Reduplicant size and placement

(1) "Canonical" reduplication patterns

Ilokano (Hayes and Abad 1989)

(Malayo-Polynesian; Philippines; 8M spkrs)

Sg.	Pl.	Gloss
púsa	puspúsa	'cat'
káldiŋ	kalkáldiŋ	'goat'
ǰyanitor	ǰyanǰyánitor	'janitor'
ró?ot	ro:ró?ot	'leaves'

Manam (Lichtenberk 1983, Buckley 1998)

(Malayo-Polynesian; New Guinea; 7000 spkrs in 1998)

Unredup.		Redup.	
salága	'be long'	salagalága	'long-sg.'
móita	'knife'	moitaíta	'cone shell'
malabóŋ	'flying fox'	malabombóŋ	'flying fox'
?ulan-	'desire'	?ulanláŋ	'desirable'

(2) Marantz (1982):

- RED = an affix (prefix or suffix)
- Shape of RED defined by a CV template
- Material associated from the same edge ("Marantz's generalization"):

  > "In the unmarked case, reduplicating prefixes associate with their melodies from left to right, reduplicating suffixes from right to left." (p. 447, Condition D.i.)

(3) The OT equivalent: (sort of)

- ALIGN-L/R(Red,PrWd): RED is a prefix/suffix
- RED = X (templatic constraint)
- LOCALITY(by seg/σ): RED is not separated from its corresponding string in the base by any segments/syllables
- MAX: copy as much as possible (from base? from input?)
- BASE-CONTIG: no skipping when copying from the base

(Unique predictions from treating these as rankable constraints)

(4) Goals today: examine a variety of reduplication patterns, seeing what additional elaborations are needed to capture three basic aspects of reduplication:

1. Where do you copy from
2. How much do you take
3. Where do you put it

(We'll take these questions out of order: (1) and (3), then (2))

Where do you copy from, and where do you put it?

(5) Marantz (1982): copying from L/R edges

- p. 447: begin at L and associate L→R, or begin at R and associate R→L

(6) McCarthy & Prince (1995): ANCHOR-L/R(Base, RED)

- The X edge of the base corresponds to the X edge of the reduplicant
- How is this not quite the same from L→R or R→L association? What are some unique predictions of an ANCHOR-based approach?
  - Hint: both constraints freely rerankable w/Contiguity

(7) Edge-in association as alignment + locality

/RED-badupi/			ALIGN-L(RED)	ALIGN-R(RED)	LOCALITY(σ)	RED = $\breve{\sigma}$
☞	a.	ba-badupi		***		
	b.	du-badupi		***	*	
	c.	pi-badupi		***	*	
	d.	ba-ba-dupi	*	**		
	e.	ba-du-dupi	*	**		
	f.	badu-du-pi	**	*		
☞	g.	badupi-pi	***			
	h.	badupi-du	***		*	
	i.	badupi-ba	***		*	

Factorial typology: edge-in candidates harmonically bound nonlocal and infixing candidates

- What rankings are needed to get Ilokano and Manam?

(8) Infixing reduplication in Timugon Murut (Prentice 1981, McCarthy & Prince 1993, McCarthy 2000)
(Malayo-Polynesian; Malaysia; around 8,000 spkrs)

	Unredup.		Redup.	
a.	bulud	'hill'	bubulud	'ridge'
b.	limo	'five'	lilimo	'about five'
c.	ulampoy		ulalampoy	(no gloss)
d.	abalan	'bathes'	ababalan	'often bathes'
e.	ompodon	'flatter'	ompopodon	'always flatter'

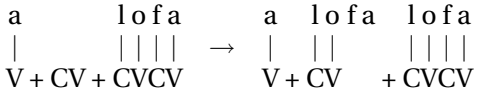
/RED-ulampoy/			*V.V, Onset/DEP/etc.	RED = $\breve{\sigma}$	ALIGN-L(RED)
	a.	u-ulampoy	*!		
☞	b.	u-la-lampoy			*
	c.	ul-ul-ampoy		*!	*
	d.	ula-la-mpoy			**!
	e.	ulam-po-poy			**!

- How is this similar to other cases of infixation that you are familiar with (e.g., Tagalog *-um-* infixation) How is it different?
- Prosodic circumscription (McCarthy & Prince 1990, 1993)
  - Skipping initial onsetless syllable is awkward in an operational framework
- ANCHOR-L is no help here (it is violated by [ulalampoy], since [l] doesn't correspond to [u])
- ALIGN-L is doing the work of keeping the reduplicant to the left (just as with infixation of segmentally specified affixes)

(9) Another infixation case: Samoan (Broselow & McCarthy 1983)
(Malayo-Polynesian; Samoa; 400,000 spkrs 1999)

	Unredup.	Redup.	Gloss
a.	táa	tatáa	'strike'
b.	túu	tutúu	'stand'
c.	nófo	nonófo	'sit'
d.	móe	momóe	'sleep'
e.	alófa	alolófa	'love'
f.	saváli	savaváli	'walk'
g.	malíu	malilíu	'die'
h.	galúe	galulúe	'work'
i	fanáu	fananáu	'be born'

(10) Marantz (1982), fn. 15: Points out existence of infixing reduplication, suggests that a similar copying mechanism could handle them



- Does not provide an explicit mechanism to position reduplicant as an infix
- Direction of copying also unexplained: why is [lofa] copied and not [a]? (Broselow & McCarthy 1983)
  - Are infixes suffixed to what comes before them, or prefixed to what comes after?
- Prosodic circumscription: target final (stressed) foot
- Possible constraints:
  - ALIGN(RED,R,'σ,L) ("ALIGN-to-$\acute{\sigma}$")
    - Alignment to the foot containing main stress is not limited to reduplication; Ulwa possessive marking is aligned immediately after the main stress foot (McCarthy & Prince 1993)
  - ANCHOR-L('σ, RED)

(11) Alignment + locality is not enough to capture Samoan:

/RED-saváli/		ALIGN-to-$\acute{\sigma}$	RED=$\breve{\sigma}$	ALIGN-L
	a. sa-saváli	*!		
☞	b. sa-sa-váli			*
☞	c. sa-va-váli			*

- ALIGN-to-$\acute{\sigma}$ captures locus of reduplication, but can't get the direction (same problem as the Marantz footnote)
- Nelson (2003 Rutgers diss.): a positional faithfulness effect (MAX('σ))

/RED-saváli/		MAX('σ)	ALIGN-to-$\acute{\sigma}$	RED=$\breve{\sigma}$	ALIGN-L
	a. sa-saváli		*!		
	b. sa-sa-váli	*!			*
☞	c. sa-va-váli				*

(12) Other examples of copying from strong positions

a. Yareba (Weimer & Weimer 1970, Riggle 2003)
(Trans-New Guinea; Papua New Guinea; 750 spkrs 1981)

	Sg.	Pl.	Gloss
a.	boroy-a	borob-a	'reveal it!'
b.	fomuy-a	fomuf-a	'break it!'
c.	doroy-a	dorod-a	'go through the hole!'

- Stem-final [y] in sg. is epenthetic (to avoid hiatus; a strictly CV lg.)
- Plural marked by copy of *stem-initial* consonant
- ALIGN-R(RED), but MAX(Initial C)
- We'll talk about the placement of the reduplicant shortly (point here is to discuss source of RED material)

b. Levantine Arabic intensive/pejorative reduplication (Broselow & McCarthy 1983)
(Semitic; Lebanon, Syria, Palestine, Jordan)

	Simple vb.	Derived vb.	Gloss (of derived)
a.	faraħ	farfaħ	'rejoiced'
b.	baħaʃ	baħbaʃ	'sought'
c.	barad	barbard	'shaved unevenly'
d.	daħal	daħdal	'rolled gradually'
e.	baʕas	baʕbas	'gave the finger to repeatedly'

- Stress is penultimate in these words
- Initial consonant is copied to create derived CCCC roots

c. Quileute (Andrade 1933, McCarthy and Broselow 1983)
(Chimakuan; Washington State; 10 spkrs in 1977)

	Unredup.		Redup.	
a.	qaːleʔ	'he failed'	qaqleʔ	(frequentative)
b.	t͡siko	'he put it on'	t͡sit͡sko	(frequentative)
c.	kʷeːt͡saʔ	'he is hungry'	kʷeːkʷt͡saʔ	'several are hungry'
d.	tukoːyoʔ	'snow'	tutkoːyoʔ	'snow here and there'

- Stress in Quileute is penultimate (quantity insensitive; Gordon 2002)
- What distinguishes the segment that gets copied here?

(13) Generalizations:

- Common to copy from left edge and prefix result (Ilokano, Tagalog)
  - Variant: V-initial words infix RED to obey ONSET (Sanskrit, Timugon Murut) = "copy as close to left edge as possible"
- Less common, but well-motivated cases of copying from and attaching to "strong" positions elsewhere in the word
  - Main stress/stressed foot (Samoan; also Manam)
- Relatively fewer suffixing cases
  - A striking contrast to segmentally specified affixation, which is predominantly suffixing

(14) A hypothesis: (Nelson 2003 Rutgers diss.)

- Reduplication targets left edges or strong positions (stressed syllables), but never right edges
- In other words, all reduplication is prefixing or stress-seeking

Purported functional motivation:

- Prefixes get in the way of lexical access for the root; suffixes allow the more important root information to sit in a prime location for lexical access
- In reduplication, you can already get going on lexical access because the reduplicant contains material from the stem
  - Caveat: this is more true in some cases than in others; in many TETU cases, the reduplicant contains only minimal information from the root (e.g., Skt desiderative, and more extreme cases, like Yoruba)
  - This functional motivation might explain why segmentally specified affixes tend to be suffixes, but why would reduplicants *prefer* to be prefixes, if they are at best neutral w.r.t. lexical access?

(15) One the face of it, many right-side reduplication cases do seem amenable to reinterpretation as stressed-syl reduplication

E.g., Manam in (1) above (but now treating first copy as RED)

/RED-malabóŋ/	RED=FT	ALIGN-to-'σ (L)	MAX('σ)	ALIGN-R
a. malamalabóŋ		*!		***
☞ b. malabombóŋ				*
c. malabombóŋ		*!	(vacuous)	

Some trouble with light final syllables, though:

/RED-salága/	RED=FT	ALIGN-to-'σ (L)	MAX('σ)	ALIGN-R
a. salasalága		*!		***
☞ b. sasalalága				**
☞ c. salagalága				**

- Maybe a LOCALITY violation? RED-Contig (no intrusion)?
- Maybe a relative prominence discrepancy: [sa(sàla)(lága)] vs. [sa(làga)(lága)]
- ANCHOR-L(RED,'σ): would force RED to start with [l]
- The point: many options before resorting to right-edge copying

(16) A possibly instructive case: Dakota/Lakhota (Boas & Deloria 1941, Shaw 1980, Marantz 1982)

	Unredup.	Redup.	Gloss
a.	gleˈʃka	gleˈʃka-ʃka	‘be spotted’
b.	waˈʃte	waˈʃte-ʃte	‘be good’
c.	loˈwã	loˈwã-wã	‘sing’
d.	ˈt͡ʃʰepe	t͡ʃʰep-ˈt͡ʃʰepe (*t͡ʃʰepe-pe)	‘be fat’
e.	ˈkaɣe	kax-ˈkaɣe (*kaɣe-ɣe)	‘do, make’
f.	ˈkʰate	kʰal-ˈkʰate (*kʰate-te)	‘be hot’
g.	naˈpʰope	na-pʰo-ˈpʰope (*napʰope-pe)	‘pop’
h.	ˈt͡ʃik’ala	t͡ʃik-ˈt͡ʃik’ala	‘small’

- Nelson (2002, 2003): the fact that RED moves around under different stress patterns proves that it is not targeting final syllables *per se*, but rather stressed syllables
- There are, however, some cases with penultimate stress but final reduplication

	Unredup.	Redup.	Gloss
i.	ˈhãske	hãska-ska	‘tall’
j.	ˈʃakpe	ʃaˈkpe-kpe	‘be six in number’
k.	ˈjamni	ˈjamni-mni	‘be three in number’
l.	ˈzaptã	ˈzaptã-ptã	‘be five in number’
m.	ʃaˈkowĩ	ʃaˈkowĩ-wĩ	‘be seven in number’
n.	wiˈkt͡ʃemna	wiˈkt͡ʃemna-mna	‘be ten in number’

- The details are too complex to go into here; the point is that some languages do have patterns that look like final-syl/foot reduplication, and the jury is perhaps still out on whether they can all be explained away
- The potential payoff: an account for a striking typological imbalance

(17) Another troubling case: Chamorro

	Adj.	Intensive	Gloss
a.	dánkolo	dánkolo-lo	‘big’
b.	buníta	buníta-ta	‘pretty’
c.	ñálang	ñála-la-ng	‘hungry’
d.	métgot	métgo-go-t	‘strong’

- Nelson’s speculation: another possible prominency mismatch case: *bùn-buníta

(18) Summary so far:

- Found evidence that RED can copy from a variety of places in the word
  - Initial onset, initial syllable, stressed syllable, final syl?
- Have focused thus far on cases in which locality is obeyed
  - Not always external affixation, but always adjacent to source material

(19) Back to Marantz’s generalization:

- By default, RED copies from left when prefixed, and from right when suffixed
- (Based on typological observation that same-side reduplication is overwhelmingly favored)

What captures this generalization in Marantz’s original proposal? What captures it in the constraint set we’ve been using?

(20) Some famous (and not so famous) exceptions to Marantz' generalization

a. Madurese (Stevens 1968)
(Malayo-Polynesian; Indonesia; 13.7M spkrs)

Sg.	Pl.	Gloss
buwɤʔ-ɤn	wɤʔ-buwɤʔ-ɤn	'fruit'
k^huwɤ	wɤ-k^huwɤ	'cave'
mõw̃ã	w̃ã-mõw̃ã	'face'
nẽỹãt	ỹãt-nẽỹãt	'intentions'

b. Chukchi (Krause 1980)
(Chukotko-Kamchatkan; Russia; 10,000 spkrs 1997)

Absolutely Pl.	Absolutive Sg.	Gloss
jilʔe-t	jilʔe-jil	'gopher'
nute-t	nute-nut	'earth'
tala-t	tala-tal	'meat'

c. Koryak (Bogoras 1969, discussed by Riggle 2003)
(Chukotko-Kamchatkan; Russia; 3,500 spkrs 1997)

Stem	Absolut. sg.	Gloss
mɪtqa	mɪtqa-mɪt	'oil'
qanga	qanga-qan	'fire'
kilka	kilka-kil	'shell-fish'

d. Creek (Martin and Mauldin 2000)
(Muskogean; Oklahoma (historically Alabama/Florida); 6000 spkrs 1990)

	Sg.	Pl.	Gloss
a.	cáːk-iː	caːcak-íː	'precious'
b.	cámp-iː	camcap-íː	'sweet'
c.	cákh-iː	cakcah-íː	'sticking in'
d.	fáck-iː	facfak-íː	'full' (container)
e.	hasátk-iː	hasathak-íː	'clean'
f.	likácw-iː	likacliw-íː	'nasty, dirty'
g.	lowáck-iː	lowaclok-íː	'soft'
h.	sófk-iː	sofsok-íː	'deep'
i.	takacw-iː	takactaw-íː	'hard'

(Also the Arabic and Yareba cases from above)

(21) Madurese: a MAX-$'\sigma$ effect?

- Note that I'm not totally sure Madurese has final stress. This is a conjecture (and an illustration of how opposite-side patterns could be derived with these constraints)

/RED-garadus/		ALIGN-L	MAX-$'\sigma$	LOCALITY(σ)
a.	gar-garadus		*!	
☞ b.	dus-garadus			*
c.	gara-dus-dus	*!*		

- Another possibility, which actually seems more plausible, is that this is part of a more general truncation process in Madurese, of disyllables to just their final syllable

Base	Trunc.	Gloss
duwaʔ	waʔ	'two'
uriŋ	riŋ	'person'

(22) Other non-local cases also show combination of MAX(somewhere) and ALIGN(somewhere else)

- Creek: copy initial CV, place before final C
  - MAX(initial σ), ALIGN-to-$'\sigma$ (or ALIGN-R) with infixation to satisfy syl structure (*[lowacklí:], [lowaclokí:] is better)
- Levantine Arabic: copy initial C, place after first syl
  - MAX(initial σ) or MAX(initial C) (landing site may be last resort: *[babrad], *[barabd], but what about [bardab]?)
- Yareba: copy initial C, place after root
  - MAX(initial σ) or MAX(initial C), looks liks ALIGN-R

(23) Yet another infixation case: Temiar (Benjamin 1976, McCarthy 1982, Broselow & McCarthy 1983/4)

(Mon-Khmer; spoken in Malaysia; 11,500 spkrs in 1981)

	Perfective	Continuative	Gloss
Active	səlɔ́g	sɛglɔ́g	'lie down, sleep, marry'
Causative	sɛrlɔ́g	səɾɛglɔ́g	

- Syllables before main stress show vowel reduction: [ə] in open syllables, [ɛ] in closed syllables
- Pattern described as mirror image of Levantine Arabic: final C copied, placed before final syllable
- MAX-stressed rime, ALIGN-to-$'\sigma$? (together with a constraint that bans creating an extra "full" syllable by copying the vowel)

(24) A similar case: Rebi West Tarangan (Gouskova 2004)

(Malayo-Polynesian; Indonesia; 6500 spkrs)

	Unredup.	Redup.	Gloss
tapúran	tarpúran	'middle'	
binúk	biknúk	'ankle'	

(The details are more complex; point is just to show there's other cases of copying the C that comes immediately after the stressed V)

(25) Trying to explain away other cases as non-cases

- Chukchi [jil?e-jil], [nute-nut]: full reduplication with apocope
- (Not so clear this works for Koryak)

(26) Summary

- Reduplication typology is richer than simply prefixation/suffixation with edge-in association
- The full McCarthy & Prince (1995) model is perhaps overly powerful, though
  - May predict patterns that don't occur
  - Certainly doesn't predict statistical asymmetries (like prefixing preference, and the tendency for edge-in association)
- Promising (but difficult) approach: try to live with a very restricted set of constraints
  - Placement constraints: alignment to prominent positions
  - Copying constraints: locality forces you to take what's handy, MAX(strong positions) forces you to take what's prominent

How much do you copy?

(27) Marantz (1982): affixation of CV skeletal template

- Reminder: what is inadequate about this approach?
- See examples in (1) if you need a hint

(28) Template constraints

- RED = $\breve{\sigma}$, RED = $\bar{\sigma}$, RED = σ, RED = Ft, etc.

(29) A danger of using templates: back-copying the template

- Template, MAX-BR ≫ MAX-IO: better to delete base than leave unreduplicated material

/RED-badupi/	RED = $\breve{\sigma}$	MAX-BR	MAX-IO
a. badupi-badupi	*!		
b. ba-badupi		*!***	
☞ c. ba-ba			****

(30) A possible response: avoid template constraints, and derive template shape from other constraints

- RED = $\breve{\sigma}$:
  - *CODA, *V:, *STRUC-σ (or something) ≫ MAX-BR
  - Don't have codas or long vowels, and don't have extra syllables—favors copying just a CV
  - Requires also a REALIZEMORPH constraint to make sure that at least one syllable is copied
- RED = $\bar{\sigma}$:
  - *STRUC-σ (or something), MAX-BR ≫ *CODA, *V:
  - Still prefers copying just one syl, but copies as much as possible
- Languages with multiple templates need multiple copies of $\mathcal{F}$-BR

Generalized Template Theory (GTT): the attempt to make templatic effects fall out by interaction of regular phonological principles

- In OT: markedness constraints, and TETU effects

(31) A nifty triumph of GTT (and problem for template constraints): variable sized reduplicants

Pima (Riggle 2003): shows variability between single C and CV reduplication
(Uto-Aztecan; Arizona & Mexico; 12,000 spkrs 1990 (incl. both Pima & Tohono O'odham))

a. C-copying reduplication

	Sg.	Pl.	Gloss
a.	má.vit	mám.vit	'lion'
b.	nák.ʃiɪ	nánk.ʃiɪ	'scorpion'
c.	sí.puk	sís.puk	'cardinal'
d.	kós.vuɪ	kóks.vuɪ	'cocoon'
e.	t͡ʃí.maiʈ	t͡ʃít͡ʃ.maiʈ	'cake'
f.	vá.ɻin	váp.ɻin	'barrel'
g.	tɪo.gi	tɪoɪ.gi	'truck'
h.	kɪa.vo	kɪaɪ.vo	'nail'

b. CV-copying reduplication

	Sg.	Pl.		Gloss
a.	hó.ɖai	ho.ho.ɖai	*hoh.ɖai	'rock'
b.	há.voɪ	ha.ha.voɪ	*hah.voɪ	'lima bean'
c.	ʔú.pu.ɻik	ʔu.ʔu.pu.ɻik	*ʔuʔ.pu.ɻik	'wart'
d.	ɲú.mat͡ʃ	ɲu.ɲu.mat͡ʃ	*ɲuɲ.mat͡ʃ	'liver'
e.	gogs	go.gogs	*goggs	'dog'
f.	biʃp	bi.biʃp	*bibʃp	'horse collar'
g.	gev.ho	ge.gev.ho	*gegv.ho	'mountain lion'
h.	vat͡ʃ.ɻo	va.vat͡ʃ.ɻo	*vapt͡ʃɪo	'lizard'
i.	namks	na.namks	*nanmks	'joint'
j.	ɻan.d͡ʒi.ki	ɻa.ɻan.d͡ʒi.ki	*ɻaɪnd͡ʒi.ki	'lentil'
k.	pɪan.d͡ʒa.kud	pɪa.ɻan.d͡ʒa.kud	*pɪaɪnd͡ʒakud	'iron'

(32) Relevant constraints for Pima

- *BADCODA: various constraints against possible codas (*h], *ʔ], *ɲ], etc.)
- *BADONSET: various constraints against illegal onsets (*[mm, etc.)
- MAX(initial onset)
- ALIGN-L(root) ≫ ALIGN-L(RED) (both want to be initial, but root wins)
- O-CONTIGUITY (no intrusion) (dominated)
- A size-restricting constraint (no extra syllables, $*\sigma$)

(This is not precisely the way Riggle formulates them, but they will do the trick for these forms)

(33) Different outcomes depending on candidate codas

/RED-mavit/	*BADCODA, **BADONS	MAX(C_1)	ALIGN(Rt)-L	ALIGN(RED)-L)	$*\sigma$
a. ma<u>ma</u>vit				**	*!**
b. <u>ma</u>mavit			*!*		***
c. m<u>m</u>avit	*!			*	**
☞ d. ma<u>m</u>vit				**	**
e. mav<u>m</u>it				***!	**

/RED-gevho/	*BADCODA, **BADONS	MAX(C_1)	ALIGN(Rt)-L	ALIGN(RED)-L)	$*\sigma$
☞ a. ge<u>ge</u>vho				**	***
b. <u>ge</u>gevho			*!*		***
c. g<u>g</u>evho	*!			*	**
d. ge<u>g</u>vho	*!			**	**
e. gev<u>g</u>ho	*!			***	**
f. gevh<u>g</u>o	*!			****	**
g. gevho<u>g</u>				***!**	**

- MAX-C_1 ensures that it's the 1st C that reduplicates
- High-ranked Align(Rt)-L, onset constraints prevent reduplicant from being a prefix or part of complex onset
- Align(RED)-L keeps RED from wandering too far into the word
- Size restrictor keeps it a single C when possible, CV when needed to avoid bad cluster

What constraint ranking is needed to ensure RED = CV, and not C with epenthetic V?

(34) A note on the size restriction

- Doesn't need to be generic $*\sigma$—it could also be a constraint demanding that the singular and plural have the same number of syllables (see also Gouskova 2004)
- Crucially, something must be evaluated gradiently, though (even if an extra σ is needed, this doesn't license full copying)

(35) What Pima shows:

- Size of reduplicant can vary depending on segmental makeup of root
- RED = "As little as you can get away with"
  - Can this be stated using templatic constraints?
- Support for the idea that size of RED is not a goal, but an effect