Uniform Exponence and Reduplication
Evidence from Kinande*

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Goal of the Talk: Show that reduplication can be subject to Output-Output correspondence constraints enforcing identity between *reduplicants*

Secondary Goal: Present an analysis of verbal reduplication in Kinande, a Bantu language spoken in the Democratic Republic of the Congo.

- The idea that uniformity is enforced by grammar not only between whole words or stems, but also potentially between affixes, is developed, among other places, in Kenstowicz (1998) as well as in Burzio (1998). This is formalized by Kenstowicz using a constraint Uniform Exponence:

(1) Uniform Exponence (Kenstowicz, 1998, p. 1)
Uniform Exponence: a lexical item (stem, affix, word) has the same realization for property P in its various contexts of occurrence.

- Uniform Exponence has previously been applied to preventing allomorphy, particularly in the domain of metrical alternations.

In this talk I apply the mechanism of Uniform Exponence to reduplication in Kinande, a Bantu language spoken in the Democratic Republic of the Congo, to account for patterns of non-correspondence as in (2) and (3): [1]

(2) *Reduplication of CVC Roots*

a.	eri-huka	*to cook*	eri-huka=huka
b.	eri-hukira	*to cook for*	eri-huka=hukira
c.	eri-hukana	*to cook e.o.*	eri-huka=hukana
c.	eri-hukwa	*to be cooked*	eri-huka=hukwa (∼ eri-hukwa=hukwa)
d.	eri-hukya	*to cause to cook*	eri-huka=hukya (∼ eri-hukya=hukya)
e.	mó-tw-á-huk-ɨre	*we cooked (yesterday)*	mó-tw-á-huka=huk-ɨre
f.	huk-e	*cook!*	huka=huk-e (∼ huke=huk-e)

(3) *Reduplication of C(V) Roots*

a.	erítâ	*to bury (people)*	erí-tata=tâ
b.	erítabwâ	*to be buried*	erí-tata=tabwâ (∼ erí-tabwa=tabwâ)
c.	erítána	*to bury each other*	erí-tata=tána (∼ erí-tana=tána)
d.	erítéra	*to bury for*	erí-tata=téra (∼ erí-tera=téra)

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[1] This data diverges from what has been previously reported for Kinande, particularly in Mutaka and Hyman (1990). The data I discuss were collected in my own elicitation, and possibly reflect a different dialect than has been previously reported.

- The forms in parentheses are optional more faithful reduplicants – abstracting away from them, the reduplicants in (2b-f) and (3b-d) are not very faithful. What they *are* is **uniform** with respect to one other.
- I will account for this fact by using a reduplication-relativized version of UNIFORM EXPONENCE:

(4) UNIFORM EXPONENCE(RED)
All occurrences of the Kinande verbal reduplicative morpheme RED within words containing a single root R must be in correspondence with each other.

Plan for the talk:

1. Kinande reduplication and uniformity.
2. Addressing the optionality in (2c-d) and (3b-d), in the context of the *Morpheme Integrity Constraint* that has been the focus of previous work on Kinande (Mutaka and Hyman, 1990; Steriade, 1997; Downing, 1999, 2000).
3. Extending reduplicant uniformity to a case of radical non-correspondence.
4. Conclusion.

1 Kinande Reduplication and Uniformity

1.1 Basic Kinande Data

- Kinande verbal reduplication was first discussed by Mutaka and Hyman (1990).
- Verbal reduplication in Kinande is typical of the Bantu family: the reduplicant is a **bisyllabic prefix** that occurs immediately to the left of the verb root, and contributes the meaning of 'quickly' or 'repeatedly'.

(5)

a.	eri-hum-a	'to hit'	eri-huma=hum-a	'to hit repeatedly'
	INF-hit-FV		INF-RED=hit-FV	
b.	eri-gend-a	'to go, to travel'	eri-genda=gend-a	'to go/travel quickly'
	INF-travel-FV		INF-RED=travel-FV	
c.	eri-twal-a	'to carry'	eri-twala=twal-a	'to carry quickly'
	INF-carry-FV		INF-RED=carry-FV	

- The Base of reduplication is the verbal root plus its suffixes: the **I(nflectional)-Stem**.
- The I-Stems in (5) are **canonical** I-stems: they involve a CVC root with a single Inflectional Final Suffix [-a]. Because they are bisyllabic, **canonical I-Stems can be fully reduplicated**.
- Shorter verb stems triplicate (overcopy) when reduplicated, in order to fill the bisyllabic template:

(6)

a.	*-so-*:	eri-sw-a	'to grind'	eri-swaswa=sw-a	'to grind quickly'
b.	*-lu-*:	eri-lw-a	'to fight'	eri-lwalwa=lw-a	'to fight quickly/repeatedly'
c.	*-tu-*:	eri-tw-a	'to cut'	eri-twatwa=tw-a	'to cut quickly/repeatedly'
d.	*-t-*:	eri-t-a	'to bury (a person)'	eri-tata=t-a	'to bury quickly/repeatedly'

- Prefixes never reduplicate, even when the I-Stem is smaller than two syllables. (7) shows this with a CV root and an object-agreement prefix (the I-Stem is encased in brackets):

(7)

eri-bi-[sw-a]	to grind it (e.g. corn)	eri-bi-swaswa=[sw-a]
INF-cl8-grind-FV		INF-cl8-RED-grind-FV
		*eri-biswa=bi-[sw-a]

We can use the following constraints to determine the size and position of the reduplicant:

(8) RED=$\sigma\sigma$
The Reduplicant is two syllables long.

(9) ALIGN(RED,R; I-Stem,L) [ALIGN]
Align the right edge of the Reduplicant with the left edge of the I-Stem.[2].

(10) S-DEP$_{BR}$
Every segment in the Reduplicant must have a corresponding segment in the Base.

(11) INTEGRITY
No segment in the Base may correspond to more than one segment in the Reduplicant.

(12) RED=$\sigma\sigma$, ALIGN, S-DEP$_{BR}$ $\gg$INTEGRITY
a. RED=$\sigma\sigma\gg$INTEGRITY $\longrightarrow$ *eri-swa=swa (no monosyllabic RED)
b. ALIGN$\gg$INTEGRITY $\longrightarrow$ *eri-biswa=bi-swa (no copy of prefixes)
c. S-DEP$_{BR}$ $\gg$INTEGRITY $\longrightarrow$ *eri-**yi**swa=swa (no epenthesis)

1.2 Uniform Exponence

- With the basic analysis of Kinande reduplication in place, we can develop the uniform exponence analysis.
- The relevant data are repeated in (13) and (14), with the uniform reduplicants **bolded**.
- While underived stems reduplicate as expected, all *derived* stems, and stems with non-default IFS (-e *subjunctive*, -ire *perfect*) exhibit imperfect base-reduplicant faithfulness.

(13) *CVC roots proliferate CVC+a reduplicant*

a.	eri-huka	*to cook*	eri-**huka**=huka
b.	eri-hukira	*to cook for*	eri-**huka**=hukira
c.	eri-hukana	*to cook e.o.*	eri-**huka**=hukana
c.	eri-hukwa	*to be cooked*	eri-**huka**=hukwa (~ eri-hukwa=hukwa)
d.	eri-hukya	*to cause to cook*	eri-**huka**=hukya (~ eri-hukya=hukya)
e.	mó-tw-á-huk-ire	we cooked (yestd.)	mó-tw-á-**huka**=huk-ire
f.	huk-e	*cook!*	**huka**=huk-e (~ huke=huk-e)

(14) *C(V) roots proliferate triplication*

a.	erítâ	*to bury (people)*	erí-**tata**=tâ
b.	erítabwâ	*to be buried*	erí-**tata**=tabwâ (~ erí-tabwa=tabwâ)
c.	erítána	*to bury each other*	erí-**tata**=tána (~ erí-tana=tána)
d.	erítéra	*to bury for*	erí-**tata**=téra (~ erí-tera=téra)

- Recall the UE REDconstraint (repeated from (4)):

(15) UNIFORM EXPONENCE(RED) [UE-RED]
For all occurrences of the Kinande verbal reduplicative morpheme RED within words containing a single root R, RED has the same realization.

- Ranking this constraint above both S-MAX$_{BR}$ and F-DEP$_{BR}$ will force uniformity (I assume that non-corresponding reduplicant-final [a] is a mutated Base vowel, violating F-DEP$_{BR}$ rather than S-DEP$_{BR}$):

[2]This constraint alone will not be sufficient to account for the position of the reduplicant with respect to V-initial roots. See Jones (2009) and Downing (2000) for discussion and analysis of such data.

(16) UE-RED≫S-MAX$_{BR}$, F-DEP$_{BR}$, Integrity

a. UE-RED≫S-MAX$_{BR}$ → allows non-copy of Base segments
b. UE-RED≫F-DEP$_{BR}$ → allows mutation of Base vowels
c. UE-RED≫Integrity → allows triplication

- This gets uniformity, but not necessarily the *right* uniformity, as shown in (17).

(UE-RED requires that whole reduplicative paradigms be evaluated simultaneously. Three representative forms make the necessary points below)

(17) UE-RED≫S-MAX$_{BR}$, F-DEP$_{BR}$

	{ eri-RED-huk-a, eri-RED-huk-w-a, mu-RED-huk-ir-e }	UE-RED	S-MAX$_{BR}$	F-DEP$_{BR}$
a. ☹	{ eri-huka=huka, eri-huka=hukwa, mu-huka=hukire }	✓	***!	**
b. ☹☞	{ eri-hukwa=huma, eri-hukwa=hukwa, mu-hukwa=hukire }	✓	**	**
c.	{ eri-huki=huka, eri-huki=hukwa, mu-huki=huk-ir-e }	✓	***!	****
d.	{ eri-huka=huka, eri-hukwa=hukwa, mu-huki=hukire }	*!	**	

(18) UE-RED≫INTEGRITY, S-MAX$_{BR}$, F-DEP$_{BR}$

	{ eri-RED-ta, eri-RED-t-abw-a, eri-RED-t-er-a }	UE-RED	INTEGRITY	S-MAX$_{BR}$	F-DEP$_{BR}$
a.	{ eri-tata=ta, eri-tabwa=tabwa, eri-tera=tera }	*!	*	**	*
b. ☹	{ eri-tata=ta, eri-tata=tabwa, eri-tata=tera }	✓	*!**	*****	*
c. ☹☞	{ eri-tabwa=ta, eri-tabwa=tabwa, eri-tabwa=tera }	✓		**	*
d.	{ eri-tera=ta, eri-tera=tabwa, eri-tera=tera }	✓		**	**!

Problem: The correct winner is harmonically bounded by another uniform paradigm, in which a non 'basic' form proliferates.

- A possible solution: highly rank S-DEP$_{BR}$
- This misses an intuition, however: what's really wrong with the (incorrect) winners in (17) and (18) is not that they violate DEP, but that the reduplicants contain morphemes not present in their bases.
  → Though in (18c) the reduplicant *tabwa* in *eri-tabwa=ta* doesn't literally contain the passive morpheme, its segments are in correspondence (via UE) with the passive morpheme.
- I implement this intuition using a constraint M-DEP, modified from a constraint with similar function in Downing (2000):

(19) M-DEP$_{BR}$
A segment in a reduplicant may not correspond, directly or indirectly, to a segment belonging to a morpheme not contained in its base.

(20) M-DEP$_{BR}$, UE-RED≫INTEGRITY, S-MAX$_{BR}$, F-DEP$_{BR}$

{ eri-RED-ta, eri-RED-t-abw-a, eri-RED-t-er-a }	M-DEP$_{BR}$	UE-RED	INTEGRITY	S-MAX$_{BR}$	F-DEP$_{BR}$
a. { eri-tata=ta, eri-tabwa=tabwa, eri-tera=tera }		*!	*	**	*
b. ☞ { eri-tata=ta, eri-tata=tabwa, eri-tata=tera }		✓	*!**	*****	*
c. { eri-tabwa=ta, eri-tabwa=tabwa, eri-tabwa=tera }	*!*	✓		**	*
d. { eri-tera=ta, eri-tera=tabwa, eri-tera=tera }	*!*	✓		**	**

A Prediction of UE:

When a root *lacks* an underived form...
...if all derived forms are based on one particular derived form (a lexicalized causative, for example), uniform exponence will not proliferate an 'underived' reduplicant, but will proliferate the simple causative reduplicant.
...if there is no underived form *but* more than one derived form exists (causative and passive, for example) it is less clear what should happen. Learners may be willing to postulate an underived reduplicant in the absence of an underived stem.

2 Optional Non-uniformity and the Morpheme Integrity Effect

- This section returns to the **non**-uniform option available to Kinande reduplicants. The relevant reduplicants are bolded in the repeated data below:

(21) *Canonical C_0VC_0 Roots*

a.	eri-huka	*to cook*	eri-**huka**=huka
b.	eri-hukira	*to cook for*	eri-**huka**=hukira
c.	eri-hukana	*to cook e.o.*	eri-**huka**=hukana
c.	eri-hukwa	*to be cooked*	(eri-huka=hukwa ∼) eri-**hukwa**=hukwa
d.	eri-hukya	*to cause to cook*	(eri-huka=hukya ∼) eri-**hukya**=hukya
e.	mó-tw-á-huk-ɨre	we cooked (yestd.)	mó-tw-á-**huka**=huk-ɨre
f.	huk-e	*cook!*	(huka=huk-e ∼) **huke**=huk-e

(22) *Subminimal C(V) Roots*

a.	erítâ	*to bury (people)*	erí-**tata**=tâ
b.	erítabwâ	*to be buried*	(erí-tata=tabwâ ∼) erí-**tabwa**=tabwâ
c.	erítána	*to bury each other*	(erí-tata=tána ∼) erí-**tana**=tána
d.	erítéra	*to bury for*	(erí-tata=téra ∼) erí-**tera**=téra

- This cannot be analyzed as UE being *partially* enforced – UE-REDplaces all relevant reduplicants in correspondence, or none of them.

- What these data illustrate is the *Morpheme Integrity Condition* effect that has been the focus of previous discussions of Kinande reduplication (Mutaka and Hyman, 1990; Steriade, 1997; Downing, 1999, 2000).

(23) *Morpheme Integrity Constraint* (Mutaka and Hyman, 1990, 83)
"Mapping of a melody to a reduplicative template takes place *by morpheme*. If the whole of a morpheme cannot be successfully mapped into the bisyllabic reduplicative template, then none of the morpheme may be mapped."

→ All dialects of Kinande seem to exhibit the MIC..
→ ...while only some exhibit Uniformity

2.1 Details of the MIC

- Extension suffixes that 'fit' in the reduplicant do reduplicate: the two suffixes that do not add a syllable to the canonical I-Stem – passive *-w-* and causative *-j-* – **must** reduplicate in this dialect.

(24)

a.	eri-hum-w-a INF-hit-PASS-FV	'to be beaten'	eri-**humwa**=hum-w-a
b.	eri-huk-y-a INF-cook-CAUS-FV	'to cause to cook'	eri-**hukya**=huk-y-a

- Similarly, syllable-adding extension suffixes attached to CV roots also reduplicate:

(25)

a.	erí-t-abw-â INF-bury-PASS-FV	to be buried	erí-tabwa=t-abw-â
b.	erí-t-án-a INF-bury-RECP-FV	to bury e.o.	erí-tana=t-án-a
c.	erí-t-ér-a INF-bury-APPL-FV	to bury for	erí-tera=t-ér-a

- The reduplications in (24) and (25) are mandatory in non-Uniformity dialects; they are optional in this dialect.

- Extension suffixes that add a syllable to the I-Stem do not reduplicate in *any* dialect when following CVC roots – we see default final [a] instead:

(26)

a.	eri-huk-ir-a	'to cook for'	eri-huka=huk-ir-a
	INF-cook-APPL-FV		*eri-huki=huk-ir-a
b.	eri-huk-an-a	'to cook each other'	eri-huka=huk-an-a
	INF-cook-RECP-FV		
c.	eri-huk-is-y-a	'to cause to cook'	eri-huka=huk-is-y-a
	INF-cook-CAUS-FV		*eri-huki=huk-is-y-a
d.	mó-tw-á-huk-ɨre	we cooked (yestd.)	mó-tw-á-huka-huk-ɨre
	INFORM.-2PL-TNS-cook-PERF.FV		*mó-tw-á-huki-huk-ɨre

- The final [a]'s in (26) cannot result from segment-skipping: a reduplicant-final [a] appears in all non-faithful forms, even when the I-Stem has a different inflectional final suffix:[3]

(27)

mó-bá-hum-ire	'they beat yesterday'	mó-bá-huma=hum-ire
mu-hum-is-y-e	'make him beat!'	mu-huma=hum-is-y-e

Why is RED [a]-final? All approaches have linked the occurrence of [a] in REDto the default inflectional suffix *-a*.

- For Mutaka and Hyman the morpheme *-a* could be inserted to fill a reduplicative template because it has no specific morphological role.
- Steriade (1998) proposes that reduplicants are constrained to resemble **actual** I-Stems, among which the [a]-final forms are priveleged.
- Downing (1999, 2000) advances the view that RED must be analyzable as a **potential**, though not necessarily actual, **canonical I-Stems**.

- The UE analysis outlined above accomplishes a similar effect – the [a]-final reduplicant proliferates because it occurs in underived and canonical contexts.

2.2 A Brief Outline of a Lexical Conservatism account of the MIC

- This is an extension of Steriade (1998)'s discussion of Kinande reduplication in terms of Lexical Conservatism.

- Steriade proposed that Kinande reduplicants must correspond to *some* otherwise occurring I-Stem in the language.

The Problem: Reduplicants are actually *constrained* in which stems they can correspond to.
→ the existence of the subjunctive imperative I-Stem *gend-e* 'travel!' does not license the reduplication *eri-gende=gend-er-a*, where the [e] belongs to an applicative morpheme.

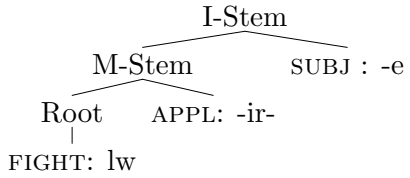
- To deal with this, we can build into the constrain enforcing lexical conservatism a restriction on the stems to which correspondence is possible:

(28) Lexical Conservatism(RED) [RED-LC]
A reduplicant of an I-Stem must correspond to that I-Stem, **or to some other existing I-Stem whose derivational structure is a subconstituent of the adjacent I-Stem**.

[3]Similarly Reduplicant-final [-a] is not a fixed segment resulting from the emergence of the unmarked (TETU, Alderete et al., 1999). There is no evidence elsewhere in Kinande that [-a] is a phonologically-unmarked vowel (Archangeli and Pulleyblank, 1989; Mutaka, 1986). For example, it is not the vowel epenthesized in loanwords in Kinande to break up disallowed consonant sequences: the vowel occurring in such environments is [i].

- The effect of this constraint on a verb with structure as in (29)...

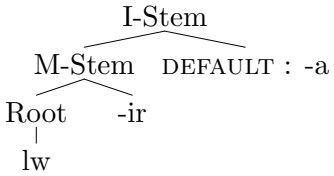
(29)



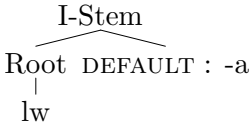
- ...is to require that its reduplicant correspond to *that* I-Stem, or to one of the I-Stems in (30), which contain subparts of (29)'s derivational structure, but the default IFS [a]:

(30)

a.



b.



- The ranking of RED-LC with respect to the other constraints will be as in (31), and successfully gets us the default [a] required in reduplication of morphologically complex forms:

(31) RED=$\sigma\sigma$, RED-LC, CONT $\gg$DEP$_{BR}$V $\gg$S-MAX$_{BR}$

	mu-RED-humire	RED=$\sigma\sigma$	RED-LC	CONT	DEP$_{BR}$V	S-MAX$_{BR}$
a. ☞	mu-huma=humire				*	***
b.	mu-humi=humire		*!			**
c.	mu-hume$_1$=humire$_2$		*!		*	**
d.	mu-hume$_1$=humire$_1$			*!		**
e.	mu-humire=humire	*!				

- The MIC effects, triggered by lexical conservatism, will be visible whenever UE-REDis ranked *below* a constraint requiring total faithful copy of a base – this effect can be obtained with locally conjoined S-MAX$_{BR}$& F-DEP$_{BR}$.

3 Other Cases of UE and Reduplication

- Recent work by Sharon Inkelas and Cheryl Zoll (Inkelas, 2005; Inkelas and Zoll, 2005) has discussed cases of *non-correspondence* in reduplication, and has argued on their basis for a non-correspondence-based approach to reduplication more generally (Morphological Doubling Theory, MDT).

- Output-Output correspondence, formalized as Uniform Exponence, provides a way to account for such data within Correspondence Theory.

- Perhaps the most striking data discussed in Inkelas and Zoll (2005) involve stem suppletion in reduplication in Sye.

- Sye strong verbs have two stem allomporphs, historically related but synchronically unpredictable (Crowley,

1998).[4] The two stems occur in complementary morphosyntactic environments:

(32) *Sye Stem Alternations* (Crowley, 1998, p.84)

	Stem 1	*Stem 2*	*Gloss*
a.	amol-	omol-	*fall*
b.	ovol-	ampol-	*turn it*
c.	oruc-	anduc-	*bathe*

- Sye reduplication totally copies the Stem. When a Stem 1 form reduplicates, both copies are in the Stem 1 form. When a Stem 2 form reduplicates, however, the second copy is always a Stem 1 form:

(33) *Sye Reduplication* (Crowley, 1998, p.79, 143)

a.	omolomol	cw-amol-omol
	fall.STEM1-fall.STEM1	3pl.FUT-fall.STEM2-fall.STEM1
b.	ovol-vol-	ampol-vol-
	turn.it.STEM1-turn.it.STEM1	turn.it.STEM2turn.it.STEM1

- These data are presented in Inkelas and Zoll as evidence against a Correspondence-based approach to reduplication, and in favour of their Morphological Doubling Theory approach.

- They can be understood within a correspondence-based approach, however, with the mechanism of Uniformity enforced between reduplicants; the suppletive reduplicants in (33) can result from UE-REDdominating all FAITH$_{BR}$ constraints:

(34)

	{ omol-RED / amol-RED }	UE-RED	FAITH$_{BR}$
a. ☞	{ omol-omol / amol-omol }		*
b. ☞	{ omol-amol / amol-amol }		*
c.	{ omol-omol / amol-amol }	*!	

- Again, this account requires a mechanism for privileging Stem 1 (the basic form) over Stem 2 – the tableau in (34) is equally satisfied by both uniform possibilities. Whether this preference if morphological, or simply the result of a majority of words containing Stem 1, is a topic for future research.

4 Conclusion

- This talk has argued for the existence of Output-Output correspondence in the domain of reduplication – but *between* reduplicants rather than between a reduplicant and its base.

- I've developed this idea within the framework of Uniform Exponence (Kenstowicz, 1998)
  - Applied to Kinande, it accounts for a pattern of *default segmentism*, unexpected given the availability of more-faithful reduplicated forms.
  - In the discussion of Sye, it might account for apparent non-correspondence, where the allomorph of a root that occurs in a reduplicant can be distinct from the allomorph that occurs in the Base.

[4] Weak verbs alternate, but the alternation is reported to be phonologically predictable.

- A speculative concluding remark: why might Kinande reduplication be subject to Uniform Exponence?
  → The effect of the MIC is to create an already-very-uniform paradigm of reduplication for CVC roots. This may provide learners with enough evidence to postulate a UE constraint even for reduplication, the prototypically non-uniform morpheme.

References

Alderete, John, Jill Beckman, Laura Benua, Amalia Gnanadesikan, John McCarthy, and Suzanne Urbanczyk. 1999. Reduplication with fixed segmentism. *Linguistic Inquiry* 30:327–364.

Archangeli, D., and D. Pulleyblank. 1989. Yoruba Vowel Harmony. *Linguistic inquiry* 20:173–217.

Burzio, Luigi. 1998. Multiple correspondence. *Lingua* 104:79–109.

Crowley, Terry. 1998. *An Erromangan (Sye) grammar*. Number 27 in Oceanic Linguistics Special Publication. Honolulu: University of Hawai'i Press.

Downing, Laura J. 1999. Morphological constraints on Bantu reduplication. *Linguistic Analysis* 29:6–46.

Downing, Laura J. 2000. Morphological and prosodic constraints on Kinande verbal reduplication. *Phonology* 17:1–38.

Inkelas, Sharon. 2005. Morphological doubling theory: evidence for morphological doubling in reduplication. *Studies on reduplication. Berlin: Mouton de Gruyter* 65–88.

Inkelas, Sharon, and Cheryl Zoll. 2005. *Reduplication: Doubling in morphology*. Number 106 in Cambridge Studies in Linguistics. Cambridge.

Jones, Patrick. 2008. Accounting for falling tones in Kinande infinitive verbs. Phonology Circle presentation, MIT.

Jones, Patrick. 2009. The phonological stem in Kinande verbal phonolgy. Ms., MIT.

Kenstowicz, Michael. 1996. Base-identity and uniform exponence: alternatives to cyclicity. *Current trends in phonology: Models and methods* 1:363–393.

Kenstowicz, Michael. 1998. Uniform Exponence: exemplification and extension. Rutgers Optimality Archive 218.

Marantz, Alec. 1982. Re Reduplication. *Linguistic Inquiry* 13:435–482.

McCarthy, John. 1981. A prosodic theory of nonconcatenative morphology. *Linguistic Inquiry* 12:373–418.

McCarthy, John, and Alan S. Prince. 1994. The emergence of the unmarked: Optimality in prosodic morphology. *Proceedings of the North East Linguistic Society* 24:333–379.

McCarthy, John, and Alan S. Prince. 1995. Faithfulness and reduplicative identity. *University of Massachusetts Occasional Papers in Linguistics* 18:249–384.

Mutaka, Ngessimo. 1986. Vowel harmony in Kinande. Ms, University of Southern California.

Mutaka, Ngessimo, and Larry Hyman. 1990. Syllables and morpheme integrity in Kinande reduplication. *Phonology* 7:73–120.

Steriade, Donca. 1997. Lexical conservatism and its analysis. Ms., University of California, Los Angeles.

Steriade, Donca. 1998. Lexical conservatism and its analysis. *Ms., University of California, Los Angeles* .