Nonlocal Reduplication

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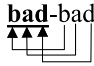
1. The edge-in generalization vs. the edge-in law

Marantz (1982) observed that reduplicative affixes generally copy the string of segments beginning with the segment at the edge to which the affix is attached and proceeding on into the word. Though he described this "edge-in association" as a tendency, many researchers have assumed, either tacitly or explicitly, that edge-in association is an inviolable principle governing reduplication (Yip 1988, McCarthy and Prince 1994, 1996, Kennedy 2004, Nelson 2003b, and others). This makes several typological predictions, including the prediction that reduplicative affixes should always occur adjacent to the material that they copy. In other words, reduplication should always be local.

In Optimality Theory (OT; Prince and Smolensky 1993), reduplication is usually analyzed using Base/Reduplicant-Correspondence constraints that govern the relationship between the reduplicative affix and the material that it copies (McCarthy and Prince 1995). In this setup, a portion of the output is designated as the base and base/reduplicant (B/R) correspondence demands that it be copied faithfully in the reduplicant. But how is the base delineated?

Kager (1999: 202), paraphrases McCarthy and Prince (1994) with "[t]he '**base**' is the output string of segments to which the reduplicant is attached, more specifically: for reduplicative *prefixes,* it is the *following* string of segments; for reduplicative *suffixes* the *preceding* string of segments." In (1) I give an example of reduplication with edge-in association. The reduplicant is underlined and bold and each segment in the reduplicant is connected by an arrow to the segment in the base with which it is in correspondence.

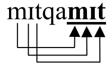
(1) Edge-in association: **bad**-badupi



Many thanks to Pamela Munro for introducing me to Creek and for many insightful comments, to Kie Zuraw for excellent analytical advice and to the participants at NELS 34 at Stony Brook for useful comments and discussion, especially Shigeto Kawahara, Abigail Cohn, and Alan Yu.

Nonetheless, there are languages that evidence "nonlocal correspondence." I use this broad term for any case of correspondence between nonadjacent strings of segments. Nonlocal reduplication always shows nonlocal correspondence but the converse does not necessarily hold (e.g. correspondence-mediated agreement is the latter but not the former (Rose and Walker 2001, Zuraw 2003)). In (2) present a prototypical instance of nonlocal correspondence and in (3) I list twelve languages that show such patterns.

(2) Nonlocal correspondence: mɪtqa**mɪt**



(3)

Twelve languages with nonlocal correspondence
Chuukese (Goodenough and Sugita 1980)
Creek (Martin and Mauldin 2000)
Indonesian (Sneddon 1996)
Itelmen (Bobaljik 2003)
Koryak/Chukchee (Bogoras 1969, Kenstowicz 1979, Krause 1980)
Madurese (Stevens 1968)
Nancowry (Radhakrishnan 1981, Alderete et al. 1999, Nelson 2000)
Tzeltal (Berlin 1963)
Tillamook (Reichard 1959)
Ulu Muar Malay (Hendon 1966)
West Tarangan (Spaelti 1997)
Yoruba (Awoyale 1989, Nelson 2003).

Nelson (2003b) and Kennedy (2004) provide short descriptions and illustrations of many of the cases above. Much of the analysis of reduplication in the languages above has focused on the task of showing that what appears to be nonlocal reduplication is either "covertly" local or, in fact, not an instance of reduplication (especially McCarthy and Prince 1996, and Nelson 2003b).

Rather than examining each language in (3), I will consider here two representative cases. In §2 I present data showing nonlocal correspondence in Chukchee/Koryak and in Creek. In §3 I will argue that, while the former may be amenable to analysis as fake nonlocal reduplication, the latter must be analyzed as true nonlocal reduplication. In §4 I give an Optimality Theoretic analysis of nonlocal reduplication in Creek.

2. Chukchee, Koryak, and Creek

Bogoras (1969) describes reduplication in absolutives in Koryak and Chukchee as in (4).

(4) "The absolute form of the noun serves to express the subject of the intransitive verb and the object of the transitive verb. … The reduplication consists in the repetition of the beginning of the word at the end, including the initial consonant, vowel, and the first consonant following the vowel." Bogoras (1969: 687-88)

In (5) I present data illustrating reduplication in the absolutive singular in Chukchee and Koryak. Though Chukchee is perhaps more well known, Koryak shows more striking reduplication in that an entire syllable may intervene between the two surface copies.

(5)

Chukchee			**Koryak**		
gloss	**stem**	**absolute**	**gloss**	**stem**	**absolute**
'land'	nute	nute**nut**	'oil'	mıtqa	mıtqa**mıt**
'tears'	mêrê	mêrê**mêr**	'shellfish'	kilka	kilka**kil**
'voice'	quli	quli**qul**	'fire'	qanga	qanga**qan**
'meat'	tala	tala**tal**	'sleep'	yilqa	yilqa**yil**

Creek, a Muskogean language, has even more strikingly nonlocal correspondence. Booker (1980: 73) states that "Creek reduplicated stems are formed by copying the initial consonant and vowel of the root and placing them before the root final consonant." In (6) I illustrate this pattern with data from Haas (1977) and Martin and Mauldin (2000).

(6) **Creek**

	gloss	**singular**	**plural**
a.	'precious'	a-cáːk-iː	a-caː**ca**k-íː
b.	'sticking in'	cákh-iː	cak**ca**h-íː
c.	'sticking in & on'	oh-cákh-iː	oh-cak**ca**h-íː
d.	'sweet'	cámp-iː	cam**ca**p-íː
e.	'torn up, mashed'	citákk-iː	citak**ci**k-íː
f.	'frozen, stiff	cóyh-iː	coy**co**h-íː
g.	'full' (of container)	fáck-iː	fac**fa**k-íː
h.	'split' (as of wood)	falápk-iː	falap**fa**k-íː
i.	'crooked'	fayátk-iː	fayat**fa**k-íː
j.	'white'	hátk-iː	hat**ha**k-íː
k.	'clean'	hasátk-iː	hasat**ha**k-íː
l.	'hot'	héyy-iː	hey**ho**y-íː
m.	'ugly, naughty'	holwak-íː	holwaː**ho**k-íː
n.	'broken off'	kálk-iː	kal**ka**k-íː
o.	'old'	lísk-iː	lis**li**k-íː
p.	'nasty, dirty, filthy'	likácw-iː	likac**li**w-íː
q.	'soft'	lowáck-iː	lowac**lo**k-íː
r.	'round'	polóːk-iː	poloː**po**k-íː
s.	'deep'	sófk-iː	sof**so**k-íː
t.	'hard, brittle'	takácw-iː	takac**ta**w-íː
u.	'empty'	tánk-iː	tan**ta**k-íː
v.	'on tiptoe'	tikínk-iː	tikin**ti**k-íː
w.	'hard, firm'	wánh-iː	wan**wa**h-íː

In (6) I have illustrated nonlocal correspondence in plural marking with adjectives. This pattern is robust and occurs with verbs as well. In (a) and (c) I show that the material targeted for reduplication is the initial portion of the stem, even when prefixes precede it.[1]

3. Arguments and analysis

Is edge-in association an inviolable law or merely a tendency? In the face of apparent counterexamples like the ones in (5) and (6) there are two plausible answers to this question. If edge-in association is only a tendency then we must determine what factors promote this tendency and what factors can lead to exceptions. On the other hand, if edge-in association is indeed an inviolable principle then the apparent cases of nonlocal reduplication must be dealt with in one of two ways. Either they must be analyzed as instances of nonlocal correspondence that are not actually reduplication, or they must be analyzed as covertly local cases of true reduplication in which the edge-in law holds at an abstract level of representation.

3.1 Divide and dismiss

The claim that some putative cases of nonlocal reduplication are merely the result of non-reduplicative copying processes deals with some of the cases in (3) by classifying them as merely nonlocal copying. Nelson (2003b) makes this case for several languages including Chukchee. She points out that in Chukchee the nonlocal correspondence occurs with only a restricted subset of the stem shapes in the language. She argues that this restricted distribution would go unexplained if the pattern were true reduplication and claims that the pattern makes more sense when characterized as a tactic aimed at achieving some sort of prosodic target.

Coupled with the fact that the use of reduplication to mark absolutive forms is relatively anomalous cross-linguistically, it might be plausible to dismiss the Koryak and Chukchee data as instances of "copying to fill out a template" and not truly reduplication.

There is one catch though. Even if the mechanisms mediating correspondence in nonreduplicative and reduplicative copying are distinct, it must still be determined why the latter requires edge-in association and the former does not. Contrary to such an idea, Kawahara (this volume) proposes that echo epenthesis (another instance of nonlocal correspondence) is actually more stringently local than the copying that occurs in reduplication and that only reduplicative copying can skip intervening segments.

It is not tenable to dismiss the Creek data in (6) as a non-instance of reduplication. Not only is plural marking one of the most common uses for reduplication cross-linguistically, but the set of stems participating in the nonlocal correspondence pattern is representative of the general prosodic properties of stems in Creek.

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[1] 'gray': sopakhátk-iː$_{sg.}$ sopakhat**ha**k-íː$_{pl.}$ in Martin and Mauldin (2000) appears to be 'dregs': *sopak* compounded with 'white': *hátk-iː*. Note that in this case the initial CV of the second stem is copied.

3.2 Covert locality

Another strategy for explaining cases of apparently nonlocal reduplication is to claim that they arise when local reduplication is occluded by the action of independent phonological processes. This tack has also been taken in attempting to explain the Chukchee data.

McCarthy and Prince (1996) citing Kenstowicz (1979) note that Chukchee has an apocope rule that deletes stem-final vowels that would also occur word-finally. Under such an analysis, reduplication is opaquely local in the sense that the locality generalization is not surface true because reduplication occurs before apocope. Bobaljik (2003) argues for much the same analysis of this pattern in Itelmen. It is not immediately clear how this line of analysis would deal with the Koryak forms in which an entire CV intervenes between the copies, but it's possible that another rule could account for these cases.

In a rule-based framework, in which reduplicative copying can be preceded and followed by other operations like deletion, apparently nonlocal reduplication can be seen as a simple case of opacity. On the other hand, in a constraint-based framework that lacks the notion of precedence among phonological operations, it is hard to see what kind of empirical predictions covert locality makes and what role it plays in the theory.

Nonetheless, if it were indeed the case that every language showing instances of true nonlocal reduplication seemed to involve the action of an independent phonological process in that language, then the notion of covert locality would lead to a more restricted typology of reduplication and would lead to interesting research questions.

But reduplication in Creek does not appear to be covertly local. The claim that reduplication in Creek is covertly local by virtue of the action of an independent phonological process would have to appeal to something like a rule that deleted all but the initial CV of the reduplicant. At this level of abstraction it is hard to imagine a reduplicative pattern that couldn't be considered local. If the edge-in association law is only inviolate at arbitrarily high levels of abstraction then it doesn't seem to make any empirical predictions about the range of possible reduplicative patterns.

4. Embracing nonlocality

In Correspondence Theory (McCarthy and Prince 1995), edge-in association is often assumed to delineate the "base" – the portion of the output that the reduplicant is obliged to copy. I argue here that nonlocal patterns of reduplication can be given a more straightforward analysis if we relax the definition of basehood in reduplication as in (7).

(7) **The base generalized**
Everything in the output that isn't the reduplicant is the base.[2]

[2] This broad definition of the reduplicative base correctly predicts that epenthetic material and material from affixes will sometimes be copied in the reduplicant.

This general notion of the base makes it necessary to adopt proposals in Nelson (1998, 2003) and Riggle (2003) that the content of the reduplicant should be determined by the action of BASE/REDUPLICANT-MAX constraints that are indexed to salient elements like stems, edges, and stressed syllables. With the general notion of basehood and this natural extension of Beckman's (1998) positional faithfulness to the base/reduplicant dimension of correspondence, we capture straightforwardly the tendency for salient material to be copied in reduplication.

(8) BASE/REDUPLICANT-MAX -C_1-ROOT: (**B/R-MX-C_1^{RT}**)
The initial consonant of the root must be copied in reduplication.

The placement of the reduplicant will then be determined by the (possibly conflicting) drives expressed by the ALIGNMENT family of constraints (McCarthy and Prince 1993) and a constraint demanding locality of the reduplicative affix and the material it copies. Consider in (9), Nelson's (2003) formalization of the locality constraint.

(9) LOCALITY:
The copied portion of the base and the corresponding reduplicant must be adjacent.

In (10) I give a more technically worded version of Nelson's constraint that doesn't refer to the base and makes it expressly clear that each segment intervening between the reduplicant and base incurs only one violation of LOCALITY.[3]

(10) LOCALITY:
No segment that isn't itself in the correspondence relation **Morph^1** $\mathcal{R}$ **Morph^2** may intervene between two segments corresponding via $\mathcal{R}$ – One mark is assigned per segment y that lies between a pair $x, x' \in S$ where $x \mathcal{R} x'$, unless $\exists y' \in S$ and $y \mathcal{R} y'$.

The B/R-MAX-C_1^{RT} constraint must dominate LOCALITY or else the latter will select candidates that copy material other than the initial consonant. This is illustrated in (11).

(11)

'sweet' RED + camp + iː	B/R-MX-C_1^{RT}	LOCALITY
a. ☞ cam.**<u>ca</u>**.piː		**
b. cam.**<u>pi</u>**.piː	*!	

Another alternative would be to place the reduplicative affix next to the material it copies. An alignment constraint demanding that the reduplicant occur near the right edge of the word will prevent this. The alignment constraint in given in (12).

[3] This last point ensures that the number of constraint violations grows as a linear function of the length of the input and not a quadratic one, as is the case with Kitto and de Lacy's (1999) ADJACENCY and Kennedy's (2004) PROXIMITY. This also guarantees that the constraint can be represented with a regular expression and that it doesn't run afoul of the problems that McCarthy (2004) has observed with gradience.

(12) ALIGN-RED-RIGHT: (**RED-RT**)
The reduplicant must occur as close as possible to the right edge of the word.

Ranking RED-RT above LOCALITY will keep the reduplicant near the right edge.[4]

(13)

'sweet' RED + camp + iː	RED-RT	LOCALITY
a. cam.**ca**.piː	**	*
b. ca.**ca**m.piː	***!	

Finally, as the reduplicant is not a suffix, some constraints must prevent RED-RT from being perfectly satisfied. One of these is a right alignment constraint on the *-iː* affix.

(14) ALIGN-*iː*-RIGHT: (**iː-RT**)
The *-iː* affix must occur as close as possible to the right edge of the word.

Ranking *iː*-RT above RED-RT will make the reduplicant occur as close as possible to the right edge but before *-iː* suffix. This is illustrated in (15).

(15)

'sweet' RED + camp + iː	iː-RT	RED-RT
a. ☞ cam.**ca**.piː		**
b. cam.piː**c**	*!	

A couple of standard markedness constraints will explain why the reduplicant is always infixed before the final consonant of the stem. First consider *COMPLEX in (16).

(16) *COMPLEX: (***CPLX**)
Consonant clusters are not permitted. (Prince and Smolensky 1993)

The reduplicant will interrupt the stem, cleaving off its last consonant, if *COMPLEX is ranked above RED-RT and CONTIGUITY, which penalizes cases in which the stem is interrupted by the reduplicant (McCarthy and Prince 1995). This is illustrated in (17).

(17)

'sweet' RED + camp + iː	*CPLX	RED-R	CONTIGUITY
a. ☞ cam.**ca**.piː		**	*
b. camp.**c**iː	*!	*	
c. camp.**ca**.**m**iː	*!	*	

[4] Alternatively the reduplicant might be aligned to the syllable bearing main stress.

The constraint NOCODA must also dominate the alignment constraint on the reduplicant.

(18) NOCODA:
Codas are not permitted. (Prince and Smolensky 1993)

The action of the constraint NOCODA will ensure that the reduplicant is infixed at the right edge of the stem even when the stem does not end in a consonant cluster.

(19)

'round' RED+ poloːk + iː	NOCODA	RED-R
a. ☞ po.loː.**po**.kíː		**
b. po.loːk.**p**íː	*!	*
c. po.loːk.**po**.íː	*!	*

There are no stems in my database of verbs and adjectives in Creek drawn from Martin and Mauldin (2000) that end in vowels. If there were vowel-final stems, this analysis predicts that the reduplicant would be placed between the stem and suffix in such cases.

To ensure that the reduplicative affix does not copy more than an a single syllable, Zoll's (1993) *STRUCTURE-SYLLABLE can be ranked in the emergence of the unmarked ranking (McCarthy and Prince 1995); below INPUT/BASE-MAX but above BASE/REDUPLICANT-MAX. *STRUCTURE-SYLLABLE is presented in (20).

(20) *STRUCTURE-SYLLABLE: (***STRUC-σ**)
Each syllable in the output incurs one penalty.

Ranking *STRUC-σ below the INPUT/BASE-MAX constraint but above B/R-MAX will keep the reduplicant small but leave base forms unaffected. This is shown in (21).[5]

(21)

'round' RED + poloːk + iː	B/R-MX-C_1^{RT}	I/B-MAX	*STRUC-σ	B/R-MAX
a. ☞ po.loː.**po**.kiː			****	loki
b. po.loː.**po.loː**.kiː			*****!	ki
c. po.**po**.kiː		**!	****	ki
d. poloːkiː	*!		****	poloki

Candidate (21d) might alternatively be ruled out by a REALIZE-MORPHEME constraint which forbids the plural form from being homophonous with the singular (see. Kurisu

[5] Plug in your favorite size restrictor for (20), e.g. ALLSYLLABLELEFT (Spaelti 1997), Hendricks' (2001) COMPRESSION model, or DEP-OO (Gouskova 2004), to name a few. There are interesting issues lurking here but they are orthogonal to the central concern of accounting for nonlocal reduplication.

2001). I include (21d) to show that B/R-MX-C_1^{RT} isn't vacuously satisfied by failure to reduplicate, so if it dominates *STRUC-σ then the size of the Creek reduplicant is derived.

To keep *STRUC-σ from predicting single-consonant reduplicants it must be dominated by the constraint against consonant clusters. This is illustrated in (22).

(22)

'empty' RED+ tank-iː	*COMPLEX	*STRUC-σ
a. ☞ tan.**ta**.kiː		***
b. tan**t**.kiː	*!	**

NOCODA must also dominate *STRUC-σ to prevent single-consonant reduplicants.

(23)

'round' RED+ poloːk -iː	NOCODA	*STRUC-σ
a. ☞ po.loː.**po**.kiː		***
b. po.loː**p**.kiː	*!	***

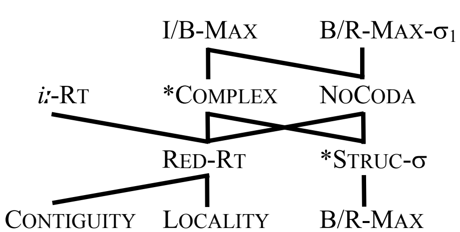
To keep NOCODA from repairing codas by selecting candidates that copy a vowel rather than the initial consonant, it must be dominated by B/R-MX-C_1^{RT}. This is shown in (24).

(24)

'sweet' RED + camp + iː	B/R-MX-C_1^{RT}	NOCODA
a. ☞ cam.**ca**.piː		*
b. ca.m**a**.piː	*!	

Finally, because both consonant clusters and codas are tolerated in Creek at large, NOCODA and *COMPLEX must both be dominated by I/B-MAX. With this last piece of information I present in (25) the master-ranking for nonlocal reduplication in Creek.

(25) **Ranking diagram for Creek reduplication**



5. Typology

In (26) I illustrate the four distinct patterns of reduplication and affixation that arise from the twenty four possible rankings of the constraints LOCALITY , RED-R, RED-L, and B/R-MAX-σ_1^{RT}. With each pattern I list one language in which the pattern is attested.

(26)

Pattern1:	a copy of the initial syllable is prefixed. This occurs if: RED-L >> RED-R E.g. Ilokano (McCarthy and Prince 1996)
Pattern2:	a copy of the final syllable is suffixed. This occurs if: RED-R >> RED-L and LOCALITY, RED-R >> BR-MAX-σ_1^{RT} E.g. Manam (McCarthy and Prince 1996)
Pattern3:	a copy of the initial syllable is suffixed. This occurs if: RED-R >> RED-L and RED-R, BR-MAX-σ_1^{RT} >>LOCALITY. E.g. Creek
Pattern 4:	a copy of the initial syllable is infixed at the left edge. This occurs if: RED-R >> RED-L and BR-MAX-σ_1^{RT}, LOCALITY >> RED-R. E.g. Pima (Riggle 2003).

6. Conclusions

There are feasible alternatives for some of the details of this analysis of reduplication in Creek. For instance, there are many ways to restrict the size of the reduplicant that would work equally well here. Also, the reduplicant's position could be derived through alignment to the stressed syllable instead of the right edge. If this were the case NOCODA would no longer need to dominate RED-R but would still need to dominate CONTIGUITY to cause the infixation into the root.

Regardless of the specifics of these details, Creek clearly shows nonlocal reduplication and shows that some constraint other than LOCALITY will be needed to derive the position of the reduplicant (e.g. RED-RT). Most importantly, the copying pattern in Creek does not seem to be amenable to any but the least restrictive (empirically vacuous) notion of covert locality.

Nonlocal reduplication is a marked alternative that can arise only when LOCALITY is dominated by B/R-MAX and an alignment constraint that are at odds. The tendency for edge-in association is expressed in all other cases where either LOCALITY is dominant or the alignment constraints on the reduplicant and B/R-Max are not at odds.

I have presented a simplified notion of the base and shown that LOCALITY, B/R-MAX, ALIGNMENT, and ordinary markedness constraints and can derive Creek's nonlocal reduplication. Moreover, all the patterns that arise from these constraints' interactions are typologically attested. Thus it seems that we obtain a simpler theory of (nonlocal) reduplication by allowing the edge-in tendency to arise through constraint interaction.

References

Alderete, John, Jill Beckman, Laura Benua, Amalia Gnanadesikan, John McCarthy and Suzanne Urbanczyk. 1999. Reduplication and with Fixed Segmentism. *Linguistic Inquiry* 30:327-364.
Awoyale, James Oladuntoye Yiwoya . 1989. Reduplication and the Status of Ideophones in Yoruba. *The Journal of West African Languages*, Calgary, AB, Canada. May, 19:1, 13-34.
Beckman, Jill. 1998. Positional Faithfulness. Doctoral dissertation, University of Massachusetts, Amherst.
Berlin, Brent. 1963. Some semantic features of reduplication in Tzeltal. *International Journal of American Linguistics*, 29, 211-218.
Bobaljik, Jonathan David. 2003. Itelmen Reduplication: Edge-In Association and Lexical Stratification. Ms. McGill University.
Bogoras, Waldemar. 1969. 'Chukchee', in F. Boas, (ed.), *Handbook of American Indian Languages, Bureau of American Ethnology Bulletin 40, Part 2*, Government Printing Office, Washington, DC, pp. 631-903.
Booker, Karen. M. 1979. *Comparative Muskogean: Aspects of Proto-Muskogean Verb Morphology.* Doctoral Dissertation. U. Kansas.
Goodenough, Ward H., and Hiroshi Sugita. 1980. Trukese-English dictionary.
Gouskova, Maria. 2004. Minimizing RED without Economy: an OO-Faith Approach. Handout from LSA annual meeting. Boston, MA.
Haas, Mary R. 1977. Nasals and Nasalizatiton in Creek. Proceedings of the Third Annual Meeting of the Berkeley Linguistics Society, 194-203,. Berkeley: Berkeley Linguistics Society, University of California, Berkeley.
Hendon, Rufus. 1966. *The Phonology and Morphology of Ulu Muar Malay*. Yale University Publications in Anthropology number 70.
Hendricks, Sean. 2001. Bare consonant reduplication without prosodic templates: expressive reduplication in Semai. *Journal of East Asian Linguistics* 10, 287–306. Kluwer.
Kager, René. 1999. Optimality Theory. Cambridge.
Kawahara, Shigeto. this volume. Echo Epenthesis and Reduplication.
Kennedy, Robert. 2004. "A Formal Replacement For Reduplicative Anchoring." Ms. University of Arizona.
Kenstowicz, Michael. 1979. Chukchee vowel harmony and epenthesis. In P. Clyne, W. Hanks & C. Hofbauer (eds.), CLS 15: The Elements: Parasession on Linguistic Units and Level (pp. 402– 412). Chicago: Chicago Linguistic Society.
Kitto, Catherine and de Lacy, Paul. 1999. Correspondence and epenthetic quality. *Proceedings of Austronesian Formal Linguistics Association* 4, 181-200.
Kurisu, Kazutaka. 2001. The Phonology of Morpheme Realization, Doctoral dissertation, University of California, Santa Cruz.
Krause, Scott. 1980. Topics in Chukchee phonology and morphology. Doctoral dissertation, University of Illinois, Urbana-Champaign, Illinois.
Marantz, Alec. 1982. Re Reduplication. *Linguistic Inquiry* 13:3, 435-482.
Martin, Jack B. 1994. Implications of plural reduplication, infixation, and subtraction for Muskogean subgrouping. *Anthropological Linguistics* 36:27-55.
Martin, Jack B., and Margaret McKane Mauldin. 2000. *A Dictionary of Creek/Muskogee, with notes on the Florida and Oklahoma Seminole dialects of Creek*. Lincoln/London: University of Nebraska Press.
McCarthy, John, and Alan Prince. 1994. Two lectures on prosodic morphology. Handouts of lectures at OTS/HIL workshop on Prosodic Morphology, Utrecht University.
McCarthy, John and Alan Prince. 1996. Prosodic Morphology 1986. Technical Report 32, Rutgers University Center for Cognitive Science.
McCarthy, John. & Alan Prince. 1995. 'Faithfulness and Reduplicative Identity.' In *University of Massachusetts Occasional Papers in Linguistics [UMOP] 18: Papers in Optimality Theory,* J. Beckman, L. Walsh Dickey & S. Urbanczyk, eds. GLSA UMass, Amherst. 249-384.
McCarthy, John. 2004. OT constraints are categorical. *Phonology* 20, 75-138.
Nelson, Nicole. 1998. "Right Anchor, Aweigh." Ms., Rutgers University.
Nelson, Nicole. 2000. Stressed rhyme faithfulness: a case study of Nancowry. In *WCCFL 19*, ed. Billery and Lillehaugen. Sommerville, MA: Cascadilla Press. 329-342.
Nelson, Nicole. 2003a. *Asymmetric Anchoring.* Doctoral Dissertation. Rutgers University.
Nelson, Nicole. 2003b. Wrong side reduplication is epiphenomenal: evidence from Yourba. To appear in: *Studies in Reduplication* [tentative title], ed. Bernhard Hurch. Mouton de Gruyter.
Radhakrishnan, R. 1981. *The Nancowry Word: Phonology, Affixal Morphology and Roots of a Nicobarese Language.* Carbondale, Illinois, and Edmonton, Alberta: Linguistic Research.
Reichard, Gladys A. 1959. A comparison of five Salish languages: V. *International Journal of American Linguistics* 59, 239-253.
Riggle, Jason. 2003. Infixation in Pima Reduplication and Its Theoretical Consequences. Handout from LSA annual meeting. Atlanta, GA.
Rose, Sharon and Rachel Walker. 2001. A typology of consonant agreement as correspondence. Ms. University of California, San Diego and University of Southern California.
Sneddon, James Neil. 1996. *Indonesian Reference Grammar*. Allen & Unwin.
Steriade, Donca. 1988. Reduplication and syllable transfer in Sanskrit and elsewhere. *Phonology*, 5, 73-155.
Spaelti, Philip. 1997. *Dimensions of Variation in Multi-Pattern Reduplication*. Doctoral Dissertation, University of California-Santa Cruz.
Stevens, Alan. 1968. *Madurese Phonology and Morphology.* American Oriental Series vol. 52, American Oriental Society, New Haven CT.
Yip, Moira (1988) Template morphology and the direction of association. *Natural Language & Linguistic Theory*, 6, 551–577.
Zuraw, Kie. 2003. Aggressive reduplication. *Phonology* 19, 395-439.

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