

Class 12

Morphological Doubling Theory (Inkelas & Zoll 2005)

12/7/17

1 Introduction

- Inkelas & Zoll (2005) [IZ] propose “Morphological Doubling Theory” [MDT] as a new way of analyzing reduplication.
 - Reduplication is *not* the result of duplication/copying/correspondence in the **phonology** (1a).
 - Reduplication is (exclusively) the result of double insertion of morphological constituents in the **morphology** (1b), followed by (not-so-)special phonological treatment.
 - ★ There is still such a thing as phonological copying, but this exists only as a phonotactic repair with no underlying morphological signification.

(1) Possible means of duplication (IZ:2)

- a. Phonological: $\{X\} \xrightarrow{\text{Spellout}} /x/ \xrightarrow[\text{Copying}]{\text{Phonological}} [x-x]$
- b. Morphological: $\{X\} \xrightarrow[\text{Duplication}]{\text{Morphosyntactic}} \{X\}\{X\} \xrightarrow{\text{Spellout}} /x-x/ \rightarrow [x-x]$

- They claim that the phonological properties of reduplication as a whole are not really any different than other sorts of morphologically-conditioned phonology.
 - i.e., the only mechanisms you need in order to capture the phonological properties of reduplication are those which you independently need in order to capture more run-of-the-mill morphophonology.
 - This means there should be no special (phonological) mechanisms for reduplication, namely BR correspondence.
 - They argue (but in a legitimate and careful way) that the sorts of patterns that would require BR correspondence in their system don't actually exist.
- Many of the things we thought might have needed BR correspondence are based on incorrect analyses, which emerges when you look at reduplication in the context of the language's larger morphological system.
 - ★ Their mantra is basically: look at the rest of the morphology.
 - When you do that, some of the patterns which look weird on their face are actually not weird for that language.
- ⇒ One really problematic issue for MDT:
 - They claim that all the types of phonological processes that apply in reduplication apply (in equivalent frequency) in non-reduplicative morphologically-conditioned phonology.
 - This is baldly not the case w.r.t. to truncation (cf. Urbanczyk 2008), which must apply ubiquitously in reduplication but almost never applies in other morphological constructions (other than hypocoristics).
- Otherwise, though, I have few quibbles with the internal logic of their system.

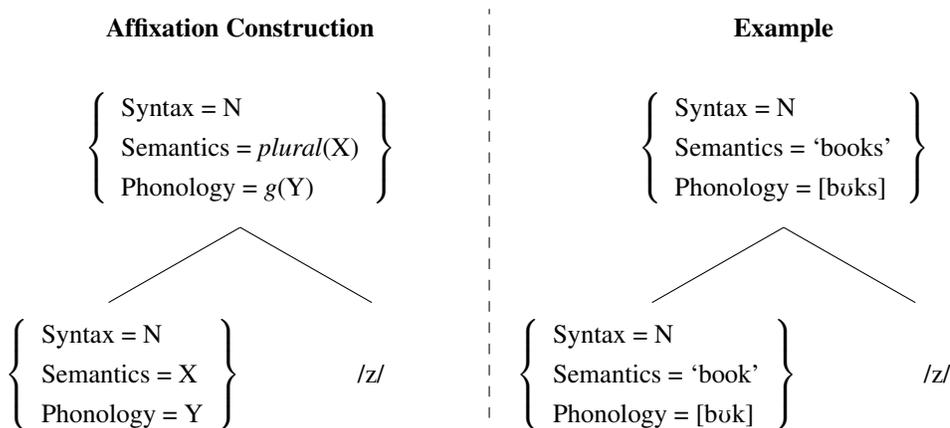
1.1 Sign Based Morphology and Cophonology Theory

- MDT is based on Sign-Based Morphology (SBM; Orgun 1996, 1999, *et seq.*).
- SBM is a version of Construction Grammar. Words (and morphological constituents) are instances of “constructions”:

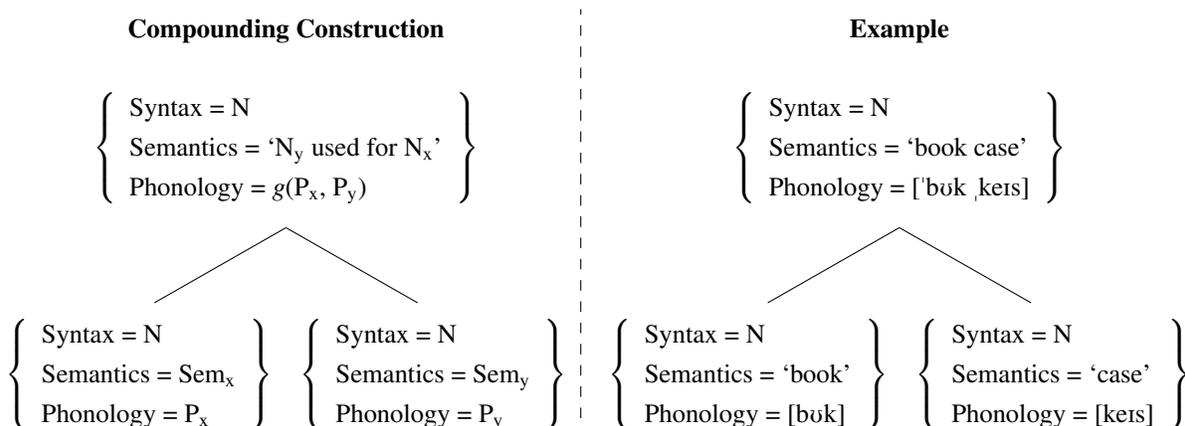
“In SBM constructions (and meta-constructions) are grammatical primitives, elaborated versions of phrase-structure rules which encode the semantic, syntactic, and phonological mappings between daughters and mothers.” (IZ:12)

- Constructions are nodes in the morphological tree.
 - They make specific demands about the (morpho)syntax and semantics of what they contain.
 - They are characterized by a (morpho)syntax and semantics that they result in.
 - They have a particular, potentially unique phonology.
- The construction for the English plural is given in (2), and the construction for English noun-noun compounding is given in (3).

(2) SBM representation of plural in English (IZ:13)



(3) SBM representation of noun-noun compounding in English (IZ:13)

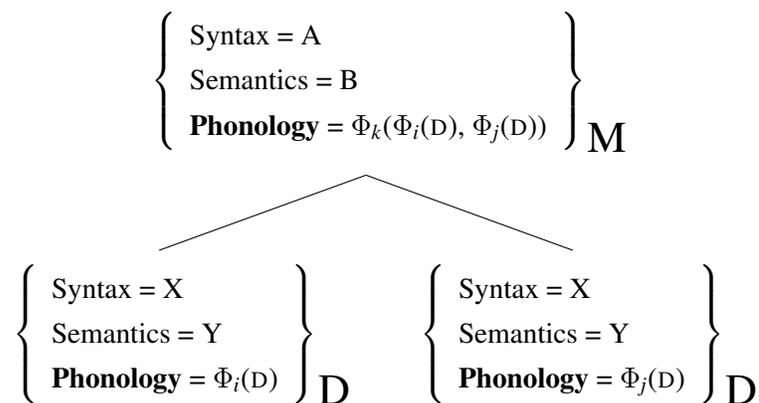


- The top node is called the “mother” node, the bottom nodes are called “daughter” nodes.
- IZ assert that what makes a construction “reduplicative” is when the mother node subcategorizes for daughters with the same semantic specification.
 - i.e., reduplication is essentially compounding (like the construction in (3)), but both daughters are specified as {**Semantics** = ‘**Sem_x**’}.

1.2 Cophonology Theory

- Phonology is handled by “Cophonology Theory” (Inkelas, Orgun, & Zoll 1997, Inkelas & Zoll 2007).
 - Each morphological construction is indexed to a particular phonology — its “cophonology”.
 - There is no necessary connection between different cophonologies in a language; they can be characterized by completely different properties.
 - They claim that cophonologies are constrained by a “master ranking” (cf. Inkelas & Zoll 2007) — a specified partial ranking that all cophonologies must obey, varying only in the ranking of constraints which are unranked in the master ranking.
 - But, as far as I can tell, there’s virtually no rules for what can/must be in the master ranking, so this is typologically meaningless.
 - The trick is, there is no necessary connection between the syntax/semantics of a node and its phonology.
- (4) Reduplicative construction with distinct cophonologies

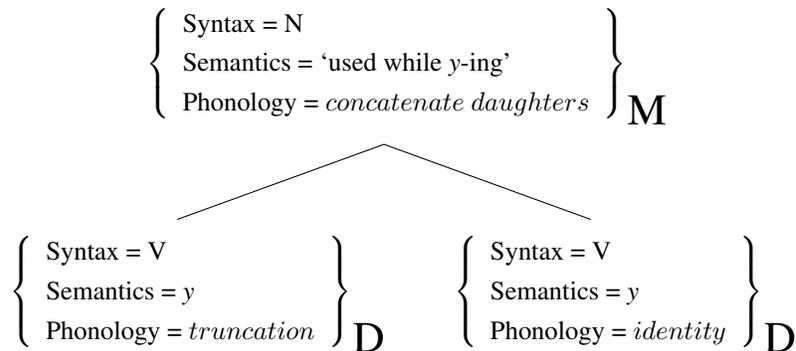
Reduplicative Construction



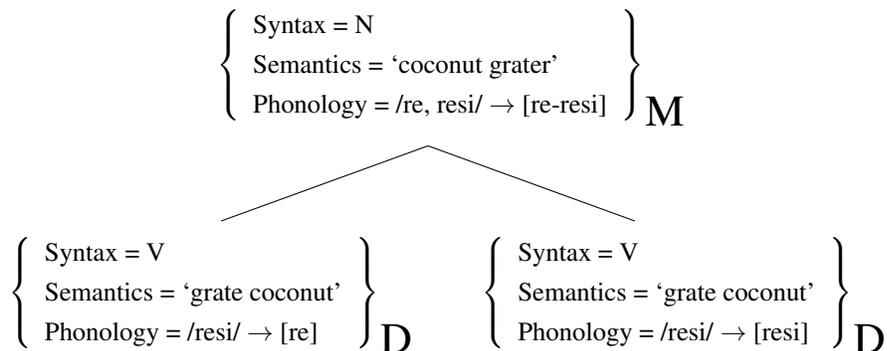
- This means that the two daughters can be passed on to the mother node with different phonological outputs.
 - The mother node cophonology then determines how the (potentially distinct) outputs of the daughter cophonologies get concatenated.
 - But the mother node applies the same phonology to both daughter outputs.

- (5) Reduplication in Banoni (IZ:15–16); e.g. $\sqrt{\text{resi}}$ ‘grate coconut’ \rightarrow *re-resi* ‘coconut grater’

Reduplicative Construction



Example



- In this framework, partial reduplication is to be understood as a construction that calls for semantic identity of its daughters, and has truncation phonology for one daughter but not the other.
- ★ IZ give no rationale for why reduplicative constructions so frequently have truncation of one daughter, but other constructions (e.g. simple affixation) so rarely do.
 - It thus feels like this may be missing an important point...

1.3 Reduplication-Phonology Interactions

- MDT eschews BR correspondence, but for more principled reasons than most of the other alternatives we’ve looked at:
 - “Base” and “reduplicant” are (at least for phonological purposes) simply different, unrelated morphological constituents.
- The morphology requires them to be identical as a matter of sub-categorization, but this is already checked and done with before phonology comes into the picture.

- MDT can thus not handle certain types of interactions that quintessentially rely on BR faithfulness:
 - Back-copying
 - Overapplication of junctural phonology
- IZ argue that no such cases exist.
 - But unlike McCarthy, Kimper, & Mullin (2012) and others, IZ actually take the time to really argue against the claimed cases of these sorts of effects.
 - Their arguments are largely reasonable.
- MDT can handle other types of reduplicative opacity, namely normal overapplication (including “allophonic” overapplication) and underapplication.
 - They do this by stipulating — or, in certain cases, demonstrating via independent evidence — that the triggers are copied morphologically and subsequently truncated, such that it is always just opacified normal application.
 - The phonology is handled derivationally, such that opacity is handled in much the same way as in Stratal OT:
 - Phonology applies normally at a lower node,
 - Then a process at a subsequent node removes the context (overapplication \approx counterbleeding) or introduces the context (underapplication \approx counterfeeding).
 - (Or the process simply doesn’t apply at the relevant node.)
- They do end up having to also claim that reduplicant shape alternations cannot be dependent on conditions at the base-reduplicant juncture (only by conditions of the input), unless it can be derived consistently by the phonology of the mother node.
 - IZ claim that these don’t truly exist.
 - I think Ponapean might be such a case. Also probably Ancient Greek.
- I think they also can’t derive the notion of TETU. (I’m guessing they would just say that it’s not really a thing.)

2 Rationale for cophonology: morphologically-conditioned phonology

- The basis for cophonology theory is the idea that many phonological processes are restricted to applying in particular morphological contexts; i.e.,
 - Some morphemes that create the context for the rule trigger application of the rule
 - Other morphemes that create the context for the rule *don’t* trigger application of the rule
- IZ (72–73) give Turkish velar deletion as an example.
 - Stem-final /k/ deletes in intervocalic position (6a)
 - ...except when it doesn’t

(6) Turkish velar deletion

a. Dative suffix: triggers velar deletion

Nominative	Dative	Gloss
bebek	bebe-e	'baby'
inek	ine-e	'cow'

b. Aorist suffix: does not trigger velar deletion

Past	Aorist	Gloss
gerek-ti	gerek-ir	'be necessary'
bırak-tı	bırak-ır	'leave'

- Assuming that the distinction between which morphemes trigger and which morphemes is arbitrary (I'm wondering if there's a consistent distinction between nominal and verbal suffixes correlating with the fact that nouns have bare forms...), then this difference has to be stipulated in the grammar somewhere.

- Phonologically speaking, the difference in behavior can be characterized by a reversal in ranking:

(7) a. Deletion ranking: $*VkV \gg \text{MAX-C}$ b. Preservation ranking: $\text{MAX-C} \gg *VkV$

- One way to handle this is to use morphologically indexed constraints (see, e.g., Pater 2009, Becker 2009).
 - One of the constraints gets split into two versions (let's assume it's the markedness constraint).
 - Affixes that induce deletion get indexed to the version of the markedness constraint that dominates MAX-C ($*VkV_i$).
 - Affixes that don't induce deletion get indexed to the version of the markedness constraint that is outranked by MAX-C ($*VkV_j$).

(8) Turkish with indexed constraints: $*VkV_i \gg \text{MAX-C} \gg *VkV_j$

- Alternatively, one could simply do the indexation to the rankings (as in (7)), rather than splitting the constraints. This is cophonology.
 - The construction for each affix that induces deletion has (7a) as part of the cophonology of its mother node.
 - The construction for each affix that does not induce deletion has (7b) as part of the cophonology of its mother node.

⇒ IZ (also Becker and many others) assert that this sort of morphologically-determined phonology is extremely common (maybe even prevalent) when you really look at a language's morphophonology on the whole.

- Therefore, going all in on morphological indexation seems to be necessary, rather than a complication.
- Reduplication is thus just the normal state of affairs — a morphological construction indexed to particular phonology that diverges in certain respects from other constructions in the language.

3 Example MDT analyses

3.1 Indonesian stress

- IZ (102–103, 108–112) provide an analysis of Indonesian, which exhibits a special stress pattern in reduplication under one very specific circumstance.

- Compounds normally show stress subordination of the first member (9).

(9) Stress in Compound Forms (McCarthy & Cohn 1998:51; cf. Cohn 1989:188)

- a. [càp][pós] ‘postmark’ (M&C:32)
- b. [tùka][cát] ‘printer’
- c. [polùsi][udára] ‘air pollution’
- d. [bòm][átom] ‘atom bomb’
 - i. pəm-[bòm][atóm]-an ‘bombing’
 - ii. pəm-[bòm][àtom]-án-ña ‘the bombing’
- e. [anèka][rágam] ‘varied’
 - i. kə-[anèka][ragám]-an ‘variety’
 - ii. kə-[anèka][ràgam]-án-ña ‘the variety’

- In reduplication (which looks kind of like compounding), sometimes you get the expected subordination pater (10ii), but sometimes you get double primary stress (10i) contrary to the expected pattern.

(10) Stress in reduplicated forms (McCarthy & Cohn 1998:52; cf. Cohn 1989:185)

i. <i>Matching</i>		ii. <i>Non-matching</i>	
a.	[búku][búku] ‘books’	[bùku][bukú]-ña	‘the books’
b.	[waníta][waníta] ‘women’	[wanita][wanitá]-an	‘womanly’ (adj.)
c.	[màsarákat][màsarákat] ‘societies’	[màsarakat][màsarakát]-ña	‘the societies’
d.	[minúm-an][minúm-an] ‘drinks’	[minùm-an][mìnum-án]-ña	‘the drinks’
e.	[hák][hák] ‘rights’ (M&C:32)	di-[pàs][pás]-kan	‘tried on repeatedly’

- This has been analyzed as a BR faithfulness effect (Kenstowicz 1995, McCarthy & Cohn 1998, Stanton & Zukoff 2016).

- Stress is assigned independently to (i) the first member and (ii) the second member + any suffixes.
- When there are no suffixes, the stress grammar places stress on the same syllables in both members.
 - IDENT[stress degree]-BR ensures that they both have primary stress, contravening the constraint against multiple primary stresses.
- Where are suffixes attached to the second member that are not present on the first, the stress grammar places stress on different syllables in the two members.
 - IDENT[stress degree]-BR can’t be satisfied (because each stressed correspondent will have an unstressed correspondent), so there’s nothing to contravene subordination.

- There’s evidence that this isn’t the right generalization and analysis.

- Namely, there are two circumstances where both members bear stress on the corresponding syllables but do not match in stress degree:

(11) Matching stress location without matching stress degree (IZ:110)

i. Matching		ii. Non-matching	
a.	(cf. [há:k][há:k] ‘rights’)	di-[pàs][pàs]-kan	‘tried on repeatedly’
b.	[kərá][kərá] ‘monkeys’	[kərà][kərá]-an	‘toy monkey’
c.	[kəcíl][kəcíl] ‘small (dist.)’	mə-[ŋəcìl][ŋəcíl]-kan	‘to belittle s.t.’

• Stress rules:

- Monosyllables are stressed.
- Disyllables are stressed on the initial (= penult).
- ə is always unstressed; so, in CəCV(C), stress the final not the penult.

• For reduplicated monosyllabic roots with a monosyllabic suffix ((11a) = (10ii.e)), the root will be stressed in both members.

→ These don’t show stress matching.

• For reduplicated CəCV(C) roots with a monosyllabic suffix (11b,c), the final syllable of the root will be stressed in both members.

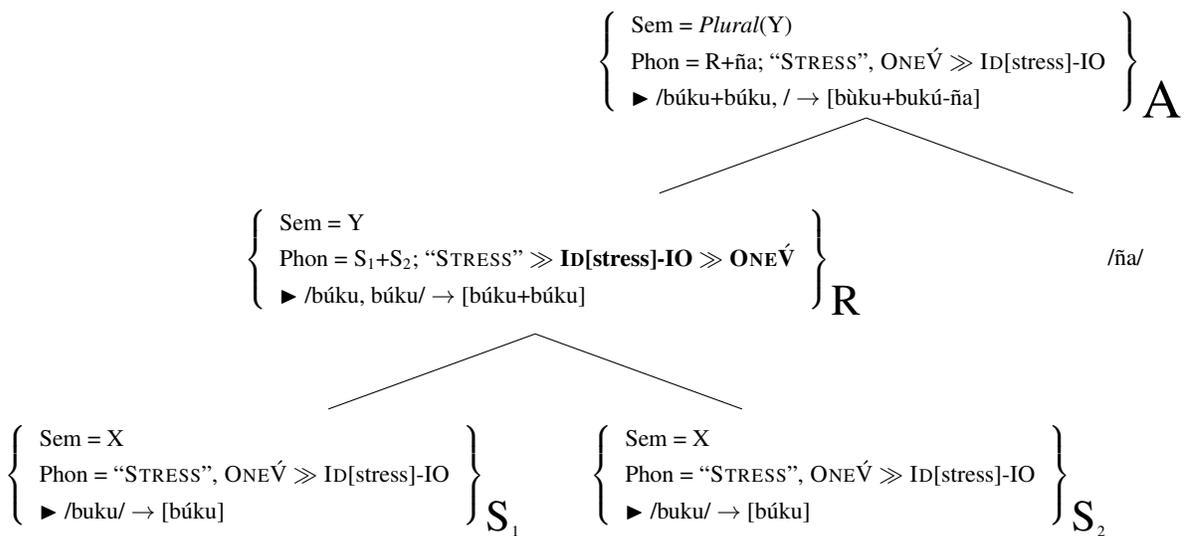
→ These don’t show stress matching.

⇒ This contradicts the BR faithfulness analysis.

• IZ give a completely different analysis in MDT, based on placing the stress subordination grammar at different nodes.

- The subordination cophonology (ONEV̇ ≫ ID[stress]-IO) is present at the stem construction node (S) and at the affixation construction node (A) [and also at the non-reduplicative compounding node].
- **But**, the stress preservation cophonology (ID[stress]-IO ≫ ONEV̇) is present at the reduplication construction node (R).

(12) Stress cophonologies in Indonesian



- The primary stresses which are assigned to the independent stems that get concatenated in reduplication are preserved at the point when reduplication happens.
 - If this is the end of the derivation, this double primary stress form will surface as an output.
- However, if reduplication is further subject to suffixation — which has the subordination cophology — the second primary stress will get demoted, regardless of whether stress moves in the second member.
- In this analysis (which does a much better job at capturing the data), the special status of primary stress results from special faithfulness to the *input*, not special faithfulness between base and reduplicant.
 - IZ refer to this as “Native Identity”, as opposed to “Coerced Identity”.
- This special faithfulness is not tied directly to the fact that it is reduplication, but simply to the fact that it is a particular morphological construction, and thus can have special phonology if it wants.
 - This predicts that any type of morphological construction should be able to display special stress properties.
 - This is a reasonable statement given the typology, in which all sorts of different morphemes can induce special stress properties cross-linguistically.

3.2 Tohono O’odham stress

- The point that stress behavior in reduplication can be tied to more general relations between stress and morphology in a language is illustrated by Tohono O’odham (IZ:129, and sources therein).
- Tohono O’odham has a weird derived environment effect:
 - Primary stress always falls on the initial syllable
 - Secondary stresses on all odd numbered syllables, with one proviso:
 - In derived (\approx morphologically complex) words, odd numbered final syllables bear stress.
 - In underived words (\approx bare roots), odd numbered final syllables **don’t** bear stress.

(13) Stress in Tohono O’odham (IZ:129)

- a. Non-derived words: no stress on final syllable
 - i. k^í: ‘house’
 - ii. pí:ba ‘pipe’
 - iii. ʔásugal ‘sugar’
 - iv. síminj^{ul} ‘cemetery’
- b. Derived words: stress permitted on final syllable
 - i. cíkpan-**dám** ‘worker’
 - ii. má:ginà-kam ‘one with a car’
 - iii. pímiàndo-**màd** ‘adding pepper’

- So, what do we expect to happen in reduplication? Stressed final syllables:

(14) Stress in reduplication (IZ:129)

pí-pibà	‘pipes’	(vs. pí:ba ‘pipe’)
sí-sminj ^{ul}	‘cemeteries’	(vs. síminj ^{ul} ‘cemetery’)
pá-pad‘o	‘ducks’	
tá-tablò	‘shawls’	

- How do we explain this effect in MDT?

- (15) a. Root node cophonology: NONFIN \gg *LAPSE
 b. All other nodes' cophonology: *LAPSE \gg NONFIN

- The point is that one morphological construction can have special phonology against the rest of the language.
 - Here it's roots (or whatever)
 - In Indonesian, it was reduplication
- As far as MDT is concerned, the choice of which construction gets something special is arbitrary and uninteresting.

3.3 Fox

- Fox (Dahlstrom 1997) has a disyllabic reduplication pattern, which marks ITERATIVE aspect.
 - Appears to the left of the root.
 - Doesn't allow long vowels or codas in its second syllable (but allows both in the first).
- Same restrictions hold of prosodic words, so reasonable to assume that the reduplicant is a prosodic word.

(16) Reduplication in Fox (IZ:166; data, w/ page numbers, from Dahlstrom 1997)

a. First (C)VC(C)V copied

pye:taw-e:wa	pye:ta -pye:tawe:wa	'he brings it for him'	217
k ^w i:nom-e:wa	k^wi:no -k ^w i:nome:wa	'he longs for him'	217
ni:škesi-wa	ni:ške -ni:škesiwa	'he is overburdened'	217
ki:hpoče:wa	ki:hpo -ki:hpoče:wa	'he eats his fill'	217

b. Second V always short

we:ne:haki	we:ne -we:ne:haki	'who (pl)?'	218
	* we:ne: -we:ne:haki		
mayo:-wa	mayo -mayo:wa	'he cries'	218
	* mayo: -mayo:wa		
po:swe:kesi-wa	po:swe -po:swe:kesiwa	'he cries louder'	218
	* po:swe: -po:swe:kesiwa		

c. No coda in second syllable

nenehke:nem-e:wa	nene -nenehke:neme:wa	'he thinks about him'	218
	* neneh -nenehke:neme:wa		
nakiškaw-e:wa	naki -nakiškawe:wa	'he meets him'	218
	* nakiš -nakiškawe:wa		
kok ^w a:ške:-wa	kok^wa -kok ^w a:ške:wa	'he is jerked'	218
	* kok^waš -kok ^w a:ške:wa		

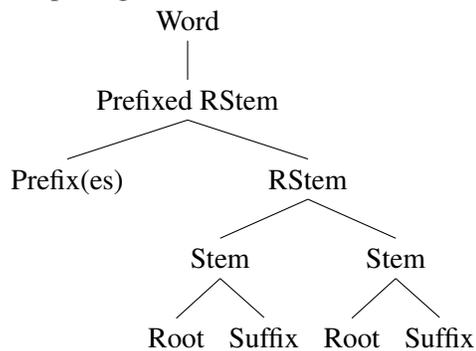
- Suffix material can be copied when the root is subminimal; prefixes always precede reduplicant (i.e. can't be copied).

(17) Reduplication of suffix material (IZ:167)

a.	mi:n-e:wa	mi:ne -mi:ne:wa	'he gives it to him'	208
	kot-aki	kota -kotaki	'he swallows it; conjunct'	219
b.	ne-mi:n-a:wa	ne-mi:na -mi:na:wa	'I give it to him'	220
	ke-nepa	ke-nepa -nepa	'you sleep'	220

- In MDT at least, these facts suggest a morphological structure as follows:

(18) Morphological structure of Fox words (IZ:167)



- In order to posit a structure like this, there should be evidence that the prefixes are exponents of higher terminals than the suffixes.
 - It's not obvious that this is true: there are both prefixal and suffixal subject agreement markers (and maybe some other types of affixes), which often obligatorily co-occur.
 - Though maybe subject agreement happens at two different points along the clausal spine (or whatever the equivalent notion is in this morphosyntactic framework).
- It feels like, for this case at least, they are positing the morphological structure that they need in order to generate the phonological facts, without much external evidence...
- There's lots of phonology going on around reduplication in Fox.
 - All of it can be made consistent with MDT, if you make several (reasonable) provisions about prosodic word boundaries and opacity.
- As far as I can see, given equivalent provisions, BRCT can handle all the same stuff, though it looks weirder.
 - Most notably, for vowel-initial roots, you would expect copying of an epenthetic consonant at a juncture, but you don't get it.
- Fox apparently has three different types of consonant epenthesis which fix hiatus for vowel-initial stems:
 - *h*-epenthesis — between disyllabic reduplicant and its base
 - *y*-epenthesis — between monosyllabic reduplicant and its base (Dahlstrom 1997:213)
 - *t*-epenthesis — between prefixes and (reduplicated) stems

- One might expect that a vowel-initial base for disyllabic reduplication which follows a vowel-final prefix might overapply *h*-epenthesis, or back-copy *t*-epenthesis.
 - This is not the case: it shows normal application — *t*-epenthesis to fill the first hiatus, *h*-epenthesis to fill the second.

(19) Epenthesis with \sqrt{amw} ‘eat’

- Unprefixed disyllabic reduplication*
e:mwa-h-amw-a:čihi ‘the ones whom they (repeatedly) eat’
- Prefixed unreduplicated stem*
ne-t-amw-a:wa ‘I eat him’
- Prefixed reduplicated stem*
ne-t-amwa-h-amw-a:wa (*ne-t-amwa-t-amw-a:wa, *ne-h-amwa-h-amw-a:wa)

- IZ eventually go in for an analysis where *t*-epenthesis and *h*-epenthesis happen at different nodes.
 - *h*-epenthesis happens in the RStem cophology:
 - *VV, DEP[t], MAX-V \gg DEP[h]
 - *t*-epenthesis happens in the Prefix or Word cophology:
 - *VV, DEP[h], MAX-V \gg DEP[t]
 - In the root+suffix constituent, hiatus seems to be resolved through vowel deletion:
 - *VV, DEP[h], DEP[t] \gg MAX-V
 - If *y*-epenthesis is real, then it would be restricted to the construction marked by monosyllabic reduplication.
- But in order to capture certain vowel alternations, IZ have to make a claim about the prosodic structure of complex words:
 - The prefix + first member of the RStem form one prosodic word
 - The second member of the RStem (which contains suffixes) forms a separate prosodic word.
- If we assume this structure, and assert that the type of epenthesis is not conditioned by morphological construction but rather by prosodic environment, then BRCT can analyze the distribution:

- (20) a. *VV, DEP[t] / $\boxed{\dots PWD} _ \{ PWD \dots \}$ \gg DEP[h] \gg IDENT[C]-BR, DEP[t] *or*
- b. *VV, DEP[h] / $\boxed{\{ PWD \dots _ \dots PWD \}}$ \gg DEP[t] \gg IDENT[C]-BR, DEP[h]

- It is an accident that we don’t get overapplication or back-copying in the BRCT analysis, but it’s also an accident that we get different types of epenthesis in the MDT analysis — everything is an accident, because any node can have any phonology.

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