# Noun Faithfulness and Word Stress in Tuyuca

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### 1. Introduction

Recent research within the Optimality Theory (OT) framework (Prince & Smolensky 1993; McCarthy & Prince 1993, 1995) has suggested that domain-specific, or positional, faithfulness constraints play an important role in the grammar (e.g., Alderete 1995; Beckman 1995, 1998; Lombardi 1996; McCarthy & Prince 1995; Padgett 1995). This paper proposes that among the salient domains that have specific faithfulness constraints is the lexical category noun. Suffix-dominance effects related to word stress in Tuyuca, a Tucanoan language spoken in Colombia and Brazil (Barnes 1996; Barnes & Takagi de Silzer 1976), are given a principled account under a noun-faithfulness analysis.

In Tuyuca, one stress is assigned to every prosodic word (PWd), which may contain a number of suffixes in addition to at least one stem. The general tendency is for stems, not suffixes, to receive word stress. However, monosyllabic nominalizers show dominant behavior when attached to a verb stem with final accent. In this configuration, it is the nominalizing suffix that receives the stress, not the verb stem.

The dominant behavior of monosyllabic nominalizers in Tuyuca is shown here to be a *noun-faithfulness effect*. The grammar of Tuyuca contains a noun-specific version of MAX(ACCENT), the constraint against deletion of input accents. When accent clash forces the deletion of an accent, the accent of the nominalizing suffix (of category N) is therefore retained at the expense of that of the stem (of category V). Tuyuca thus becomes another case motivating the inclusion of noun-faithfulness constraints in the grammar (see also Smith 1997ab).

This paper is structured as follows. Section 2 provides background discussion on domain-specific faithfulness in general and noun faithfulness in particular. Section 3 develops a noun-faithfulness-based analysis of Tuyuca stress assignment. Finally, Section 4 draws conclusions and considers implications of the analysis.

### 2. Noun faithfulness and domain-specific faithfulness

In a number of languages, nouns allow more phonological contrasts than other words. For example, in Spanish, nouns, but not verbs, contrast lexically for location of stress (Harris 1969). In Arabic, nouns can have more stem shapes than verbs (McCarthy & Prince 1990). In Tokyo Japanese, nouns contrast lexically for accent location; verbs and adjectives do not (McCawley 1968, Poser 1984, Smith 1997ab).

In OT, phonological contrasts that are restricted to a particular domain within a given language have been analyzed by means of domain-specific faithfulness (often called positional faithfulness; e.g., Beckman 1998). Domains that have been

proposed to have specific faithfulness constraints include the stressed syllable (Alderete 1995, Beckman 1998), the syllable onset (or perhaps all consonants which are [+release]; Lombardi 1996, Padgett 1995), the morphological root (McCarthy & Prince 1995), and the root-initial syllable (Beckman 1995, 1998). As Beckman (1998) demonstrates, it is only domains that are salient, in some phonological, phonetic, grammatical, or cognitive sense, that can have specific faithfulness constraints; only salient domains are observed to have special phonological privileges.

Beckman (1998) and most of the other references above account for domain-specific faithfulness effects as follows. The grammar of the language under consideration contains a markedness constraint (**M**) prohibiting a certain phonological contrast from appearing in surface forms. This markedness constraint outranks the general, context-free faithfulness constraint (**F**) that would have required the contrast to be maintained in surface forms throughout the language. However, the grammar also contains a high-ranking domain-specific faithfulness constraint (**DF**) that calls for the contrast to be maintained *within the particular domain in question*. Given this ranking, **DF** >> **M** >> **F**, the contrast does not in general appear in the language (because **M** >> **F**), but it does appear in the privileged domain (because **DF** >> **M**).

The approach taken here extends the notion of domain-specific faithfulness to nouns, accounting for the privileged phonological behavior of nouns in the same way as that of stressed syllables or morphological roots. Specifically, the proposal is that the grammar contains domain-specific faithfulness constraints for the category <u>noun</u>, or *noun-faithfulness constraints* (**NF**). Languages in which nouns license phonological contrasts not supported elsewhere in the language can then be shown to have the ranking **NF** >> **M** >> **F**, analogous to the ranking for other instances of domain-specific faithfulness.[1]

One interesting aspect of OT is that even a low-ranking constraint can play a role in the grammar. Constraints may be dominated, but they are not turned off. So in a context that renders dominating constraints inapplicable, a dominated constraint may become relevant, having what are called *emergent* effects (McCarthy & Prince 1994). Furthermore, constraints are assumed to be universal. Even in a language where a particular constraint is ranked too low to act on the language as a whole -- by affecting the inventory of phonemes or possible syllable or morpheme shapes, for example -- it is still present. Given the right phonological environment and the right ranking of other constraints, then, it is predicted that any constraint may show emergent effects in some language. In fact, finding emergent effects provides supporting evidence for the existence of a proposed constraint *as a constraint* and not as some factor outside the constraint hierarchy. Emergent effects make it possible to see that the constraint is present and yet is dominated.

Thus, if phonological privilege for nouns truly does come from noun-faithfulness constraints, then there should be languages with emergent noun-faithfulness effects. Languages that have high-ranking noun-faithfulness constraints in the canonical **NF** >> **M** >> **F** ranking do exist (Smith 1997ab); these are the languages with a phonological contrast that appears only in nouns. But are there any

languages in which a **NF** constraint has emergent effects despite being relatively inactive in the language as a whole?

The rest of this paper examines just such a case. Word stress in Tuyuca does not involve a canonical **NF** >> **M** >> **F** ranking; lexical words of all categories (noun, verb, adjective) can potentially have word stress on any position when spoken in isolation, so the nouns do not show a greater inventory of stress possibilities than the other categories. However, an apparent suffix-dominance effect, seen only with monosyllabic nominalizers, is best explained as resulting from the presence of a noun-faithfulness constraint in the grammar. Therefore, the suffix-dominance pattern in Tuyuca word stress is an emergent noun-faithfulness effect.

## 3. Word stress in Tuyuca

### 3.1 *Overview of word-stress assignment*

As described by Barnes (1996), Tuyuca assigns stress within the domain of the prosodic word (PWd). A PWd consists of at least one stem, followed optionally by one or more suffixes. Every PWd bears exactly one word stress, which is realized phonetically as a combination of intensity and high pitch. The location of the stress in a PWd$^2$ is determined by the underlying accents of its component morphemes.$^3$

Some stems always receive the word stress, no matter what suffix they combine with, as in (1a.i-ii). For these stems, the stress always falls on a particular mora (but for each such stem, the designated mora must be lexically specified). These stems are taken to have an underlying *accent* on the mora which surfaces with stress. Other stems receive (default, stem-final) stress when combined with certain suffixes (1b.ii), but not when combined with others (1b.i); these stems are *unaccented*. Similarly, the suffixes that never receive word stress (1a.ii, 1b.ii) are unaccented, while those that receive stress when combined with certain stems (1b.i) are accented.

(1)  a.  <u>Accented stem</u>: *h<u>o</u>o* 'plant.manioc'
       i.  *accented suffix:*    /h<u>o</u>o$_V$-w<u>i</u>$_{EV}$/    [hóowi]   'he plants manioc'
       ii. *unaccented suffix:*  /h<u>o</u>o$_V$-a$_{EV}$/    [hóoa]    'I plant manioc'

    b.  <u>Unaccented stem</u>: *hoo* 'submerge.oneself'
       i.  *accented suffix:*    /hoo$_V$-w<u>i</u>$_{EV}$/    [hoowí]   'he submerges himself'
       ii. *unaccented suffix:*  /hoo$_V$-a$_{EV}$/    [hoóa]    'I submerge myself'

    *Note: EV=evidential; <u>o</u>=accent; ó=stress*

Assuming the underlying representations shown in (1), the following generalizations can be made about word-stress placement (after Barnes 1996).

(2)  To determine which morpheme receives word stress:
       • Accented morphemes are preferred over unaccented morphemes.
       • If both morphemes are accented, or both are unaccented, stems are preferred over suffixes.

However, there is one configuration where the preference for stem stress is overridden: that in which a final-accent verb is combined with a monosyllabic nominalizer (3c). If a final-accent verb is combined with an ordinary accented suffix, the stress is on the stem, as expected (3a). If a verb with non-final accent is combined with a monosyllabic nomimalizer, again the stress is on the stem (3b). But as (3c) demonstrates, a monosyllabic nominalizer unexpectedly receives the stress when it combines with a final-accent verb. That is, monosyllabic nominalizers appear to *dominate* final-accent verbs for the purposes of stress assignment.

(3)  a.  /hoo̲$_V$ + wi̲$_{EV}$/   [hoówi]   'he submerges himself'      *stress on stem*
     b.  /ho̲o$_V$ + re̲$_{NOM}$/   [hóore]   'the planting of manioc'     *stress on stem*
     c.  /hoo̲$_V$ + re̲$_{NOM}$/   [hooré]   'the submerging of oneself'   *stress on suffix*

The following two sections present an analysis of stress assignment, accounting for both the general pattern (section 3.2) and the special case of final-accent verbs with monosyllabic nominalizers (section 3.3). But first, one more point must be considered: the relationship between accent and stress in Tuyuca.

This relationship can be viewed in two different ways. One possibility is to assume, as Barnes (1996) does, that stress is the automatic phonetic realization of every accent. Since a PWd in Tuyuca has only one stress, this view of accent and stress must say that all accents except one are deleted from every output PWd.

The second possibility, which is the one chosen here, is to separate accent more completely from stress. Under this view, *accent* (indicated with an underline: o̲) is lexically specified information that marks a location as eligible for stress. *Stress* (indicated with an acute diacritic: ó) is a property of output forms, realized in Tuyuca as a combination of intensity and high pitch.

Constraints in the grammar regulate the behavior of accent and stress and the relationship between them. Several such constraints are important in the analysis developed below:  MAX(ACCENT) requires input accents to have corresponding output accents (on MAX constraints and Correspondence Theory, see McCarthy & Prince 1995). NOSHIFT is a faithfulness constraint compelling an accent to surface in the place where it is underlyingly associated. Finally, STR-TO-ACC requires that accents are realized as stress and that stress appears only where there is an accent; this constraint[4] is loosely analogous to the Weight-to-Stress principle (Prince 1990) or constraint (Prince & Smolensky 1993).

Note that these constraints, being violable, are not necessarily surface-true. Crucial to the analysis below (see especially the treatment of accent clash in section 3.3) is the following result. If we allow STR-TO-ACC to be dominated in Tuyuca, and thus sometimes violated in optimal forms, then some PWds will have multiple *accents* in their output forms -- even though other constraints ensure that there is only ever one *stress*. This result, which has important consequences (see section 3.3), is not possible to derive in a theory where stress is taken to be the automatic phonetic realization of every accent that persists in a surface form.

## 3.2 *A constraint-based analysis of word-stress assignment*

This section develops an analysis of the general stress-assignment pattern in Tuyuca.

As noted above, every PWd in Tuyuca has one and only one stress. This fact can be accounted for by the constraints in (4), ranked as in (5).

(4)　HEADEDNESS　　　　Every PWd has a head (=stress)
　　　*STRESS　　　　　　Have no stresses in the output
　　　STRESS-TO-ACCENT　Every accent is realized as a stress, and every stress is
　　　　　　　　　　　　　　on an accent

(5)　*Ranking*:　HEADEDNESS >> *STRESS >> STR-TO-ACC

The constraint HEADEDNESS (Selkirk 1995) captures the requirement that prosodic constituents be headed (Selkirk 1981). Because every PWd in Tuyuca does indeed have an output stress, even when it has no input accent, we know that HEADEDNESS is undominated. The constraint *STRESS is a member of the *STRUCTURE family (Prince & Smolensky 1993), ruling out excess structure in the output. Although high-ranked HEADEDNESS forces *STRESS to be violated once in every output form, there is nothing that requires more than one violation. Thus, *STRESS enforces the maximum of one stress per PWd, even when this means that STR-TO-ACC is violated because some accents appear in the output without stress.

In (6), the input has no accents. HEADEDNESS ensures that the output PWd has a stress, even though this leads to violation of both *STRESS and STR-TO-ACC. (Concerning the location of this default stress, see below.)

(6)　/hoo+a/  'submerge.oneself-EV'　HEADEDNESS >> *STRESS >> STR-TO-ACC

| | HEADEDNESS | *STRESS | STR-TO-ACC |
|---|---|---|---|
| a. hooa | *! | | |
| ☞ b. hoóa | | * | * |

In (7), the input has more than one accent. Here, the constraint *STRESS becomes relevant, ensuring that the output has no more than one stress.

(7)　/hoo+wi/  'plant.manioc-EV'　HEADEDNESS >> *STRESS >> STR-TO-ACC

| | HEADEDNESS | *STRESS | STR-TO-ACC |
|---|---|---|---|
| a. hóowí | | **! | |
| ☞ b. hóowi | | * | * |

The next constraint accounts for the fact that, all else being equal, stems have priority over suffixes for stress. (For recent discussion of related phenomena in a number of languages, see Alderete (in prep.).)

(8)　STEMSTRESS　　　　Every stem has a stress

When both the stem and the suffix have accents, as in (9), STEMSTRESS ensures that it is the stem accent, and not the suffix accent, that receives the stress.

(9)  /ho͟o+wi͟/ 'plant.manioc-EV'  [ *STRESS  >>  STR-TO-ACC ] , STEMSTRESS

|  |  | *STRESS >> | STR-TO-ACC | STEMSTRESS |
|---|---|---|---|---|
|  | a. hó͟o\|wí͟ | **! |  |  |
| ☞ | b. hó͟o\|wi͟ | * | * |  |
|  | c. ho͟o\|wí͟ | * | * | *! |

Similarly, when neither the stem nor the suffix have accents, as in (10), STEMSTRESS causes the default stress to be inserted into the stem, not into the suffix.

(10)  /hoo+a/ 'submerge.oneself-EV'  [ HEADEDNESS >> STR-TO-ACC ] , STEMSTRESS

|  |  | HEADEDNESS | STR-TO-ACC | STEMSTRESS |
|---|---|---|---|---|
|  | a. hoo\|a | *(!) |  | *(!) |
|  | b. hoo\|á |  | * | *! |
| ☞ | c. hoó\|a |  | * |  |

The preceding tableau raises a question: given that the stress will be inserted into the stem when there are no accented morphemes, what ensures that the stress falls on the stem-final mora and not some other mora in the stem? The selection of the stem-final mora for default stress can be analyzed as an Alignment effect (McCarthy & Prince 1993).

(11)  ALIGN-STRESS-R      Every stress is aligned with the right edge of a PWd

However, ALIGN-STRESS-R is crucially dominated by STEMSTRESS; default stress stays within the stem rather than going to the rightmost mora of the PWd.

(12)  *Ranking*:  STEMSTRESS >> ALIGN-STRESS-R

(13)  /hoo+a/      'submerge.oneself-EV'      STEMSTRESS  >>  ALIGN-STRESS-R

|  |  | STEMSTRESS | ALIGN-STRESS-R |
|---|---|---|---|
|  | a. [hóo\|a]_PWd |  | μμ! |
| ☞ | b. [hoó\|a]_PWd |  | μ |
|  | c. [hoo\|á]_PWd | *! |  |

Furthermore, ALIGN-STRESS-R is also dominated by STR-TO-ACC; it is better for the stress to fall on an accented mora than for it to fall at the right edge of a stem.

(14)  *Ranking*:  STR-TO-ACC >> ALIGN-STRESS-R

(15)  /ho͟o/ 'plant.manioc' HEADEDNESS >> *STRESS >> STR-TO-ACC >> ALIGN-STR-R

|  |  | HEADEDNESS | *STRESS | STR-TO-ACC | ALIGN-STR-R |
|---|---|---|---|---|---|
| ☞ | a. hó͟o\| |  | * |  | μ |
|  | b. ho͟ó\| |  | * | *!* |  |

A final basic fact about word-stress assignment in Tuyuca is that stress prefers an accented suffix to an unaccented stem. This fact supports the ranking given in (16), which is exemplified in (17).

(16)    *Ranking*:    STR-TO-ACC >> STEMSTRESS

(17)    /hoo+wi/  'submerge.oneself-NOM'    STR-TO-ACC >> STEMSTR >> ALIGN-STR-R

| | | | | |
|---|---|---|---|---|
| ☞ | a.  hoo\|wí | | * | |
| | b.  hoó\|wi | *! | | μ |

To summarize, the constraint ranking motivated in this section is as follows.

(18)    HEADEDNESS >> *STRESS >> STR-TO-ACC >> STEMSTRESS >> ALIGN-STR-R

With this ranking, every PWd has one (HEADEDNESS >> *STRESS) and only one (*STRESS >> STR-TO-ACC) stress. Accented morphemes are preferred over unaccented morphemes for stress, but when all else is equal the stem is stressed (STR-TO-ACC >> STEMSTRESS). Finally, default stress appears on the stem-final mora (STEMSTRESS >> ALIGN-STR-R).


3.3 *The special case: Final-accent verbs and monosyllabic nominalizers*

The analysis as developed so far accounts for the general facts about word-stress assignment in Tuyuca, but it does not explain the apparent dominance of monosyllabic nominalizers over final-accent verbs. In this section, the dominance pattern is shown to be the result of an emergent noun-faithfulness constraint.

As shown in (19a), the final-accent verb /hoo/ behaves as expected when combined with most accented suffixes; the stress falls on the stem accent. But when the same verb is combined with a monosyllabic nominalizer, as in (19b), the stress unexpectedly falls on the suffix accent.

(19)    a.  With a typical accented suffix        /hoo+wi/  *hoówi*  'he cut slashes'
        b.  With a monosyllabic nominalizer  /hoo+re/  *hooré*  'the cutting of slashes'

Descriptively, in order for a stem accent to be dominated by a suffix accent in Tuyuca, the following conditions must be met. The verb accent must be on the final mora. Also, the suffix must be one of the monosyllabic nominalizers (which are all accented). So suffix accents are dominant only in a configuration such as *hoo*ᵥ+*re*ₙ.
    There are two points to note about this configuration. First, the two accents are on adjacent moras, so this is a case of accent clash. Second, the accent that loses belongs to the stem, which is a verb, while the accent that wins belongs to the nominalizing suffix, which is arguably a noun. That is, the domination of final-accent

verbs by monosyllabic nominalizers is actually clash resolution in favor of a noun rather than a verb. This is therefore a *noun-faithfulness effect*, brought about by the presence of a noun-specific faithfulness constraint against accent deletion.

The constraints needed to account for this phenomenon are as follows:

(20)  NOCLASH         Accents on adjacent moras are prohibited (cf. Prince 1983)
      MAX(ACCENT)   An accent in the input must have an output correspondent
                    (No deletion of accents)
      MAX(ACCENT)$_N$ An accent in the input *that belongs to a noun* must have an
                    output correspondent (No deletion of accents, *in nouns*)

NOCLASH must dominate MAX(ACCENT), because accents are deleted (violating MAX) in order to avoid an accent-clash configuration.

(21)  *Ranking*:  NOCLASH >> MAX(ACCENT)

The tableau in (22) exemplifies a case in which a final-accent verb is combined with an ordinary accented (monosyllabic) suffix. This is a clash configuration; because of NOCLASH, one accent must delete to resolve the clash. STEMSTRESS ensures that it is the stem accent that remains, so that the stress will fall within the stem.

(22)  /hoo$_V$+wi$_{Af}$/ 'cut.slashes-EV'  [ NOCLASH >> MAX(ACC) ] , STEMSTRESS

|   |     | NOCLASH | MAX(ACC) | STEMSTRESS |
|---|-----|---------|----------|------------|
|   | a. hoó\|wi | *! | | |
|   | b. hoo\|wí | *! | | * |
| ☞ | c. hoó\|wi | | * | |
|   | d. hoo\|wí | | * | *! |

However, when a final-accent verb is combined with a (monosyllabic) nominalizer, the clash is resolved in the other direction: the suffix accent is the one that remains to receive the stress. This fact motivates the ranking in (23). (Note that there is no evidence to determine how MAX(ACC) and MAX(ACC)$_N$ are ranked with respect to one another.)

(23)  *Ranking*:   [ MAX(ACC)$_N$, NOCLASH ] >> STEMSTRESS

Both MAX(ACC)$_N$ and NOCLASH dominate STEMSTRESS, so preserving the noun accent and avoiding clash are both more important than having the stress in the stem.

(24)  /hoo$_V$+re$_N$/  'cut.slashes-NOM'        *Note*: MAX(ACC)$_N$, MAX(ACC) *unranked*
          [ MAX(ACC)$_N$ , NOCLASH ] >> [ STEMSTR , MAX(ACC) ]

|   |     | MAX(ACC)$_N$ | NOCLASH | STEMSTR | MAX(ACC) |
|---|-----|--------------|---------|---------|----------|
|   | a. hoó\|re | | *! | | |
|   | b. hoo\|ré | | *! | * | |
|   | c. hoó\|re | *! | | | * |
| ☞ | d. hoo\|ré | | | * | * |

Adding the MAX constraints and NOCLASH to the hierarchy makes no difference for non-final-accent verbs. With these verbs, accent clash never arises, so there is no need to delete any of the accents. As usual, STEMSTRESS ensures that the stem accent, not the suffix accent, receives the stress.

(25) /hoo<sub>V</sub>+re<sub>N</sub>/ 'plant.manioc-NOM' [MAX(ACC)<sub>N</sub>, NOCLSH] >> [STMSTR, MAX(ACC)]

| | | MAX(ACC)<sub>N</sub> | NOCLSH | STMSTR | MAX(ACC) |
|---|---|---|---|---|---|
| ☞ | a. hóore | | | | |
| | b. hooré | | | *! | |
| | c. hóore | *! | | | * |
| | d. hooré | | | *(!) | *(!) |

So far, this discussion has considered only nominalizers that are monosyllabic, because polysyllabic nominalizers do not show dominant behavior over final-accent verbs. In fact, as long as NOSHIFT (26) is ranked low in the hierarchy, the lack of dominance effects for polysyllabic nominalizers is actually predicted by this analysis.

(26)    NOSHIFT        If accent $\alpha 1$ and mora $\mu 1$ are associated in the input, then their correspondents $\alpha 2$ and $\mu 2$ are associated in the output (Accents do not change location)

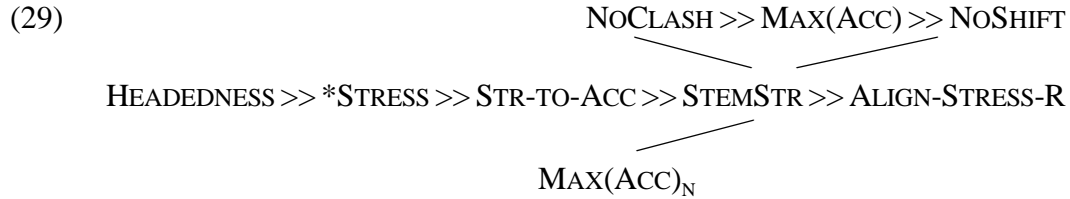(27)    *Ranking*:    [ MAX(ACC) , STEMSTRESS ] >> NOSHIFT

With this ranking, it is better to shift the suffix accent to another mora than to delete it or have the stress fall outside the stem.[5]

(28)    /hoo<sub>V</sub>+adara<sub>N</sub>/  'cut.slashes-NOM.ANIM.PL.FUT'        *(constructed example)*
        [ MAX(ACC)<sub>N</sub>, NOCLSH ] >> [ STMSTR , MAX(ACC) ] >> NOSHIFT

| | | MAX(ACC)<sub>N</sub> | NOCLSH | STMSTR | MAX(ACC) | NOSHIFT |
|---|---|---|---|---|---|---|
| | a. hoóadara | | *! | | | |
| | b. hooádara | | *! | * | | |
| | c. hoóadara | *(!) | | | *(!) | |
| | d. hooádara | | | *(!) | *(!) | |
| ☞ | e. hoóadara | | | | | * |

Crucially, shifting the accent is an option for the polysyllabic nominalizers, but not for the monosyllabic (or, more properly, monomoraic) ones, because they have no other mora for the accent to shift to. Therefore, clash becomes a problem -- and suffix dominance effects are observed -- only with monosyllabic nominalizers.

This concludes the analysis of word-stress assignment in Tuyuca. For reference, the constraint ranking from (18) is repeated in (29), with the addition of the constraints motivated in the section just concluded. (The symbols '>>' and '→' both indicate constraint domination.)

(29) $\qquad$ NOCLASH ≫ MAX(ACC) ≫ NOSHIFT

HEADEDNESS ≫ *STRESS ≫ STR-TO-ACC ≫ STEMSTR ≫ ALIGN-STRESS-R

MAX(ACC)$_N$

## 4. Concluding remarks

Generally in Tuyuca, stems have priority over suffixes for stress. However, the configuration in which a monosyllabic nominalizer is combined with a final-accent verb is an exception to this generalization. This paper has shown that the apparent suffix dominance seen in monosyllabic nominalizers is a noun-faithfulness effect: when accent clash forces deletion, the verb accent deletes, not the suffix (noun) accent.

This analysis has a number of favorable points. For one thing, no special mechanism is needed to account for the suffix-dominance effects; they are shown to be noun-faithfulness effects, which are independently observed in other languages. Furthermore, in reducing the suffix-dominance effects to the interaction of a noun-faithfulness constraint with accent clash, this analysis explains a number of details about the particular configuration necessary for suffix dominance to occur that would otherwise have to be individually stipulated: why all dominant suffixes are nominalizers, why only the monosyllabic nominalizers are in fact dominant, and why only the verbs with final accent are dominated.

Furthermore, this analysis, which is internally well-motivated for Tuyuca, also contributes an important case for the cross-linguistic study of noun-faithfulness effects: word stress in Tuyuca provides an example of *emergent noun faithfulness*. Nouns in Tuyuca do not in general have greater phonological privileges than other words. However, under pressure from high-ranking NOCLASH, faithfulness to input accents is preserved in nouns at the expense of words of other categories.

## Endnotes

[1] As noted above, Beckman (1998) argues that only domains that are salient can have specific faithfulness constraints. Indeed, evidence from language processing and language acquisition suggests that nouns are more cognitively salient than words of other lexical categories. For example, nouns seem to be more easily retained in memory, more readily accessible, and acquired earlier and in greater numbers than other words (Gentner 1982, Goldin-Meadow et al. 1976, Huttenlocher & Lui 1979).

[2]According to Barnes (1996:46 ff.), the word stress is confined to the first two morphemes of a PWd (except for certain highly restricted cases involving nominal classifiers, when the stress may fall on the third morpheme). This fact suggests that Tuyuca has a recursive PWd structure for multiply suffixed words, such as

[$_{PWd}$ [$_{PWd}$ *stem + suffix* ] + *suffix* ]. If stress were to fall on the second suffix in such a structure, the innermost PWd would be left with no stress.

[3]The underlying representations assumed here follow those motivated by Barnes (1996), with one important exception.  Barnes divides the accented morphemes into those with  "associated" (linked) and those with "unassociated" (floating) accent, but in this paper all accented morphemes are taken to have lexically linked accents.  As a result, the analysis given here differs considerably from that in Barnes (1996).  For a detailed comparison of the two approaches, see Smith (1997b).

[4]More properly, there are two distinct constraints, one requiring that every accent be associated with a stress, and one requiring that stress appear only where there is an accent. But in this discussion there is no need to rank the two constraints separately, so for ease of exposition the name STR-TO-ACC is used to encapsulate the two.

[5]Shifting the accent to avoid clash occurs only within suffixes, never within stems. This is another example of domain-specific faithfulness.  Although the context-free NOSHIFT is low ranking, the root-specific faithfulness constraint NOSHIFT$_{Root}$ is undominated in Tuyuca.  Note that the noun-verb distinction and the root-affix distinction partition the lexicon differently.  While the nominalizing suffixes are nouns, and are therefore subject to noun-faithfulness constraints, they are *not* roots, so they are not subject to root-specific faithfulness constraints.  (On root-specific faithfulness constraints, see McCarthy & Prince (1995), Beckman (1998).)

**References**

Alderete, John (1995). "Faithfulness to prosodic heads."  To appear in B. Hermans & M. van Oostendorp, eds., *The Derivational Residue*. Amsterdam: John Benjamins.

Alderete, John (in prep.). *Morphologically Governed Stress in Optimality Theory*. PhD dissertation, University of Massachusetts, Amherst.

Barnes, Janet (1996). "Autosegments with three-way lexical contrasts in Tuyuca." *International Journal of American Linguistics* 62, 1:31-58.

Barnes, Janet and Sheryl Takagi (de Silzer) (1976). "Fonología del tuyuca." *Sistemas fonológicos de idiomas colombianos*, tomo III. (Bogotá):  Ministerio de Gobierno.

Beckman, Jill N. (1995). "Shona height harmony: Markedness and positional identity."  In Beckman, Dickey, and Urbanczyk, eds., 53-75.

Beckman, Jill N. (1998). *Positional Faithfulness*. PhD dissertation, University of Massachusetts, Amherst.

Beckman, Jill N., Laura Walsh Dickey, and Suzanne Urbanczyk, eds. (1995). *University of Massachusetts Occasional Papers in Linguistics 18:  Papers in Optimality Theory*. Amherst: GLSA.

Gentner, Dedre (1982). "Why nouns are learned before verbs: Linguistic Relativity versus Natural Partitioning." In S. Kuczaj, II, ed., *Language Development*. Hillsdale, NJ: Erlbaum.

Goldin-Meadow, Susan, Martin E. P. Seligman, and Rochel Gelman (1976). "Language in the two-year old." *Cognition* 4:189-202.

Halle, Morris, and Jean-Roger Vergnaud (1987). "Stress and the cycle." *Linguistic Inquiry* 18:45-84.

Harris, James W. (1969). *Spanish Phonology*. Cambridge, MA: MIT Press.

Huttenlocher, Janellen, and Felicia Lui (1979). "The semantic organization of some simple nouns and verbs." *Journal of Verbal Learning and Verbal Behavior* 18:141-162.

Lombardi, Linda (1996). "Positional faithfulness and the phonology of voicing in Optimality Theory." Ms., University of Maryland, College Park.

McCarthy, John, and Alan Prince (1990). "Prosodic morphology and templatic morphology." In M. Eid and J. McCarthy, eds., *Perspectives in Arabic Linguistics II*. Amsterdam/Philadelphia: John Benjamins.

McCarthy, John, and Alan Prince (1993). "Generalized alignment." Ms., University of Massachusetts, Amherst and Rutgers University.

McCarthy, John, and Alan Prince (1994). "The emergence of the unmarked: Optimality in Prosodic Morphology." *NELS 24*, vol. 2, 333-379.

McCarthy, John, and Alan Prince (1995). "Faithfulness and reduplicative identity." In Beckman, Dickey, and Urbanczyk, eds., 249-384.

Padgett, Jaye (1995). "Partial class behavior and nasal place assimilation." *Proceedings of the Arizona Phonology Conference: Workshop on Features in Optimality Theory*. Coyote Working Papers in Linguistics, University of Arizona.

Prince, Alan (1983). "Relating to the grid." *Linguistic Inquiry* 14:19-100.

Prince, Alan (1990). "Quantitative consequences of rhythmic organization." *CLS 26*, vol. 2, 355-398.

Prince, Alan, and Paul Smolensky (1993). *Optimality Theory: Constraint Interaction in Generative Grammar*. Ms., Rutgers University and University of Colorado, Boulder.

Selkirk, Elisabeth O. (1981). "On prosodic structure and its relation to syntactic structure." In T. Fretheim, ed., *Nordic Prosody II*. Trondheim: Tapir.

Selkirk, Elisabeth O. (1995). "The prosodic structure of function words." In Beckman, Dickey, and Urbanczyk, eds., 439-469.

Smith, Jennifer L. (1997a). "Noun faithfulness: Evidence from accent in Japanese dialects." To appear in *Japanese/Korean Linguistics 7*. Stanford: CSLI.

Smith, Jennifer L. (1997b). "Noun faithfulness: On the privileged behavior of nouns in phonology." Ms., University of Massachusetts, Amherst [ROA #242].

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