Intra-Representational Correspondence and Truncation

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1 Introduction

Segmental loss between related forms (inputs and outputs, outputs and derived outputs, etc.) can be motivated either by surface markedness conditions or purely by morphology. It is this latter type of *morphological truncation*, or simply *truncation*, that I am concerned with in this paper. Many languages have truncation processes:

(1) a. English hypocoristics

rɪtʃərd rɪtʃ 'Richard~Rich'

suzən su 'Susan~Sue'

b. Deverbalized infinitives in Icelandic (Benua 1995)

grenjɑ > grenj 'crying'

klifrɑ > klifr 'climbing'

c. Yapese vocatives (Jensen 1977)

luʔɑg luʔ 'Luag'

mɑŋɛːfɛːl' mɑŋ 'Mangefel' '

Benua (1995, 1998) motivates the segmental loss found in truncation via emergence of an unmarked prosodic structure, as has been done with reduplication (McCarthy and Prince 1994). Working within Optimality Theory (Prince and Smolensky 1993), she provides an analysis in

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which truncated forms are subject to constraints on prosodic size that non-truncated forms are not. Her analysis utilizes constraints from an expansion of correspondence theory (McCarthy and Prince 1995) that allows correspondence between a base and words derived from it, so-called *output-output correspondence*. In particular, the truncated form (the *truncatum*) is taken to be derived from a base, and is related to it through *base-truncatum correspondence*.

In section 2, I detail Benua's emergence of the unmarked analysis and two problems that arise from it. In section 3, I outline an alternative analysis of truncation that expands the type of faithfulness seen in reduplication (namely, intra-representational correspondence, in which substrings of the same output stand in correspondence with each other). In section 4, I apply IRC to French hypocoristics, which utilize truncation, as well as reduplication and metathesis. Finally, I return to Icelandic deverbalization in section 5 and present a possible solution to the problem it presents.

2 Benua's Analysis of Truncation in Optimality Theory

2.1 Emergence of the Unmarked Prosodic Structure

When some marked structure that appears in one domain D_1 is barred from another domain D_2, the unmarked structure emerges in D_2. This is called *emergence of the unmarked* and is characterized in Optimality Theory through the following constraint ranking schema:

(2) faithfulness in D_1 » markedness » faithfulness in D_2

For Benua, D_1 is the input-output (IO) dimension of faithfulness, while D_2 is the base-truncatum (BT) dimension, a specific instance of the output-output (OO) dimension. The markedness conditions she uses to drive truncation are prosodic size limitations. Thus, Benua's ranking schema for truncation is:

(3) IO-faith » prosodic limits » BT-faith

In particular, since segmental loss is the result of satisfying the prosodic limits, the crucial faithfulness constraints belong to the MAX family:

(4) **MAX-IO**

Every segment in the input must have a correspondent in the output.

MAX-BT

Every segment in the base must have a correspondent in the truncatum.

The prosodic markedness constraint will vary from language to language, depending on the size of the truncatum. For Japanese, which has foot-sized truncata, Benua utilizes the alignment constraint ALLFOOTLEFT:

(5) **ALLFOOTLEFT** ≡ ALIGN-(Foot,Left,PrWd,Left)

The left edge of every foot must be aligned to the left edge of a prosodic word.

With high-ranking MAX-IO, base forms are not subject to the prosodic limitations, so there is no deletion in the IO dimension:[1]

(6) 'Kazuhiko'

	/kɑzuhiko/	MAX-IO	ALLFOOTLEFT	MAX-BT
✓	a. (kɑzu)(hiko)		*	
	b. (kɑzu)	hiko!		

The key to using emergence of the unmarked effects as the impetus for the segmental deletion in truncation relies on Benua's assertion that truncation does not involve IO faithfulness. That is, there is simply no correspondence between the input and the truncatum, so constraints such as MAX-IO are effectively ignored. The unmarked prosodic structure can then emerge in truncation, if MAX-BT is ranked lower than the prosodic limitations:

(7) 'Kazu', BASE: *kazuhiko*

/kɑzuhiko+τ/[2]	MAX-IO	ALLFOOTLEFT	MAX-BT
✓ a. (kɑzu)(hiko)		*!	
b. (kɑzu)			hiko

While Benua's analysis is elegant, there are at least two serious problems that seem to have no resolution in her theory. The first is an empirical problem from Icelandic, which requires the MAX-BT to be ranked over MAX-IO, the opposite ranking required to get emergence of the unmarked prosodic structure for a focused discussion on subtractive morphology). The second problem is a deeper theoretical problem with the lack of IO correspondence in truncation. I discuss each in turn in the rest of this section.

2.2 Icelandic

In non-truncated words in Icelandic, word-final C*j* clusters are simplified by loss of the glide [j]. This restriction on codas is formalized as the constraint SONCON:

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[1] Only binary feet are allowed (high-ranking FOOT BINARITY), and syllables must be parsed into feet (high-ranking PARSE-σ). Thus, candidates like *(kazuhiko)* and *(kazu)hiko* will be ruled out.

[2] I use the symbol /τ/ to represent the morpheme which induces truncation. The linear concatenation of morphemes in the input is merely a typographic convention and does not represent any assumed morphological structure of the input other than combination of separate meaningful morphemes.

(8) **<u>SONCON</u>**

Codas must rise in sonority.

Since deletion is used to resolve violations of SONCON, MAX-IO must be low-ranking:[3]

(9) ‘snowstorm’

/bylj/	SONCON	MAX-IO
✓ a. byl		j
b. bylj	*!	

But Icelandic also has a process of truncation which deverbalizes infinitives. If a word-final C*j* would result from this truncation, it is allowed to remain and does not undergo further deletion. Thus, MAX-BT must be ranked over SONCON:

(10) ‘crying’, BASE: *grenja*

/grenjɑ+τ/	MAX-BT	SONCON
✓ a. grenj	ɑ	j
b. gren	jɑ!	

This means that the emergence of the unmarked ranking used to motivate truncation in Japanese cannot be used in Icelandic, as the reverse ranking holds:

[3] The entire analysis of Icelandic is not given here. In particular, I ignore candidates involving epenthesis, and I gloss over the specifics of SONCON.

(11) MAX-BT » SONCON » MAX-IO

Indeed, the candidate **grenja* showing no segmental loss is predicted incorrectly to be the output by Benua's analysis, since it violates none of the relevant constraints:

(12) 'crying', BASE: *grenja*

/grenjɑ+τ/	MAX-BT	SONCON	MAX-IO
✓ a. grenj	ɑ!	j	ɑ
b. gren	jɑ!		jɑ
✗ c. grenjɑ			

In general, any language which resolves some sort of markedness through deletion, except in truncated forms, will encounter this same problem. Benua does not provide any formal way to resolve this ranking paradox. She states that, in order to satisfy the requirements of truncation, *some* segmental loss must occur, so candidates with no missing segments are not considered. Exactly how these candidates are ruled out in not explicated.

Encoding "at least one segment must be lost" directly into the truncation morpheme is an unappealing option for a variety of reasons. Such encoding is very much input-dependent, rather than constraint-dependent, a step backwards for Optimality Theory, which prefers to encode phonological processes in the constraint hierarchy. In addition, there is no principled reason why the truncation morpheme should be encoded for segmental loss (as opposed to epenthesis, metathesis, etc.), or why it should be encoded to accept loss of a single segment (as opposed to two segments, a syllable, etc.). These problems point to the fact that such encoding in the morphemes is rule-like in power, taking one form and changing it in a specific, unmotivated, way. Ideally, an analysis of truncation which fully conforms to Optimality Theory would move as much of the explanation from the morphemes and into candidates and the constraint hierarchy.

2.3 Theoretical Problems

In Benua's model of truncation, there is no IO correspondence relation between the truncatum and the input, thus constraints like MAX-IO, FAITH-IO, etc., are ignored in the presence of truncation. Instead, Benua claims that truncation is a purely transderivational process. That is, faithfulness only exists between a base form and a form derived from it. However, other derivational processes besides truncation certainly seem to require access to the input. In English, certain clusters are prohibited word-finally (**da*[mn], **bo*[mb], **you*[ŋg]), but can appear word-medially in derived forms (*da*[mn]*ation*, *bo*[mb]*adier*, *you*[ŋg]*er*). That truncation is singled out as having a different set of correspondence relations than other morphological processes is troubling. A more stream-lined theory would allow all morphemes to have access to the same dimensions of faithfulness.

On occasion, truncation even seems to be more faithful to the input than the base is. In the following English hypocoristics, the schwa of the base name corresponds to different full vowels in the hypocoristic forms:

(13) *N*[ə]*thaniel*~*N*[e]*than* *J*[ə]*rome*~*J*[ɛ]*rry*

[ə]*lijah*~[i]*li* *Le*[ə]*nardo*~*Le*[o]

Christ[ə]*pher*~*Christ*[ɑ]*ph* *P*[ə]*tricia*~*P*[æ]*t*

Since this alternation is unpredictable, the quality of the vowel must be underlying. Yet in Benua's analysis, the truncatum cannot access the vowel quality, as IO correspondence does not exist for truncation. At minimum then, Benua's analysis would have to be modified to allow for featural identity in the IO dimension to be available. Yet this further weakens the analysis: Why should MAX-IO (and only MAX-IO) be singled out as ignorable exactly when the truncation morpheme τ is in the input? Why do other morphemes not have this ability?

In the rest of this paper, I give an alternative analysis to Benua's treatment of truncation that relies on a single, principled, motivation for truncation (eliminating the empirical problem), and that allows IO correspondence to occur naturally, by moving the motivation for truncation from the input to the candidate representations and the constraint hierarchy (thereby avoiding the theoretical problems).

3 Intra-Representational Correspondence

3.1 Reduplication as IRC

The many similarities between reduplication and truncation (heavy dependence on prosody, lack of segmental content in the input) suggest extending an analysis of reduplication to truncation, as Benua does with McCarthy and Prince's (1994, 1995) EoU analysis of reduplication. However, her extension seems to be in the wrong direction, as reduplication avoids MAX-IO precisely because no segments are lost from input to output, which is not the case for truncation. In addition, she takes the extension into a completely different direction by bringing in OO correspondence, further muddying the analogy between reduplication and truncation.

I propose that the crucial aspect of the reduplication analysis is not the emergence of the unmarked effects, but rather the dimension of correspondence needed to account for reduplication. This base-reduplicant (BR) correspondence occurs intra-representationally (within the same form, which Spaelti (1997) calls the *redform*), and ensures, among other things, that the reduplicant maximally copies from the base and is featurally identical to it. This dimension of correspondence is distinct from both the IO and OO dimensions, as seen below:

(14)

```
/budogɑ/                /budogɑ+RED/
   ↑                          ↑
   IO                         IO
   ↓                          ↓
budogɑ  ←OO→  budobudogɑ
                    ↑___↑
                      BR
```

I define such *intra-representational correspondence* (IRC) for reduplication as follows:

(15) Let: RED = a morpheme that triggers IRC; and

b = any morpheme(s).

Then: O(*b*) = the output (surface) form of *b*;

O(*b*+RED) contains two substrings B and R:

IO correspondence governs faithfulness between *b* and O(*b*), and *b* and B;

OO correspondence governs faithfulness between O(*b*) and B; and

IRC governs faith between B and R.

This can be schematized more generally as:

(16)

```
 /b/          /b+RED/
  ↑             ↑
  IO            IO
  ↓             ↓
O(b)  ←OO→   BR   = O(b+RED)
             ↑_↑
             IRC
```

By convention, R will be underlined, while B will be obvious from the input. As with any other dimension of correspondence, there is a family of correspondence constraints for IRC regulating the similarity between B and R:

(17) **MAX-BR**

Every segment in the base must have a correspondent in the reduplicant.

IDENT-BR

Corresponding segments between base and reduplicant must agree featurally.

etc.

These are exactly the same constraints as in McCarthy and Prince (1995), so nothing has changed for their analysis of reduplication. However, the IRC version of BR correspondence can be easily extended to truncation.

3.2 Truncation as IRC

To extend IRC from reduplication to truncation, only the labels need to be changed:

(18) Let: τ = a morpheme that triggers IRC; and

b = any morpheme(s).

Then: O(*b*) = the output (surface) form of *b*;

O(*b*+τ) contains two substrings B and T:

IO correspondence governs faithfulness between *b* and O(*b*), and *b* and B;

OO correspondence governs faithfulness between O(*b*) and B; and

IRC governs faith between B and T.

(19)

```
 /b/                /b+τ/
  ↑                  ↑
  IO                 IO
  ↓                  ↓
 O(b)  ←OO→         BT   = O(b+τ)
                    ↑_↑
                    IRC
```

T, like R, will be represented by underlining. The crucial difference between reduplication and truncation in IRC is the amount of overlap between the two substrings of the output. For reduplication, B and R are disjoint; the reduplicant and the base do not overlap. Since truncation does not have the luxury of extra segments in the output like reduplication does, B and T cannot be disjoint. In fact, I assume that they are identical, and thus overlap completely.[4]

Such morphological overlap (or *haplology*) is ruled out by McCarthy and Prince's (1995) constraint MORPHOLOGICAL DISJOINTNESS:

(20) **MORPHDIS**

Distinct instances of morphemes have distinct contents, tokenwise.

In other words, for every segment that is in the output realization of two different morphemes, a violation of MORPHDIS will be incurred. Reduplication, with disjoint output realizations of the two input morphemes, perfectly satisfies MORPHDIS. Truncation on the other hand, will violate it by as many segments as there are in the output. This will have the desired effect of reducing the size of the output (by segmental loss) in order to satisfy MORPHDIS. A specific analysis is given in the next section.

4 An IRC Account of French Hypocoristics

French hypocoristics display a number of patterns, ranging from truncation, to reduplication, to metathesis (Nelson 1998). I analyze each type within IRC.

4.1 Truncated Forms

Trisyllabic names have disyllabic truncated hypocoristic forms. Whether they are left- or right-anchored depends on whether the base form begins with a consonant or a vowel:

[4] B, T, and R will be required to have at least one segment in their output realizations by some constraint such as REALIZE MORPHEME. This is not crucial for this paper, so I simply assume that REALIZE MORPHEME or some similar constraint is ranked very high in the hierarchy.

(21)

	normal form	*hypocoristic*	*gloss*
C-initial	dorote	doro	'Dorothée'
	kɑrolin	kɑro	'Caroline'
V-initial	elizɑbet	zɑbet	'Elizabeth'
	ɑmeli	meli	'Amélie'

Nelson argues that the selection of an edge for anchoring is driven by satisfaction of ONSET. I am not concerned with this aspect of the data, so I will simply adopt her constraint ranking for these anchoring effects:

(22) ANCHOR-Edge(base,truncatum) » ONSET » ANCHOR-Left(base,truncatum).

I assume for truncation, which has an input of the form /*b*+τ/, that MORPHDIS is violated by maximal overlap of B and T, the output realizations of *b* and τ. For example, in the form *doro*, all the output segments are correspondents of the input segments from *b* = /dorote/, while T (indicated by underlining) also encompasses all of the output segments. Note the perfect alignment on the left and right edges between T and the prosodic word. The following alignment constraints are not violated:

(23) **ALTW** ≡ ALIGN-(T,Left,PrWd,Left)

The left edge of every T must be aligned to the left edge of a prosodic word.

ARTW ≡ ALIGN-(T,Right,PrWd,Right)

The right edge of every T must be aligned to the right edge of a prosodic word.

Since these alignment constraints are satisfied at the expense of MORPHDIS, they must be ranked higher than it:[5]

(24) 'Doro'

	/dorote+τ/	ALTW	ARTW	MORPHDIS
✓	a. <u>doro</u>			doro
	b. <u>do</u>ro		ro!	dorot
	c. do<u>ro</u>	do!		dorote

Contra Benua, I assume that IO correspondence, MAX-IO specifically, is active at all times, even in cases of truncation. Thus, MAX-IO must be ranked in the hierarchy in such a way that deletion is the predicted output of truncation. The required ranking is MORPHDIS » MAX-IO:

(25) 'Doro'

	/dorote+τ/	ALTW	ARTW	MORPHDIS	MAX-IO
✓	a. <u>doro</u>			doro	te
	b. <u>dorot</u>			dorot!	e
	c. <u>dorote</u>			dorote!	
	d. <u>do</u>rote		rote!		

[5] Candidates such as *<u>*do*</u> will be ruled out by minimal word conditions, which force French hypocoristics to be composed of at least two syllables. How this requirement interacts with normal French grammar (which allows smaller words) requires further research.

This analysis works as well for the right-anchored hypocoristics which are derived from vowel-initial names:

(26) 'Zabet'

	/ɑmeli+τ/	ALTW	ARTW	MORPHDIS	MAX-IO
✓	a. meli			meli	ɑ
	b. ɑmeli			ɑmeli!	
	c. ɑmeli		ɑ!	ɑ	
	d. ɑmeli	ɑme!		li	

A reduplicated output, such as **dodo* or **dorotedorote* cannot be used to avoid violations MORPHDIS, since reduplication will be ruled out by the alignment constraints:

(27) 'Doro'

	/dorote+τ/	ALTW	ARTW	MORPHDIS	MAX-IO
✓	a. doro			doro	te
	b. dorodoro		doro!		te
	c. dorotedorote		dorote!		

For these basic truncation forms, IRC seems to work nicely and does not interfere with the regular forms, since there is no τ in the input to create T in the output to adhere to ALTW, ARTW, and MORPHDIS, the motivation for segmental loss. However, there are some hypocoristic forms in French which do not rely on simple truncation.

4.2 Truncated + Reduplicated Forms

When the base form is bisyllabic, the hypocoristic is formed by reduplication of the first syllable (or final syllable, for vowel-initial bases):

(28)		*normal form*	*hypocoristic*	*gloss*
	C-initial	nikol	nini	'Nicole'
		miʃel	mimi	'Michelle'
	V-initial	emil	mimil	'Émil'
		yber	beber	'Hubert'

These facts cannot be explained with the analysis developed so far, which incorrectly predicts the truncated form **niko* as the hypocoristic for *nikol*, due to the alignment violation incurred by *nini*:

(29) 'Nico'

/nikol+τ/	ALTW	ARTW	MorphDis	Max-IO
✓ a. nini		ni		kol
✗ b. niko			niko	l
c. nikol			nikol	

Nelson obtains the correct output through two assumptions. The first assumption (which I adopt for lack of a better analysis) is that some meta-linguistic process prevents hypocoristics from being too similar to their base forms. Thus, candidates like **niko* will be prevented from surfacing, forcing the speaker to select a different output.[6] I indicate this meta-linguistic disqualification by shading the entire row of the disqualified candidate in the tableau:

(30) 'Nico'

/nikol+τ/	ALTW	ARTW	MorphDis	Max-IO
✓ a. nini		ni		kol
b. niko			niko	l
c. ninikol		nikol!		

Nelson's second assumption, that the input is specified for reduplication rather than truncation, is unnecessary for the IRC analysis, as the correct result obtains with τ in the input. In fact, without specifying that truncation must occur, Nelson's analysis predicts a hypocoristic with only reduplication **ninikol*, rather than the correct output which has both truncation and reduplication. Thus, the IRC analysis predicts the correct output using only one morpheme, τ, for the two processes in hypocoristic formation, rather than one separate morpheme for each process.

4.3 Metathesized + Reduplicated Forms

Finally, there are certain forms which, in order to avoid violations of Onset, undergo metathesis, since there are too small to undergo right-anchored truncation (the normal repair-strategy to

[6] Such a process is not entirely bizarre (Nelson cites evidence that certain possible hypocoristics like **mama* for *mari* 'Marie' are not used because of their similarity to already extant words in the lexicon. This phenomenon clearly needs further study.

prevent vowel-initial hypocoristics). Because of their small size, these forms also require reduplication to bring the hypocoristic form up to two syllables:

(31)

	normal form	*hypocoristic*	*gloss*
V-initial[7]	iv	vivi	'Ives'
	ɑn	nɑnɑ	'Anne'

The following constraints are relevant for these data:

(32) **<u>ONSET</u>**

Every syllable must have an onset.

<u>LINEARITY</u>

Linear order of segments is preserved in correspondence relations (IO, etc.).

LINEARITY, which prevents metathesis, will obviously be violated by these forms, at the expense of ONSET. The alignment constraints are also violated, since these forms show reduplication, which is not perfectly aligned:[8]

(33) 'Vivi'

/iv+τ/	ONSET	LINEARITY
✔ a. <u>vi</u>vi		v<i
b. <u>iv</u>iv	**!	

[7] Nelson does not provide cases of monosyllabic C-initial names, such as *ʒɑ̃* 'Jean'. Presumably, the hypocoristic form of these names would be simple reduplication: *ʒɑ̃ʒɑ̃*.

[8] High-ranking DEP-IO will prevent epenthesis from satisfying ONSET (as well as the minimal word conditions).

The other constraints do not affect the outcome: ALTW, MORPHDIS,and MAX-IO are satisfied by the winning output, while ARTW is equally violated by both possible candidates. Thus, it is unclear from these data how these two sub-hierarchies are ranked with respect to each other, yielding the following partial hierarchy for French hypocoristics:

(34) ONSET ARTW ALTW

LIN MORPHDIS

MAX-IO

5 An IRC Analysis of Icelandic Deverbalization

As IRC has been presented so far, it does not obtain the correct results for Icelandic. The facts are repeated here for convenience:

(35) a. word-final C*j* is subject to deletion in normal forms (SONCON » MAX-IO)

b. deverbalized truncated forms allow word-final C*j* (*grenja* > *grenj*, **gren*)

The ranking derived for French hypocoristics predicts incorrect **gren* as the winner:

(36) ‘crying’

/grenjɑ+τ/	ALTW	ARTW	MORPHDIS	MAX-IO
✓ a. grenj			grenj	ɑ
✗ b. gren			gren	jɑ
c. grenjɑ			grenjɑ!	

No ranking of SONCON will help, since the correct output violates it while **gren* does not. Indeed, the only way in which **gren* is worse is by the fact that it has deleted more segments than *grenj*. This can be captured by using conjoining MAX-IO with itself (cf. Smolensky 1993, and others), so that MAX-IO^2 will be violated only when two or more segments have been deleted, but not one. MAX-IO^2 ranked over MORPHDIS, which is ranked over SONCON, predicts the correct output:

(37) 'crying'

/grenjɑ+τ/	ALTW	ARTW	MAX^2	MDIS	SONCON	MAX
✓ a. grenj				grenj	*	ɑ
✗ b. gren			jɑ!	gren		jɑ
c. grenjɑ				grenjɑ!		

Another solution might be possible, but note that self-conjunction of MAX-IO is not a valid option for Benua's EoU analysis, which crucially relies on IO faithfulness being ignored.

6 Conclusion

By expanding base-reduplicant correspondence to allow the truncation morpheme τ to trigger the same type of Intra-Representational Correspondence (IRC), I have shown that it is possible to motivate the segmental loss seen in truncation without relying on emergence of an unmarked (EoU) prosodic structure, à la Benua. Her EoU analysis carries two serious problems: empirically, it fails for cases of truncation (as in Icelandic) which require the truncatum to be more marked than non-truncated words with respect to markedness that is normally alleviated via deletion; and theoretically, there are problems associated with stipulating that IO faithfulness is inactive for truncation.

For my IRC analysis, these issues are not a concern, since I detach the analysis from the ranking required by EoU, and I allow IO faithfulness to function normally for truncation as it does for all other morphological processes. In addition, this approach ties truncation and reduplication more closely at a mechanical level, allowing both processes to trigger IRC. This move seems justified, given the similarities of between truncation and reduplication with respect to prosodic structure and lack of underlying segmental content.[9] Specifically, this analysis unites three very different surface processes in French hypocoristics with one morpheme and one constraint ranking which dictates which of the processes will emerge. This analysis predicts that truncation will generally result in exactly the minimal word (when possible), though as shown in section 5, other constraints can come into play to affect this prediction.

While my analysis steers away from EoU in truncation, I should note that I am not arguing for the elimination of EoU. IRC does not preclude EoU effects from occurring in truncation. Rather, I have shown that the drive to delete segments in truncation cannot come from EoU but can be obtained from IRC. Crucially, this is shown for the Icelandic deverbalization, which is impossible to analyze as EoU, but can be accounted for in IRC.

IRC as a theoretical mechanism is already required for reduplication, and there is nothing inherent to IRC to limit it solely to reduplication. By expanding its application to truncation, I have streamlined the theory while avoiding problems the arise for Benua's analysis of truncation.

[9] See Sanders (1998; 1999) for an IRC analysis of the reversal process found in some ludlings, which shares these same properties with truncation and reduplication.

References

Benua, Laura. 1995. "Identity Effects in Morphological Truncation." In J. Beckman, S. Urbanczyk, and L. Walsh, eds. *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. GLSA, University of Massachusetts, Amherst. 77–136.

———. 1998. *Transderivational Identity: Phonological Relations between Words*. Doctoral dissertation, University of Massachusetts, Amherst.

Jensen, John Thayer. 1977. *Yapese Reference Grammar*. University Press of Hawaii, Honolulu.

McCarthy, John, and Alan Prince. 1993. "Generalized Alignment." In *Yearbook of Morphology 1993*. G. Booij and J. van Marle, eds. Dordrecht: Kluwer Academic Publishers. 79–153.

———. 1994. "The Emergence of the Unmarked: Optimality in Prosodic Morphology." In *Proceedings of NELS 24*. M. Gonzalez, ed. GLSA, University of Massachusetts, Amherst. 333-379.

———. 1995. "Faithfulness and Reduplicative Identity." In *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. J. Beckman, S. Urbanczyk, and L. Walsh, eds. GLSA, University of Massachusetts, Amherst. 249–384.

Prince, Alan, and Paul Smolensky. 1993. "Optimality Theory: Constraint Interaction in Generative Grammar." Manuscript, Rutgers University and University of Colorado, Boulder.

Nelson, Nicole. 1998. "Right Anchor, Aweigh." Manuscript, Rutgers University.

———. 1999. "Right Anchor, Aweigh." Talk given at the 73rd annual meeting of the Linguistics Society of America, Los Angeles.

Sanders, Nathan. 1998. "Same-Edge Alignment with Opposite-Edge Effects: An Analysis of Reversal Ludlings." Manuscript, University of California, Santa Cruz.

———. 1999. "Same-Edge Alignment with Opposite-Edge Effects." Talk given at Trilateral Phonology Weekend, Stanford University.

Smolensky, Paul. 1993. "Harmony, Markedness, and Phonological Activity." Talk presented at the Rutgers Optimality Workshop I, New Brunswick, New Jersey.

Spaelti, Philip. 1997. *Dimensions of Variation in Multi-Pattern Reduplication*. Doctoral dissertation, University of California, Santa Cruz.