

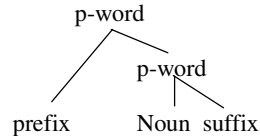
**Prosodic domains for segmental processes?
evidence from some Austronesian languages**
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1. Introduction

(1) Selkirkian model of syntax-phonology interface (Selkirk 1978, 1980a,b)

- Rules or constraints project phonological constituents from syntactic structure.

E.g., left edge of lexical category projects left edge of **phonological word** (ALIGN(LexWd,L,PWd,L)):



- Phonological rules/constraints can refer to edges and junctures of these domains: *VOICEDOBSTRUENT]_{PWd}
- They can also apply only when the whole structural description is contained within one of these domains: *NASAL-VOICELESSOBSTRUENT(domain=PWd)

This framework has been elaborated in a literature too vast to review here (Selkirk 1981, 1984, Kaisse 1985, Nespor & Vogel 1986, Hayes 1989, Inkelas 1990, Inkelas & Zec 1990, Itô & Mester 1992/2003, to appear, Truckenbrodt 1995, Peperkamp 1997, Hall & Kleinhenz 1999, Kager & Zonneveld 1999...)

(2) Competing frameworks

- Level ordering

Often, putting morphemes in different domains can be replaced concatenating late:

/piol/

Level *n*: postnasal voicing *not applicable*
 Level *n+1*: add prefix *am+piol* *no postnasal voicing; it's too late*

vs. am[piol]_{PWd} *no postnasal voicing because boundary intervenes*

- Output-output correspondence

IDENT(vce)-Unprefixed/Prefixed >> *NAS-VCELESSOBST ⇒ no voicing in *am-piol*

(3) State of the field?

- Phonologists are often explicit about whether they subscribe to level ordering or output-output correspondence (rarely both). But we tend to help ourselves to prosodic domains without further comment (exception: Raffelsiefen 2005).
- There has been some explicit evaluation of the theory lately
 - Bickel, Hildebrandt & Schiering 2007: the theory predicts that within a language, we should be able to define the p-word so that it works as the domain of multiple processes. Their typological survey finds that more commonly a language needs to define 2 or 3 such domains between the foot and the phonological phrase.
- Raffelsiefen (1999a) proposes that prosodic constituents serve as the domain for other prosodic constituents only (feet, and then syllables). Segmental phenomena are sensitive to p-word structure only via footing/syllabification.

(4) Talk preview

- Assess the evidence in the Austronesian languages I'm familiar enough with: Samoan, Tagalog, Palauan, Malagasy, Javanese.
- For the most part, these languages do well under the prosodic-domains theory.
- But, there are cracks
 - Even in the most straightforward case (Samoan) one morpheme goes its own way
 - Tagalog prefixes are ambiguous
 - Palauan may have morphological domains besides the prosodic ones
 - Javanese (Tang to appear) requires a richer syntax-phonology interface

2. Samoan (joint work w/ Robyn Orfitelli & Kristine Yu—see Orfitelli & al. 2008)

Most data found in Milner (1966) or Mosel & Hovdhaugen (1992), but pronunciations always from consultants Kare'i Lokeni and John Fruean.

(5) Main stress

- Moraic trochee at right edge (Homer 2007a)

(sámi)	'sea'	<i>parentheses enclose presumed feet</i>
pu(líŋi)	'pudding'	
la(vá:)	'energized'	

- Certain ("close") suffixes included in this domain: noun-forming *-ŋa*, denominal *-a*, "ergative" *-a*, "ergative" *-na*. Note all monomoraic.

(páe)	'set out'	pa(é-ŋa)	'presentation of food'
sa(váli)	'walk'	(sàva)(lí-ŋa)	'parade'
<(tʰála)>(tʰála)	'discuss'	<(tʰála)>tsa(lá-ŋa)	'discussion'
(ŋífo)	'tooth'	ŋi(fó-a)	'having teeth'
a(núfe)	'worm'	(ànu)(fé-a)	'having worms'
<(ʔèle)>(ʔéle)	'dirt'	<(ʔèle)>ʔe(lé-a)	'dirty'
(fúsi)	'hug'	fu(sí-a)	'hug-A'
(pùì)(púì)	'surround'	(pùì)pu(i-a)	'surround-A'
(tʰéʔe)	'reject'	tʰe(ʔé-na)	'reject-NA'

(6) Secondary stress

- Other feet seem to be left-aligned given the choice (hard to find long, native monomorphemes)¹

(sìka)(lámu)	'scrum'
(tʰèmo)ka(lási)	'democracy'
(ʔàfa)(kàni)si(tʰána)	'Afghanistan'

- With "close" suffixes, secondary stress develops as expected:

sa(váli)	'walk'	(sàva)(lí-ŋa)	'march _N '
a(núfe)	'worm'	(ànu)(fé-a)	'having worms'

¹ Unless first V is epenthetic—then tends to avoid stress: *pa(làni)(kéke)* 'blanket'

- “Aloof” bimoraic suffixes “ergative” –*ina*, noun-forming –*Caŋa*: main stress is uninformative, because they form own foot (though see diphthongs below).

But secondary stress is not like that of a monomorphemic word—stays where it was before suffixation:

a(lófa)	‘love’	a(lòfa)-(ʔáŋa)	‘greeting’ (love+CAŋA)
		*(àlo)fa-(ʔáŋa)	
le(ána)	‘BAD’	(fàʔa)-le(ána)-(ína)	‘destroy’ (FA’A+bad+INA)
		*(fàʔa)-(lèa)ŋa-(ína)	

- Compounds: first member footed like separate word, not left-to-right

a(lòfi)-(vác)	‘sole of foot’ (assembly+foot)	*(àlo)fi-(vác)
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[root-{ŋa, a, na}]Pwa
 [root]Pwa-{ina, Caŋa}
 [root]Pwa[root]Pwa
 Domain of footing/stress constraints = PwD

Can derive domains with a grammar that says “root initiates p-word” (ALIGN(root,L,PwD,L)) and “root closes off p-word unless suffix is too small to form its own foot” (FTBIN, PARSESYLL >> ALIGN(root,R,PwD,R)).

⇒ This is the classic way that prosodic domains are supposed to work.

(7) Vowel coalescence

- –*a* suffixes obligatorily fuse with preceding /a/

(lóka)	‘arrest’	lo(ká:)	‘arrest-A’	
(tʰála)	‘open’	<tsa>(tsà:)(lá:)	‘open-A’	/ta:la:/
<pàla>(pála)	‘dirt’	<pàla>pa(lá:)	‘dirty’	
(wíŋa)	‘meaning’	(wì:)(ŋá:)	‘meaningful’	

- but aloof –*ina* doesn’t fuse with preceding /i/ (stress is a confound here)

(kíki)	‘kick’	(kiki)-(ína)	‘kick-INA’
(tʰípi)	‘cut’	(tʰipi)-(ína)	‘cut-INA’

- and prefix *fàʔa*– doesn’t fuse with following /a/, except in rapid speech

(fàʔa)-(àlo)-(álo)	‘respectful’ (FA’A+RED+face)
(fàʔa)-a(lf-ŋa)	‘procession’ (FA’A+visible+GA)

- and no fusion across compound boundary

(mèa)-a(ʔó-ŋa)	‘homework (thing+learn+GA)’
(vài)-(ínu)	‘drinking water (water+drink)’

prefix-[root]Pwa
 Domain of syllabification, where V_iV_i syllabified together = PwD or maybe foot

(8) Diphthong formation

- Avoid *aí, aú, eí, oú*, even if this disrupts the normal footing/stress pattern

(mái)le	‘dog’	cf. pa(é)lo	‘barrel’
(fái)va	‘fishing trip’		
(máu)ŋa	‘mountain’	cf. a(ó)ŋo	‘tree sp.’
(tʰáu)tse	‘eat/drink <i>respectful</i> ’		
(tʰáu)si	‘look after’		
(tséi)ne	‘girl’		
(lóu)ni	‘loan’		

- Happens with “close” suffixes too, unsurprisingly

va(ʔái)	‘look’	<vàʔa>va(ʔái)-ŋa	‘looking after’
(fàʔa)-(sàla)(láu)	‘broadcast’	(fàʔa)-(sàla)(láu)-ŋa	‘b’cst announcement’
le(léi)	‘good’	(fàʔa)-le(léi)-ŋa	‘making peace’

- But not with “aloof” –*ina*

(kùka)-(ína)	‘cook-INA’
(vàne)-(ína)	‘carve-INA’
<tàla>(tála)-(ína)	‘tell-INA’
(fàʔa)-le(ána)-(ína)	‘destroy-INA’

- Nor across prefix-stem boundary

fè-(ítsa)	‘angry-pl’
(fàʔa)-(<ùlu>)-(úlu)	‘be subject to’ (<i>ulu</i> ‘head’)
(fàʔa)-(<ípo>)-(ʔípo)	‘marry’

- Nor across compound boundary or reduplication

<(ífi)>(ífi)	‘tree sp.’
(tʰápa)-(ípu)	‘call out names of those to be served’ <i>ava</i> (ask.for+cup)
(pòna)-(úa)	‘Adam’s apple’ (knot+neck)

same domains as above
 domain of syllabification still PwD or foot, with constraints on how to syllabify sequences like *aí, au*

(9) VVV sequences

- In monomorphemes, not only (ai)a#, (au)a# [we hear epenthetic glides; not transcribed here], but also (ae)a#, (ao)a#

ma:(nái)a	‘nice’	like (mái)le
(ʔáu)a	‘don’t’	like (tsáu)si
(tsáu)a	‘war, fight’; ‘Taua [district name]’	
(éi)ja	‘That’s it!’	like (tséi)ne

(mác)a	‘rope’	cf. ma(é)la
(wác)a	‘wire’	
(láo)a	‘choke’; ‘talking-chief’s house’	cf. pa(ó)lo
(páo)a	‘power’	

- Same thing with ergative *-a* suffix [except *ae, ao* may be variable²] ⇒ more or less like monomorphemes

(máu)	'get'	(máu)-a	'get-A'
(fái)	'do'	(fái)-a	'do-A'
(váe)	'kick'	(váe)-a	'kick-A'

- But **denominal** *-a* doesn't act like it's part of a monomorpheme, and doesn't act aloof either

(vái)	'water'	va(f-a)	'watery'	
(láu)	'leaf'	la(ú-a)	'leafy'	
(váe)	'foot, leg'	va(é-a)	'having legs'	cf. (váe)a 'Vaea (Mt.)'
(váo)	'weeds'	va(ó-a)	'overgrown w/weeds'	

Monomorpheme would be *[(vái)a]; aloof would be *[(vái)]-a

Domains don't help here—we need a stipulative, morpheme-specific solution, like a floating grid mark in the suffix's lexical entry, or a requirement that the suffix be footed.

See Orfitelli, Yu & Zuraw for the phonological analysis.

(10) Samoan conclusions

- [root+monomoraic suffix] forms PWd; everything else is external
 - PWd is domain of footing, foot is domain of syllabification and nearly everything follows...
 - ...except the strange behavior of denominal *-a*
- ⇒ PWd doing well for explaining lower-level prosody, but no evidence about segmental processes.

3. Tagalog

Data are from French 1988 ("Fr"), Ferrer 2006 ("Fe"), Schachter & Otanes 1972 ("S&O"), and my own observations.

(11) Main stress

- Partly lexical, and very involved with morphology, so there's a lot to say (see Sabbagh 2004), but it's clear that most suffixation shifts stress:

basá?	'wet'	basa?-ín	'be wetted'
bása	'read'	basáh-in	'be read'
bantás	'punctuation'	bantas-án	'be punctuated' (Fe)

⇒ [root-suffix]_{PWd}
Domain of footing/stress =PWd

² e.g. (<vào>)va(ó-a) 'restrain-A'

- (12) **Prefix stress** (partial description; there's more going on that I don't have a handle on...): **French 1988**

- Within a prefix complex, stress a **reduplicated** or **closed** syllable

ma kì ki-ʔúsap	'will request' (Fr71)
p<in>a kì ki-ʔusáp-an	'is making a request of' (Fr71)

màg pa ka-ʔáral	'study intensely' (Fr75)
ma ka pàg pa-ʔáral	'be able to send to school' (Fr75)
pàg -ʔáral-an	'be studied' (Fr75)
ma kà ka pàg -ʔáral	'will be able to study'

- Unless there would be a stress clash—then only the second is stressed

mag ʔà-ʔáral	'will study' (Fr74)
mag pà pa ka-ʔáral	'will study intensely' (Fr75)

- But clash between prefix and root is fine

màg -ʔáral	'study' (Fr74)
ma ka pàg -ʔáral	'be able to study' (Fr74)
mag ʔà-ʔáral	'will study' (Fr74)

prefixes [root]_{PWd}
Domain of *STRESSCLASH =PWd

- (13) **Tapping—joint work with Kevin Ryan** (all this applies to native words only; loans are different)

- Within a root, **r** is only intervocalic, and **d** is only elsewhere

dápat	'must'	áraw	'day'
lákad	'walk'	bíro	'joke'
hindí?	'not'		
hadláj	'obstruct'		

- Obligatory **d** → **r** / V__V across root-suffix boundary

lákad	'walk'	lakár-an	'be walked on'
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- Doesn't apply at boundary in two-syllable reduplication (root-root?)³

dalá-dalá	'load carried'
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- Optional (some words do it, some don't) at prefix-stem boundary

dáhan	'slowness'	ma-ráhan	'slow'
dáhon	'leaf'	ma-dáhon	'leafy'

[root-suffix]_{PWd}
[root]_{PWd}[root]_{PWd}
Variation: **prefix [root]_{PWd} ~ [prefix root]_{PWd}** (see Zuraw in press for predictors)
At odds with French's stress data, where no evidence for **[prefix root]_{PWd}**

³ Except in a couple of special items: ma-rámi 'many', much more frequent than dámi 'large quantity'; ma-dami-dami ~ ma-rami-rami ~ ma-rami-dami.

(14) Nasal assimilation

- Within a root, nasal usually agrees in place with following obstruent (many exceptions in pseudoreuplicated words—see Zuraw 2003)

hantád ‘exposed’ lambót ‘soft’ laŋkáʔ ‘jackfruit’

- Across the prefix-stem boundary, it’s obligatory for some (most?) words and variable for others (SEASITE 2009 and a written corpus—see Zuraw 2006).

pam-bansáʔ ‘national’ pan-daʔigdíg ‘universal’
 maŋ-patíd ~ mam-patíd ‘cut off’ maŋ-dúkot ~ man-dúkot ‘pickpocket’

- Across proclitic-word boundary, it’s optional (S&O p. 21)

aŋ báhaj ~ am báhaj ‘the house’

Again, prefixes vary, unlike in French’s stress data.
 Proclitics seem to vary too: **clitic** [word]_{PWd} ~ [**clitic word**]_{PWd} ?

(15) Vowel height

- In native words, mid Vs allowed in last syll. only (except VʔV), no [u] in final syll.

ʔúlo ‘head’ *ʔolo, *ʔolu, *ʔulu

- Suffix counts in calculation of “last syllable”—alternation is obligatory

háloʔ ‘mixture’ halúʔ-in ‘be mixed’

- But alternation is optional in 2-syllable reduplication:

hálo-háloʔ ~ hálu-háloʔ ‘halo-halo’

Given the tapping data, I’d rather not say that these optionally form a single p-word (which would mean yet a third domain structure is needed).

Instead we could say *u]_{PWd} >> *NONFINALO]_{PWd} >> FAITH-OO ~ *NONFINALO]_{PPhrase}
 [[**root**]_{Pwd}]_{PPhrase} [[**root**]_{Pwd}]_{PPhrase} ~ [[**root**]_{Pwd} **root**]_{PPhrase}

- Enclitics optionally cause preceding V to raise

ʔakó ‘I’ ʔako rin ~ ʔaku rin ‘me too’

Instead we could say that *o]_{PWd} >> FAITH-OO ~ *o]_{PPhrase}
 [[**word**]_{Pwd}]_{PPhrase} **clitic** ~ [[**word**]_{Pwd} **clitic**]_{PPhrase}

(16) Syllabification-based phonotactics

- Word-finally, most **consonant clusters** are forbidden (all are forbidden in native words; some occur in loans)

*palikt
 *sikiłh

- But vowel-initial suffixes can enable these clusters root-finally, since 2nd C can be onset. Seen in non-productive vowel syncope.

sakít ‘illness, pain’ sak.t-án ‘be harmed’
 bilí ‘buying’ bil.h-ín ‘be bought’ (/bilih/ or opaque h-epenthesis)

[**root-suffix**]_{PWd}
 Domain of **syllabification** =PWd

(17) Glottal stop

- Consonant-adjacent ʔ is rare. Just a few Cʔ roots, like ʔugʔóg ‘shake’, and none with ʔC

ʔ → Ø / C__ fed by syncope
 gawáʔ ‘task’ gaw-ín ‘do-OF’ *gawʔ-ín

Definitely a segmental *ʔC constraint.

- but ʔ tends not to delete in prefixation, compounding, or compounding reduplication:

mag-ʔanáʔ ‘give birth’
 túbig-ʔulán ‘rain-water’
 ʔáraw-ʔáraw ‘daily’

Even in fairly natural speech—preliminary analysis with James Pannacciulli of Pilipino Speech Corpus (Guevara et al. 2002)

Could reflect syllabification constraints—deleting the ʔ would cause/reflect resyllabification

but consistent **prefix** [**root**]_{PWd}
 Domain of ***Cʔ** (or in prefixation, maybe syllabification)=PWd

- ʔ → Ø / __C when “linker” -ŋ/na is added

V-final: ma-búti + LINK = ma-búti-ŋ ‘good’
 ʔ-final: ma-júmiʔ + LINK = ma-júmi-ŋ ‘modest’
 other C-final: ma-tákaw + LINK = ma-tákaw **na** ‘greedy’ (S&O 118)

Tricky because one allomorph looks like a suffix and the other like an enclitic. Can be analyzed if *COMPLEXCODA, MAX-ORALC >> USE-ŋ >> MAX-ʔ

(18) Geminate consonants

- **Geminate** consonants are forbidden within a morpheme: *baggo*
- But OK across prefix-stem boundary, as is any gC sequence (only a subset attested root-internally)

mag-gugó ‘shampoo’ (Fe)
 pag-gamít ‘usage’ (Seasite)
 pag-gamót ‘treatment’ (Seasite)

prefixes [**root**]_{PWd}
 Domain of ***GEMINATE** and other ***CC** =PWd

- *Problem*: although prefix-prefix boundary is weak enough that stress clash isn’t tolerated, it’s strong enough that a geminate is

mag gâ-gamót ‘will treat’

(19) Tagalog conclusions

- PWd initiated at beginning of root (explains suffixes, compounding)
- But prefixes ambiguous
 - Stress, onset glottal stop and geminates: **prefix [root]_{PWd}**
 - Tapping, nasal assimilation: **[prefix root]_{PWd}**

⇒ Evidence for prosodic domains' governing segmental processes. But, uniform domain starts to break down.

4. Palauan

Data from Josephs 1975, 1990, Flora 1974. Broad transcriptions.

(20) Prefix allomorphy

- Reciprocal prefix is *ʔa-* before most *ʔ*-initial stems:

ʔa-ʔám 'break (e.o.'s limbs)'

ʔa-ʔarákl 'work with e.o.'

ʔa-ʔúbəl 'spill (sthg) together'

Reminiscent of "aggressive reduplication" (Zuraw 2003), which favors repetition.

- Otherwise, main two allomorphs are *ka-* and *kə-* (also *kai-*, *kau-*, *kaiuə-*)

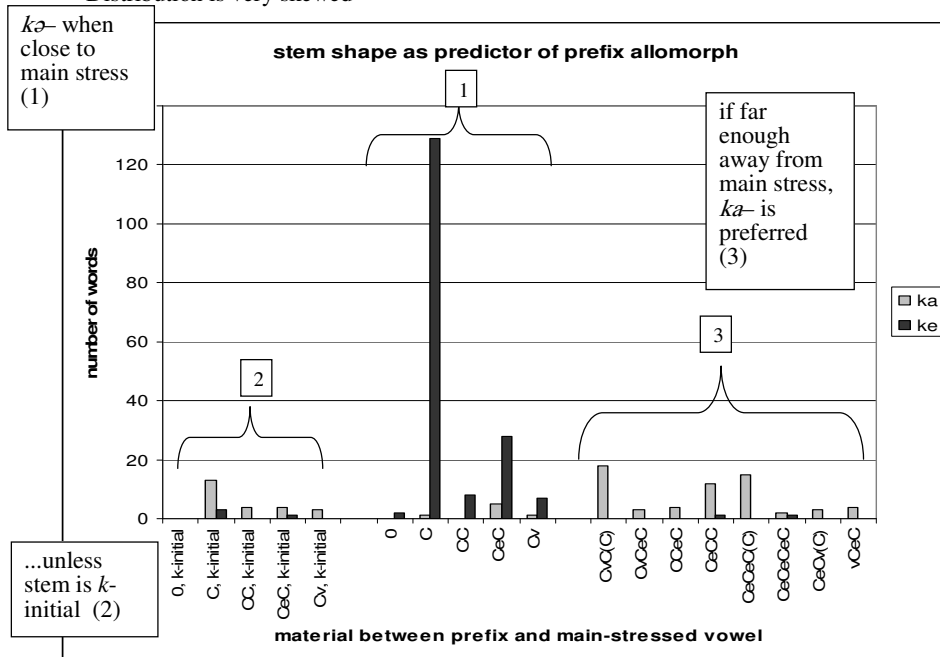
ka-təkərékl 'come out of water together'

ka-bðəbíð 'get caught or twisted on e.o.'

kə-ðáuʔ 'cut e.o.'

kə-səmrámr 'scratch at e.o.'

- Distribution is very skewed



- *k*-effect maybe $*C_i\partial C_i$ —see Raffelsiefen 1999b for similar constraints in English
- 1 vs. 3 makes sense if *ka-* occurs when secondary-stressed (this is speculative! No one has studied secondary stress in Palauan as far as I know; I don't trust myself to hear it)

And if minimum (non-final) foot is (Cv.Cv), (Cv.CvC), (CvC.Cə), (Cv.CəC) not $*(Cv)$, $*(CvC)$ or $*(CvCə)$ [plausible if full V, coda C moraic, but ə not moraic]

intervening	prefix not footable ⇒ <i>kə-</i>	prefix footed ⇒ <i>ka-</i>
0	<i>kə-(é.bəð)</i>	$*(kà)$
C	<i>kə-(báís)</i>	$*(kà)$
CC	<i>kə-r.(ðérð)</i>	$*(kàC)$ [or C is actually in onset?]
CəC	<i>kə-rə(ńúus)</i>	$*(kà.Cə)$
Cv	<i>kə-(buá.ʔəl)</i>	$*(kà)$
CvC		<i>(kà-bu)(lák)⁴</i>
CvCC		<i>(kà-ʔis)(ńúll)</i>
CvCəC		<i>(kà-bi)tə(lék)</i>
CCəC		<i>(kà-s.bə)(sú.bəð)</i>
CəCC		<i>(kà-ðək)(ðákt)</i>
CəCəC		<i>(kà-ðə)rə(bórb)</i>
CəCəCC		<i>(kà-ʔə)rəm(rúm)</i>
CəCəCəC		<i>(kà-kə)ðə.rə(bórb)</i>
CəCv		<i>(kà-sə)(loákl)</i>
CəCvC		<i>(kà-bə)bi(tókl)</i>
vCəC		<i>(kà-o)tə(ráu)</i>

[prefix-stem]_{PWd}
 domain of footing=**PWd**
 domain of aggressive reduplication=**PWd** (or bigger)
 domain of $*C_i\partial C_i$ =**PWd** (or bigger)

(21) Suffixes clearly part of stress domain

- Stress aligns to right edge of word (roughly, form a trochee at the right edge of the underlying form) ⇒ suffixes pull stress to the right (feeding V reduction)

ðákt 'fear' *ðákt-ék* 'my fear' *ðákt-ám* 'our (excl) fear'
mə-lúʔəs 'write' *ləʔəs-áll* 'is to be written' *l-il-əʔəs-íj* 'writes it'

[stem-suffix]_{PWd}

(22) Reduplication

Two allomorphs, *Cəi-* and *CV(C)-*. (see Zuraw 2002, Finer 1986 for more info)

- *Cəi-* favored when stem begins CC or Cə

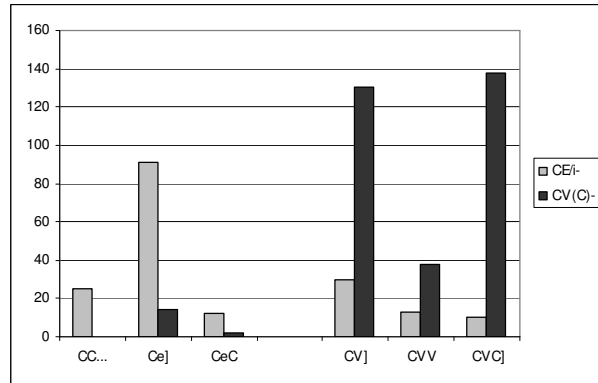
<i>unreduplicated</i>		<i>reduplicated</i>	
<i>klóu</i>	'big'	ki-klóu	'a little better'
<i>bətók</i>	'many'	bə-bə.tók	'just more than enough'

Note that $*(bə-bə.tókl)$ would violate $*C_i\partial C_i$

⁴ Why (CVC) allowed as final foot here and elsewhere? Word-final footing tends to be opaque (underlying final material can be deleted), maybe be lexicalized synchronically.

- CV(C)- favored when stem begins CVV, CV_{syll}, or CVC_{syll}; Various realizations because of vowel reduction

mə-sáoð	‘explain’	mə- so -sáoð	‘try to explain’
tórð	‘frustration’	bəkə- tər -tórð	‘easily frustrated’
ol-dúm	‘make appear’	ol- dmə -dúm	‘keep bobbing up’



Can analyze along these lines: Copy as much of first stem syllable as possible, up to two moras. CV(C)- results when stem vowel is actually copied and then reduced. When it can't be copied (because another C intervenes: **ki**-klóu) or when we'd get a C_i∅*C_i sequence, then use Cε/i-.)

- When reduplication applies twice, the outer copy has to be Cε/i-

bír-	‘swinging’	om- bε-brə -bír	‘fall making circles’
mə-ðákt ^h	‘be afraid of’	mə- ðε-ðək -ðákt ^h	‘be rather afraid of’
mə-láok ^h	‘greasy’	mə- lε-lo -láok ^h	‘rather greasy’

Maybe it's the same morpheme applied twice, with *C_i∅C_i.

[RED-stem]_{PWd}
domain of *C_i∅C_i=PWd again

(23) Nasal substitution and infixation

Finer 1986: CV(C)- reduplicant is inside the stem, but Cε/i- is outside

- Infix goes inside the CV(C)- reduplicant, but not inside the Cε/i- reduplicant:

CV(C)-	[túp] _{stem}	‘spit’
	[t<ə>úp] _{stem}	‘spat on’
	[t<ə>əp-túp] _{stem}	‘covered with spit’

Cε/i-	[tiákl] _{stem}	‘knot’
	[t<ə>iákl] _{stem}	‘knotted’
	tε-[t<ə>iákl] _{stem}	‘one knotted cord’

- Nasal substitution (here, oN+b... → o-m...) applies to CV(C)- reduplicant, but fails to apply to Cε/i- reduplicant:

CV(C)-	[báləʔ] _{stem}	‘slingshot’	o-[máləʔ] _{stem}	‘hit w/ slingshot’
	o-[mələ-báləʔ] _{stem}	‘play around with slingshot’		
Cε/i-	[bəkáll] _{stem}	‘sail’	o-[məkáll] _{stem}	‘sail canoe’
	om- bε -[bəkáll] _{stem}	‘sail around aimlessly’		

- Paradox? reduplicant shape depends on base shape, plausibly because of *C_i∅C_i. But, the Cε/i- shape that's a reaction to that constraint acts as though it's in a more outer domain.

⇒ Is this really an outer prosodic domain, or just a more exterior morphological position?

Would be nice if theory of prosodic domains could completely replace theory of morphological boundary types, but maybe it can't...

(24) OCP (segmental) [see Lubowicz to appear, Zuraw & Lu 2008]

- Infix **m** dissimilates to w/u/o (depending on stress and nearby vowels) when a labial consonant follows, even if not immediately: OCP(labial)

	stem	present perfective, plural non-human object	gloss
<i>no labial</i>	toŋakl kiwt ðakl	t- m -oŋakl k- m -iwt ð- m -akl	‘put up high’ ‘clean up’ ‘bury’
<i>initial labial</i>	basəʔ	m -asəʔ	‘name’
<i>next C is labial</i>	ðobəʔ kəməð jəbəð	ð- w -obəʔ k- w -əməð i- w -əbəð	‘chop down’ ‘sew up’ ‘lasso’
<i>labial C later in word</i>	ðaləm səsəb	ð- w -aləm s- w -əsəb ~ s- m -əsəb	‘plant’ ‘burn’

- By contrast the prefix version of this “verb marker” (mə- / o-) dissimilates only locally (Josephs 1975):

<i>initial C not labial</i>	mə-ráel	‘walk’	(+few irreg. w/ o-)
	mə-ʔát	‘be smoked’	
<i>initial C labial</i>	o-bóes	‘get shot’	
	o-bəkáll	‘be driven’	
<i>doesn't matter if labial C later</i>	mə-ʔáb	‘be dim’	
	mə-kámím	‘be sour’	

- Lubowicz to appear (see also Finer 1986, Lu in progress): infix can dissimilate long-distance because it's incorporated into the stem; prefix dissimilates only locally because it hasn't been.

Hard to do this in terms of prosodic domains: if prefix is external, why can it see the stem-initial C at all? Jaye Padgett suggests: maybe a weak OCP (*LABVLAB) operates across larger domain that includes prefix, and strong OCP (*LAB...LAB) operates in smaller stem&infix domain.

⇒ Morphological domain again? Unfortunately here it's a domain for a purely segmental OCP constraint, rather than for placement or action of a morpheme.
Or, prefixing reduplicants inside p-word and segmental prefixes outside?

(25) Palauan conclusions

- Allomorphy of reciprocal prefix and reduplication is sensitive to segmental properties of stem, suggesting they are in a single domain.
- For behavior of other affixes, the two forms of reduplication act like one is in the "stem" and one is outside of it—this is pretty weird if they are really allomorphs of the same morpheme (alloduples: Spaelti 1999).
- Infix is sensitive to segmental properties of the whole stem, while segmental prefixes are only sensitive to the stem edge, suggesting that they are in an outer domain.

Unclear which of the above Palauan morphology is productive; verb morphology vanishingly rare on loans, for example.

So maybe we're really seeing chronological differences in when affixation patterns developed vs. when various phonological rules lost productivity??

⇒ Overall, prosodic domains don't help much with analyzing Palauan.

5. Malagasy

Generalizations and some data from Albro 2005, who uses levels. Additional data from Richardson 1885, Vaovao 1973

Note: unstressed final vowels tend to be weakened/deleted, with some conditioning by vowel quality and preceding consonant; this isn't reflected in the transcriptions below.

(26) Primary stress (prosodic); see Erwin 1995

- Primary stress is on the (underlying) penultimate mora, unless the word is monomoraic (some controversy about *e*, which can bear final stress—see Pearson 1994, Albro p. 211), and except for diphthongs:

(bábu) 'plunder'
bu(láli) 'slip'

- Suffixes shift primary stress (not sure about secondary stress in these examples)

<i>X</i>	<i>X+a (imperative)</i>	
ma-(mábu)	ma-ma(bú-a)	'capture'
mi-bu(láli)	mi-bula(lí-a)	slip

- Each part of a compound behaves as a separate entity

(váva)-(fú) 'solar plexus (mouth+heart) (Martin 2005, p. 292)
(tsù)-(búlu) 'straight-haired' (straight+hair)

Aside: Martin (2005) argues that loans with aberrant stress are actually treated as compounds to allow this stress (evidence is from reduplication: the last foot of the first pseudo-compound member reduplicates, just like in real compounds, instead of the last foot of the whole word as in monomorphemes)

(sòko)-(lá) 'chocolate' red. sòko-sòko-lá (Martin 290)
(zàvu)-(ká) 'avocado' red. zàvu-zàvu-ká

[root-suffix]_{PWd}
[root]_{PWd} [root]_{PWd}
Domain of footing = PWd

Secondary stress? See Albro pp. 146-150, but it's unclear what is the basic pattern and whether prefix stress depends on stem, so hard to draw conclusions.

(27) Vowel coalescence

- Suffix *-a* or *-an* merges w/ preceding /a/ (also deletes after /e/, not shown)
- Suffix *-in* merges w/ preceding /i/ (and possibly deletes after /e/, not shown)

<i>X</i>	<i>X+an (passive I)</i>	<i>X+in (passive II)</i>	<i>X+a (imp.)</i>	
mi-burúsi	i-burusí-ana	burusína	mi-burusí-a	'brush'
mi-bàri-bári	i-bàri-barí-ana	barína	mi-bàri-barí-a	'be brilliant'
mam-bá ⁰ ga	am-ba ⁰ gána	ba ⁰ gá-ina	mam-ba ⁰ gá	'make gap'
mi-báda	i-badána		mi-badá	'closed up'

- Same thing happens at some prefix boundaries, regardless of stress pattern

<i>X</i>	<i>vua + X (another passive)</i>
búbaka	vua-búbaka
<i>but</i>	
á dina	vuá dina 'investigate'
akóra	vuakóra 'hoot at'

<i>X</i>	<i>ma(h)a + X (ability, causation)</i>
bé	ma(h)a-bé 'make abundant'
áru	ma(h)áru 'be able to protect' [Richardson p. xxii]

<i>X</i>	<i>mi + X (another passive)</i>
kí ^m pi	mi-kí ^m pi 'shut eyes'
f ^m buna	mi ^m buna 'living in common'
irái	mirái 'one; unite' [except: ísa 'number' mi-ísa 'amount to']

Note that this happens even if the Vs would be in different feet: *(vua)-(á di)na, *(mi)-(f^mbu)na

- Need to do some research on other prefixes (thanks to Matt Pearson and Ed Keenan), but don't have the data handy.

[prefix-root]_{PWd} (at least for these prefixes)
Domain of *V_iV_i = PWd

(28) Vowel quality [Albro 227-230]

- Unstressed final /e/ raises to [i], but suffixation makes it nonfinal. Note that end of reduplicant acts as though word-final.

<i>UR</i>	<i>X</i>	<i>X+u (pas. imp.)</i>	
/bede/	bèdi-bédi	bèdi-bedé-u	'tattle, chatter'
/ere/	mi-éri	i-eré-u	'hide'
/vezl/	mi-véli	i-veléz-u	'beat'

[root]_{PWd} [root-suffix]_{PWd}
 Domain of *e]= PWd ; i.e., *e]_{PWd}

(29) Malagasy conclusions

- Prefix acts like it's part of the PWd—even for a bimoraic prefix that could have formed its own foot (*vua-*)
- Some segmental phenomena with a PWd-like domain: *V_iV_i *e]_{PWd}

6. Javanese: Tang 2007

(30) Basic vowel alternations (data from Tang)

- Word-final /a/ -> [ɔ] ([ɔ] not allowed elsewhere, except under vowel harmony)

final: ɔ *non-final:* a *before clitic:* variable
 ɔŋɔ 'pray' ɔŋa-?ne 'pray (for s.o.)'
 gula 'sugar' gula-ne ~ gula-ne 'the sugar'

[root-suffix]_{PWd}
[word]_{PWd} clitic ~ [word clitic]_{PWd}
 Domain of *a]= PWd ; i.e., *a]_{PWd}

(31) Compounds (data from Tang again)

Tang shows that, at least for her East Javanese consultant, compound words aren't like monomorphemic words, nor do they act like two-word phrases.

- The two halves of a compound behave like separate words: **[root]_{PWd}[root]_{PWd}**
 /anda + wiɔɔdari/ 'goddess' → ɔndɔ-wiɔɔdari 'rainbow' (ladder+goddess)

- When clitic attaches to N-N or N-A compound, only the [ɔ] variant is possible!
 /kambaŋ + gula + ne/ 'candy' → kambaŋ-gula-ne 'the candy' (flower+sugar)
 *kambaŋ-gula-ne

Tang gives a nice minimal pair
phrase wɔŋ tuwɔ-ne ~ wɔŋ tuwa-ne 'the old person'
compound wɔŋ-tuwɔ-ne, *wɔŋ-tuwa-ne 'the parents'

- Tang proposes compounds reach spell-out earlier (w/ vowel allomorphy implemented at that point) than do phrases, freezing final [ɔ] before cliticization.
- We can re-state this using prosodic domains: **(word)_{PWd} clitic ~ (word clitic)_{PWd}** in general, but only **(root)_{PWd}(root)_{PWd} clitic** for compounds.

But we still need an explanation of this difference, possibly along Tang's lines; simple ALIGN won't do it.

Armin Mester suggests: stronger boundary after a PWd that dominates other PWds:
 ((root)_{PWd}(root)_{PWd})_{PWd}

(32) Javanese conclusions

- A domain analysis of the unusual behavior of compounds is possible
- But deriving the domains requires a richer syntax-phonology interface than simple constraints like "initiate p-word at beginning of root" (ALIGN(Root,L,PWd,L))

7. Summary

(33) Samoan

<i>domains</i>	<i>phenomena (all prosodic)</i>
[root- $\{\eta a, a, na\}$] _{PWd}	footing/stress
[root] _{PWd} - $\{ina, Caŋa\}$	V coalescence
[root] _{PWd} [root] _{PWd}	diphthong formation
prefix-(root) _{PWd}	diphthongs __[a]

- ALIGN(Root,L,PWd,L)
- Behavior of aV_{-denom} not explained by domains, levels, or O-O correspondence—requires an idiosyncratic, morpheme-specific constraint no matter the framework.

(34) Tagalog

<i>domains</i>	<i>possibly prosodic phenomena</i>	<i>definitely segmental phenomena</i>
[root-suffix] _{PWd} clitic [root] _{PWd} ~ [clitic root] _{PWd} [root] _{PWd} [root] _{PWd} (but p-phrase varies) [word] _{PWd} clitic (but p-phrase varies) prefix-prefix?	footing/stress stress clash tapping V height no complex coda	tapping, nasal assimilation V height coda glottal stop
prefixes [root] _{PWd}	footing/stress onset glottal stop	geminate
prefix [root] _{PWd} ~ [prefix root] _{PWd}		tapping nasal assimilation

- ALIGN(Root,L,PWd,L)
- Looks like some purely segmental phenomena have domain sensitivity.
- Conflicting evidence on prefixes. Data for secondary stress should be elaborated, but conflict will probably remain.

(35) Palauan

<i>domains</i>	<i>possibly prosodic phenomena</i>	<i>definitely segmental phenomena</i>	<i>morphological phenomena</i>
[prefix-stem] _{PWd} [stem-suffix] _{PWd}	footing aggressive redup.	*C _i əC _i	
[RED-stem] _{PWd}		*C _i əC _i	
Ce/i-[stem] [CV(C)-stem]			infixation nasal subst.
məo-[??stem] [<infix>stem]		local vs. long-distance dissimilation	

- Conflicting evidence from reduplication, but at least the conflicting phenomena are of different types.
- Unclear how to make the məo- prefix sensitive to stem-initial C but not beyond.

(36) Malagasy

domains	possibly prosodic phenomena	definitely segmental phenomena
[root-suffix] _{PWd} [root] _{PWd} [root] _{PWd} [prefix-root] _{PWd}	footing	*V _i V _i *e] _{PWd}

- Syntactic word and p-word seem to line up (but secondary stress needs more investigation). Some prefixes may be different (no V coalescence).

(37) Javanese (Tang to appear)

domains	definitely segmental phenomena
[root-suffix] _{PWd} [word] _{PWd} clitic ~ [word clitic] _{PWd} [root] _{PWd} [root] _{PWd} clitic <i>only</i>	*a] _{PWd}

- Enclitic is sensitive to whether preceding word is compound or not.

(38) Prospect

- Investigating the p-word and p-phrase requires in-depth study of a language: multiple phenomena, multiple morphemes, information that is often not transcribed (e.g., secondary stress, sandhi phenomena), semantic and frequency information...
- Are Austronesian languages similar to better-studied families (e.g., Romance, Germanic) in their prosodic structure? Do traits of prosodic domains cluster areally? Do they change too fast to even cluster genetically? How are they affected by changes in productivity?

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