASH. In order for it to be the winning candidate, PARSE-SYL would have to be ranked higher than *CLASH. In this way, PARSE-SYL would be able to eliminate candidate a.:

(14) Tableau 4: /maan + kuli/

/maan + kuli/ 'we will take it'	PARSE-SYL	*CLASH
a. (máan.ku)li	*!	
b. \rightarrow (máan)(kù.li)		*

Here we see that reranking the constraints provides us with the attested output as the winning candidate. We thus find ourselves with a ranking paradox. It should be noted that those constraints which have been left out of the preceding tableaux would not provide us with the correct winning candidate. Neither candidate violates any of the previously mentioned constraints.

We must ask ourselves, what is the crucial difference between these two contexts? Why is stress clash permitted in /maankuli/ but not in /kiiwangka/?

The answer is that stress clash is occurring across a morpheme boundary in /maankuli/, but tautomorphemically in /kiiwangka/. In the attested output for /maankuli/, the word is parsed into two binary feet, thus leaving no syllable unparsed. It appears as though the reason that stress clash is permitted in this context is that in all other ways it is harmonic and that the stress clash is occurring across a morpheme boundary rather than tautomorphemically. Therefore, it is the morphologically derived environment which is providing the context for the underapplication to occur.

5. Solution

5.1 Postulation of a new constraint

The simplest way to resolve this ranking paradox, this underapplication of stress clash resolution, is with an additional constraint. The problem in Tableau 3 is that the constraint *CLASH is too powerful to allow stress clash to occur across a morpheme boundary. Again, we cannot simply demote the constraint because stress clash needs to be prevented from occurring tautomorphemically. We thus need a high ranked constraint which would prevent stress clash from occurring tautomorphemically while at the same time allowing it to occur across a morpheme boundary.

I propose that the constraint *CLASH be exploded into a general constraint and a context specific constraint: *CLASH and *CLASH[TAUTOMORPHEMIC]:

(15) *CLASH: No stressed syllables are adjacent

(16) *CLASH[TAUTOMORPHEMIC]: No stressed syllables are adjacent within a morpheme

In this way, stress clash can be prevented tautomorphemically, but allowed across a morpheme boundary. *CLASH[TAUTOMORPHEMIC] will be ranked above PARSE-SYL, so as to prevent the incorrect candidate from winning in Tableau 2 (for example), effectively taking the place of *CLASH. *CLASH will need to be ranked below *CLASH[TAUTOMORPHEMIC] so that it may be effective. It will also need to be ranked below PARSE-SYL so as to achieve the attested output as the winning candidate in Tableau 4. Our final constraint hierarchy is: *CLASH[TAUTOMORPHEMIC] >> PARSE-SYL >> *CLASH. This can be seen in the following tableau:

(17) Tableau 5: /maan + kuli/ (revised)

/maan + kuli/ 'we will take it'	*CLASH[T]	PARSE-SYL	*CLASH
a. (máan.ku)li		*!	
b. ☞ (máan)(kù.li)			*

The importance of ranking PARSE-SYL above *CLASH is made clear here. Candidate a. is correctly eliminated by PARSE-SYL. Candidate b. is therefore the winning candidate despite its violation of *CLASH.

5.2 Application of the new constraint and hierarchy in other contexts

We must now go back and apply this new constraint and hierarchy to the previously discussed contexts, in order to support this solution.

5.2.1 Morphologically derived words with polysyllabic roots

As has been previously mentioned, stress clash must be prevented from occurring tautomorphemically in words like /kiiwangka/. The effectiveness of the new constraint in preventing this from occurring can be seen in Tableau 6:

(18) Tableau 6: /kiiwa + ngka/ (revised)

/kiiwa + ngka/ 'in the deep water'	*CLASH[T]	PARSE-SYL	*CLASH
a. ☞ (kíi.wang)ka		*	
b. (kíi)(wàng.ka)	*!		*

Candidate b. is correctly eliminated by the new constraint *CLASH[TAUTOMORPHEMIC], leaving candidate a. as the winning candidate. Therefore, this new constraint and resulting hierarchy holds up in this context.

5.2.2 Non-morphologically derived contexts

Finally, we must test our new constraint and hierarchy on monomorphemic contexts. This can be seen in Tableau 7:

(19) Tableau 7: /purraalka/ (revised)

/purraalka/ ‘brolga’	*CLASH[T]	PARSE-SYL	*CLASH
a. ☞ pu(rráal.ka)		*	
b. (pú)(rràal.ka)	*!		*
c. pu(rráal)ka		**!	

Once again we find that the attested output is the winning candidate. Candidate b. is eliminated by *CLASH[TAUTOMORPHEMIC]⁴, and candidate c. is eliminated by its double violation of PARSE-SYL. The new constraint and hierarchy correctly account for the stress phenomena in this context as well. Thus the proposed solution is able to account for the underapplication of stress clash resolution in the given contexts, while still eliminated stress clash in other contexts.

6. Conclusion

There is an apparent underapplication of stress clash resolution in Muruwari. Stress clash is prohibited in Muruwari, except in morphologically derived words with monosyllabic roots. It seems as though this underapplication is the result of the placement of the morpheme boundary. A derived word with a heavy monosyllabic base can be parsed into two binary feet, the first being binary by moraic analysis and the second by syllabic. In this way, it does not violate either the constraint FT-BIN or PARSE-SYL. These feet fall on either side of the morpheme boundary. Apparently, stress clash is permitted in this context due to it occurring over the morpheme boundary rather than tautomorphemically, as it would in a morphologically derived word with a polysyllabic root.

It seems to me that the reason for the appearance of stress clash in derived words with a monosyllabic heavy base, such as /maankuli/, is the need to mark the addition of the derivational morpheme in a prosodic manner. In derived words with polysyllabic heavy bases like /kiiwangka/, on the other hand, morphological derivation cannot be marked prosodically without violating either WEIGHT TO STRESS or FT-BIN. The violation of WEIGHT TO STRESS would arise if stress were to shift from the first syllable to the second, as occurs in derived words with polysyllabic light bases. The violation of FT-BIN would arise if the derivational morpheme were to receive stress as well. This need to indicate morphological derivation prosodically may explain other interesting stress facts in Muruwari not discussed here, such

⁴ Candidate b. also incurs a violation of the higher ranked constraint Ft-Bin which does not appear in these tableaux.

as the appearance of degenerate feet in derived words with monosyllabic light bases and the previously mentioned stress shift in derived words with polysyllabic light bases.

To account for this opaque stress clash resolution, a new constraint was proposed: *CLASH[TAUTOMORPHEMIC]. This high ranked constraint serves to prevent stress clash from occurring tautomorphemically, and the fact that the original *CLASH constraint is low ranked prevents it from crucially eliminating candidates which have stress clash occurring across a morpheme boundary.

References

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