Reduplication in Compounding Contexts: Morphological Doubling vs. Correspondence[*]

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1. Introduction: Reduplication in Compounding Contexts

The center of inquiry for the present paper is how the (morpho-phonological) process of reduplication might interact with the (morpho-syntactic) process of compounding. Consider a compound construction *Z* composed of two stems *X* and *Y*, thus exhibiting a structure like that in (1):

(1) $[X\text{-}Y]_Z$

Given such a structure there are at least eight theoretically possible targets for reduplication. These involve targeting either the *edges* of the compound (i.e. the left edge, the right edge, either edge, or both edges of Z), or the *sub-constituents* of the compound (i.e. X, Y, X *or* Y, or X *and* Y), for the reduplication.[1]

Because canonical stems are composed of a foot and canonical reduplicants are a foot or less, many cases of reduplication may be indeterminate with respect to the above possibilities. The examples of reduplication applying in noun incorporation (i.e. noun-verb compound) contexts in Paiwan (Austronesian) presented by Chang and Wu (2006), for instance, are ambiguous between a disyllabic reduplicant applying to the entire N-V compound or just the full reduplication of the disyllabic nominal member of the compound. Examples like that in (2b) are typical:

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[1] The further possibility of having *infixal* reduplication would greatly increase the potential targets. However, we will not consider this further possibility here.

(2) Paiwan Reduplication + Noun Incorporation (Chang and Wu 2006)

a. sa-'uma=aken
go.to-AF>-home=1s.NOM
'I went home'

b. sa-'uma-**'uma**=aken
go.to<AF>-home-**RED**=1s.NOM
'I am going home'

The actual target of Paiwan reduplication could be disambiguated by a monosyllabic noun stem, which would either yield a monosyllabic reduplicant in the "full copy of the noun stem" scenario (3a) or would involve copying the final syllable of the verb stem along with the monosyllabic noun stem in the "copy two syllables from the (right) edge" scenario (3b):

(3) Hypothetical Reduplication + NI in Paiwan involving a monosyllabic noun stem: √BA

a. sa-**[**ba**]-ba**=aken OR b. s<e**[**m>a-ba**]-maba**=aken
'I am going to <whatever is denoted by √BA>)'

Under standard conceptions of the Lexicalist Hypothesis invoking such notions as the *thesis of the atomicity of words* (cf. DiSciullo & Williams 1987 and similar proposals), the targeting of sub-constituents of a compound for reduplicative inflection should not be possible. However, targeting the sub-constituents of compounds for reduplication (and other types of inflection) is indeed attested.

One example illustrating the targeting of specific members of a compound for reduplicative inflection is attested in Hiaki (Yaqui; Uto-Aztecan) NI contexts, where the head of the compound, i.e. the verb stem, is reduplicated (cf. 4). Lexicalist theories of NI, e.g. Mithun (1984) and Rosen (1989), incorrectly lead us to expect that the edge of the complex verb stem created by the supposedly lexical process of N-V compounding is what should be targeted for reduplication (thus, yielding the unattested edge-marking reduplications in 4):

(4) Reduplication on N-V Compounds in Hiaki (Harley and Haugen 2008)

	Compound	Gloss	Reduplicated form	Unattested
a.	pan-hooa bread-make	'making bread'	pan-**ho**-hoa	*pan-pan-hoa
b.	kuču-sua fish-kill (pl.obj.)	'fishing'	kuču-**su**-sua	*ku-kuču-sua

One construction that clearly targets *both* sub-constituents of a compound for reduplication is observed with adjective-adjective compounds in Chinese:

(5) Chinese Adj+Adj Compounds– AABB [A+RED+B+RED] (Feng 2006: 202 [170])

	Base	*Lit.* translation	Gloss	Redup. Form	Gloss
a.	ganjing	'dry+clean'	"clean"	gan**gan**jing**jing**	"clean" (intensified)
b.	qingsong	'light-loose'	"relaxed"	qing**qing**song**song**	"relaxed" (intensified)

Pima (Uto-Aztecan) provides an example of a language targeting *either* member of a compound for reduplication, where reduplicating either member (or both members) of a noun-noun compound yields pluralization of the compound as a whole:

(6) Pima Noun-Noun Compounds (Munro and Riggle 2004 [5])

a. ʼònk-ʼús **ʼò**-ʼonk-ʼús ~ ʼònk-**ʼú**-ʼus ~ **ʼò**-ʼonk-**ʼú**-ʼus
salt-tree **RED**-salt-tree salt-**RED**-tree **RED**-salt-**RED**-tree
'tamarack' 'tamaracks' ~ 'tamaracks' ~ 'tamaracks'

b. bàn-nód:adag **bà**-ban-nód:adag ~ bàn-**no**nd:adag ~ **bà**-ban-**no**nd:adag
coyote-plant.type **RED**-coyote-plant coyote-**RED**-plant **RED**-coyote-**RED**-plant
'peyote' 'peyote (pl.)' ~ 'peyote (pl.)' ~ 'peyote (pl.)'

c. [li**l**-mì**mi**da]-hoa**h**as-hà**ha**ʼa]-[dá**da**gkuanakud:] (Munro and Riggle 2004 [18])
[glass]-[baskety-jar]-[wiper]
'glass dish cloth(s)'

(6c) is particularly interesting because it illustrates Munro and Riggle (2004)'s claim that there are thirty-one possible plurals for a compound with five stems (i.e. 2^n-*1*). Reduplicating any of the stems, or all of the stems, in this kind of complex noun compound will yield the pluralization of the entire compound—no scope differences emerge by targeting specific members within compound.

Edge-marking reduplication on compounds, which I assume to be the usual case, should be relatively straightforward under any theory of reduplication. However, as the above examples show, theories of phonology, morphology, and/or reduplication must also somehow allow for reduplication to target specific sub-constituents of a compound (i.e. X, Y, X *and* Y, or X *or* Y), contra the Lexicalist Hypothesis. The remainder of this paper will address the targeting of sub-constituents of compounds for reduplication by comparing and contrasting this process in two current competing theories of reduplication: Inkelas and Zoll (2005)'s Morphological Doubling Theory (MDT) (§2) and McCarthy and Prince (1995)'s Correspondence Theory (§3).

2. Reduplication and Compounding in Morphological Doubling Theory (MDT)

MDT abandons the usual *phonological copying* approach to reduplication, where the phonological make-up of a particular kind of morpheme, a "reduplicant", is determined by copying material from some other morpheme or stem, "the base". This makes MDT quite unlike most received theories of reduplication, including the skeletal theory proposed by Marantz (1982), the early Prosodic Morphology theory of McCarthy and Prince (1986), and Correspondence Theory (CT) (McCarthy and Prince 1995).

To see how MDT works, consider a prototypical case of disyllabic reduplication from Diyari (Pama-Nyugnan):

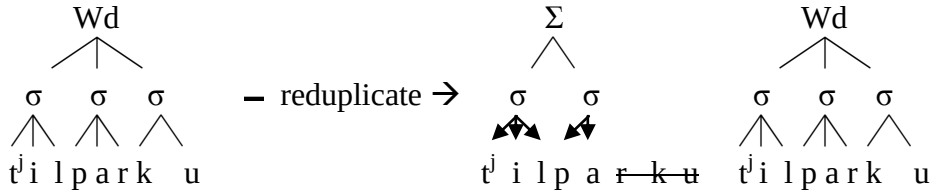
(7) Diyari Disyllabic Reduplication (Inkelas & Zoll 2005: 79 [16])

a. wiḻa ‘woman’ > **wiḻa**-wiḻa

b. tʲilparku ‘bird sp.’ > **tʲilpa**-tʲilparku * tʲilparku-tʲilparku

(7b) shows that the reduplicant in Diyari must be composed of two syllables (i.e. a foot), and is not merely a full copy of the stem (as might be erroneously concluded from looking at examples like 7a, involving disyllabic stems, alone). Traditional analyses of this kind of pattern have proposed a kind of template for the expression of the reduplicant, either through the stipulation of bare prosodic structure which must maximally link up to the segmental melody of a copy of the stem (as in McCarthy and Prince 1986, cf. 8), or through the stipulation of a template constraint requiring that the reduplicant be of a certain size (as in McCarthy and Prince 1995, cf. 9).

(8) Traditional McCarthy and Prince (1986)-style account of Diyari Reduplication



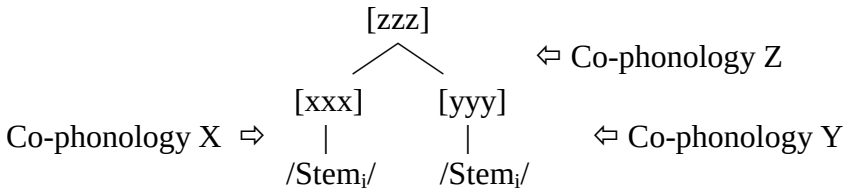
(9) Traditional, Correspondence Theoretic Account (with a Template)

/ tʲilparku + RED /	RED=Σ	MAX_{BR}
a. **tʲilparku**-tʲilparku	*!	
b. ☺ **tʲilpa**-tʲilparku		rku
c. **tʲil**-tʲilparku	*!	parku
/ wiḻa + RED /	RED=Σ	MAX_{BR}
a´. ☺ **wiḻa**-wiḻa		
b´. **wi**-wiḻa	*!	ḻa

MDT, on the other hand, makes the alternative proposal that the identity between the two morphemes in such constructions is not phonological, as in the above copying approaches to reduplication, but rather is *semantic*. In MDT reduplication is a kind of compounding construction where the two daughters of the compound are often (usually) identical. For this reason MDT ought to be ideally suited for accounting for reduplication in compounding contexts. However, the kind of compounding constructions discussed in section 1 will post some problems for MDT, as we will see below.

The basic schematic for reduplication in MDT is presented in (10):

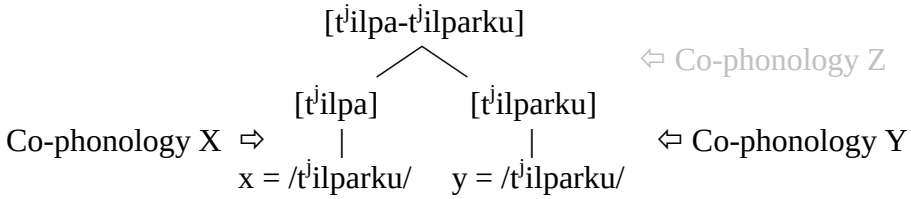
(10) Schematic for Reduplication in MDT (Inkelas & Zoll 2005)



For reduplication like that in Diyari, a stem such as *tʲilparku* is compounded with another stem, which happens to be identical (cf. 11a). To ease our discussion I will be referring to the traditional "base stem" simply as *the stem*, and I will be labeling the traditionally-labeled "reduplicant" as *the Doppelgänger*. Cases of "partial reduplication" involve truncation of only one of the daughter stems, the *Doppelgänger*, as regulated by a co-phonology that applies to that daughter only. This is shown for the reduplication of Diyari *tʲilparku* in (11), where Co-Phonology X imposes a kind of template requiring the output to be of a certain shape (here, a foot) by the constraint ranking of PWD≈FOOT >> IO-FAITH (cf. 11b), while Co-Phonology Y requires a fully faithful output by the different ranking of IO-FAITH >> PWD≈FOOT (cf. 11c).

(11) MDT Analysis of Diyari: Separate Co-phonologies (~Inkelas & Zoll 2005: 79 [17])

a.



b. Co-phonology X: PWD≈FOOT >> IO-FAITH

/ tʲilparku /	PWD≈FOOT	IO-FAITH
a. tʲilparku	*!	
b. ☺ tʲilpa		rku
c. tʲil	*!	parku

c. Co-phonology Y: IO-FAITH >> PWD≈FOOT

/ tʲilparku /	IO-FAITH	PWD≈FOOT
a. ☺ tʲilparku		
b. tʲilpa	r!ku	
c. tʲil	p!arku	*

Any kind of junctural phonology that might occur between the two stems is regulated by the third co-phonology, Co-phonology Z, which applies at the word level.

Given this structure for reduplication constructions, MDT does not allow any dependency relationship to hold between a "reduplicant" (i.e. the *Doppelgänger*) and its "base", and there should be no reduplication-specific phonology. Two of the proposed

advantage of MDT are the supposed lack of reduplication-specific phonology, and a close correlation of reduplication constructions with "synonym constructions" which is captured under the same account—i.e. semantic identity.

Regarding the issue of reduplication-specific phonology, one potential objection to MDT is that there indeed does seem to be quite a bit of evidence for reduplication-specific phonology, an important class of examples of which comes from the large literature on *the emergence of the unmarked* (TETU). A long-standing observation about reduplication constructions is that reduplicants often have a less marked structure than do their bases. In CT this has been attributed to a constraint ranking that places a markedness constraint between a highly ranked constraint on Input-Output correspondence (e.g. FAITH_{IO}) and a relatively lower ranked constraint on Base-Reduplicant correspondence (e.g. FAITH_{BR}). Many examples of TETU have been cited in the literature (see Kennedy 2008 for a recent defense of the essential approach); I will discuss yet another case, from Tawala, in detail below. It is not clear how MDT, which does not distinguish "reduplicant" from "base" in such a manner, would account for this robust cross-linguistic tendency.

Secondly, one of Inkelas and Zoll's major motivations for incorporating the idea of semantic identity into their analysis of reduplication constructions comes from the existence of "synonym constructions" in certain languages. For example, Hindi has a construction which employs the compounding of synonymous but etymologically distinct nominals in order to yield an idiomatic interpretation (Singh 1982). For example, the word *tan-badan* takes the native Hindi word for 'body', *tan*, and compounds it with a word of Perso-Arabic origin, *badan*, which also means 'body'. The resulting compound *tan-badan* then leads to an interpretation of 'body, etc.' This productive morphological process is semantically identical to "a productive process of echo-word reduplication in which the exact same stem is doubled" (Inkelas and Zoll 2005: 60), as in *roti-voti* and *namak-vamak*, where the words *roti* 'bread' and *namak* 'salt' "echo reduplicate" with a [*v*]-initial copy of the stem, which yields the meanings 'bread, etc.' and 'salt, etc.', etc. Other languages show similar compounding constructions involving synonyms, near-synonyms, antonyms, etc.

The presence of echo-reduplication serving the same function as synonym compounding in languages like Hindi do seem to lead to the reasonable conclusion that those construction types are indeed linked in such languages. However, one striking cross-linguistic generalization about reduplication constructions in particular is that they often involve only *partial* reduplication. If reduplication constructions are actually equivalent to synonym compounding constructions cross-linguistically, then the MDT analysis that posits truncation-inducing co-phonologies to yield partial reduplication should be expected to produce (some frequency of) truncation in synonym compounding constructions as well. To take a hypothetical example involving two Indo-European languages, English and Spanish, a synonym compound construction involving such words as Spanish *problemo* and English *problem* would yield, without truncation, *problemo-problem*. The typology of partial reduplication leads us to expect a variety of different kinds of potential truncations to show up in some language or another, such as a

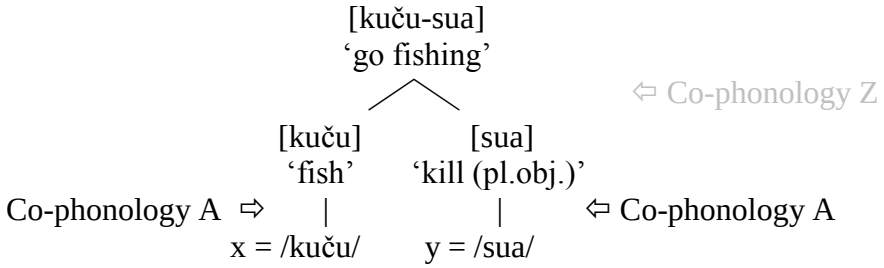
disyllabic template yielding something like **problem-problem*, a heavy syllable template (**prob-problem*), a light syllable template (**pro-problem*), and/or a Sanskrit-style "core syllable" template (**po-problem*). If synonym compounds never allow for such truncation then MDT would have to have some way to address the fact that truncation otherwise seems to be reduplication-specific. Thus, there is a potential conceptual problem for MDT's proposed equivalence of the two construction types. I will refer to this crucial issue as *the problemo-problem*, leaving it open to empirical investigation.

Returning to reduplication in compounding contexts, one advantage of approaching this issue in MDT is that MDT explicitly displays the morphological structure at hand. For example, let us consider the straight-forward MDT analysis of a simple N-V compound in Hiaki without reduplication:

(12) MDT Analysis: A Simple N-V Compound in Hiaki

kuču-sua
fish-kill (pl.obj.)
'fishing'

a.



b. Co-phonology A: IO-FAITH >> PWD≈SYLLABLE

/ kuču + sua /	IO-FAITH	PWD≈SYLLABLE
a. ☺ kuču-sua		**
b. ku-sua	č!u	
c. kuču-su	a!	

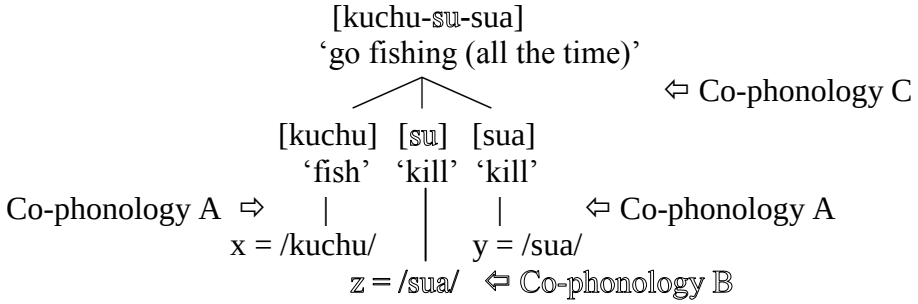
In (12) two stems, the noun *kuču* 'fish' (stem *x*) and the verb *sua* 'kill (pl.obj.)' (stem *y*) compound to yield a verb with the idiomatic interpretation 'to go fishing'. No truncation of any kind applies to either stem so we can assume that the same co-phonology, here Co-phonology A, applies to both stems. Because IO-FAITH is ranked over any kind of prosodic templates both stems surface with full faithfulness to their inputs.

Under reduplication, however, the verb stem doubles. As observed above in (4), when reduplication applies to the verb stem in (this class of verb in) Hiaki the reduplicant (~ MDT's *Doppelgänger*) appears as a single syllable. This will require the introduction of a second co-phonology, Co-phonology B, to apply to the *Doppelgänger* verb stem. Co-phonology A will be the same as above:

(13) MDT Analysis: A Simple N-V Compound + Reduplication Hiaki: $N + V_i + V_i$

kuchu-sua → kuchu-**su**-sua *__ku__-kuchu-sua
fish-kill (pl.obj.)
'fishing'

a.



b. Co-phonology B: PWD≈SYLLABLE >> IO-FAITH

/ sua /	PWD≈SYLLABLE	IO-FAITH
a. sua	*!	
b. ☺ su		a

We can raise the question here—why does Co-phonology B kick in to apply to one instance of √*sua* and not the other? One possible answer is that there might be something in the compound-level co-phonology, Co-phonology C, that prohibits the (redundant?) full expression of adjacent identical roots. Following the proposal of a constraint *REPEAT in Yip (1998) and the generalized Obligatory Contour Principle (*X. . .X) in Suzuki (1998), Hicks Kennard (2004) proposes a constraint prohibiting adjacent identical syllables, $*\text{REPEAT}_{[\sigma]}$, in Tawala durative reduplication. For the Hiaki truncation in (13) we might want to try to propose a similar *REPEAT constraint, perhaps at the level of the foot (Σ), at the compound-level Co-phonology C. This analysis is shown in (14).

(14) A Possible Analysis of Truncation: Co-phonology C: $*\text{REPEAT}_{[\Sigma]}$ >> IO-FAITH

/ kuchu + sua + sua /	$*\text{REPEAT}_{[\Sigma]}$	IO-FAITH
a. kuču-sua-sua	*!	
b. ☺ kuču-su-sua		a
c. ☹ kuču-sua-su		a
d. ☹ kuču-su-su		a!a

This approach might yield truncation for one of the identical daughters, but we would still have to find some way to apply the truncation to the first daughter (the actual winning candidate, 14b) rather than the second (the eight-ball candidate in 14c), and we would also have to prevent truncation from applying to *both* daughters (as in 14d).

There might be some reasonable way to get the right result in a fully fleshed-out analysis of this reduplication pattern in Hiaki but, as a general strategy, appealing to the compound-level co-phonology (i.e. Co-phonology C) in order to motivate the truncation required for partial reduplication is going to be highly problematic. Returning to the

situation in the Tawala durative, *REPEAT$_{[\sigma]}$ comes into play specifically in the case of two adjacent syllables occurring between a reduplicant and its base, as in (15):

(15) Tawala: *REPEAT$_{[\sigma]}$ for identical adjacent syllables between RED and Base only

a. to.to.go	'be sick'	>	t**oo**.to.go	*__to__-to.to.go	'be sick (durative)'
b. be.i.ha	'search'	>	**bi**-be.i.ha	*__be__-be.i.ha	'be searching'
c. a.pu	'bake'	>	**a.p**-a.pu	*__a-__apu	'be baking'
d. ge.le.ta	'arrive'	>	**ge.le**-ge.le.ta	*ge-geleta	'be arriving'

Other cases of morphological concatenation in Tawala can freely lead to identical adjacent syllables, as in (16) (Haugen and Hicks Kennard 2009, data from Ezard 1997):

(16) Tawala: Violations of *REPEAT$_{[\sigma]}$ in non-reduplicative contexts

a.	b.	c.
Pronominal prefix + V stem	Derivational prefix + V stem	Root-Root compounds:
a-a.ni	*lu-lu.pa.li*	*nu.go-go.ho.la*
1.SG.SUBJ-*eat*-OBJ	derivational.prefix-'ask'	heart-jump
'I ate something'	'beg'	'be surprised'

(16c) is particularly instructive for our present discussion. There we see two full roots being compounded, with the juxtaposition bringing about two identical adjacent syllables. However, the grammar does nothing to eliminate the resulting violation of *REPEAT$_{[\sigma]}$ (i.e. **nu.g**__**oo**__**.ho.la**, in contrast to *t*__*oo*__*.to.go* in 15a). Two adjacent syllables are forbidden in the case of reduplication creating juxtaposed identical syllables (cf. 15), however. In an MDT account like that proposed in (14), which would posit a blanket *REPEAT$_{[\sigma]}$ constraint at Co-phonology C, the two kinds of compounding should be treated identically. The fact that this constraint seems to only affect the reduplication case suggests an instance of reduplication-specific phonology that is otherwise outlawed in MDT. In the CT account, on the other hand, this difference is straight-forwardly captured as a standard case of TETU, where FAITH$_{IO}$ >> *REPEAT$_{[\sigma]}$ >> FAITH$_{BR}$. Since MDT does not recognize a distinction between a reduplicant and its base, this is another example of an empirical and conceptual problem for the theory.[2]

Assuming that this general problem can be resolved (or circumvented) in some way, MDT's semantic identity account seems to be relatively straightforward in the analysis of reduplication in Hiaki compounding contexts. In the noun incorporation (i.e. N-V compounding) cases above, it is the verbal element that is morphologically doubled (~ reduplicated), which seems to correlate well with the fact that it is the verbal element that is semantically doubled.[3] Further evidence from Hiaki supporting this idea are verb-verb compounds, which allow reduplication to apply to either or both of the verb stems:

[2] See Hicks Kennard (2004) for a Correspondence Theoretic account of the Tawala data in (15) that unifies the various surface reduplicants under a single constraint ranking. Inkelas and Zoll (2005: 94-5) provide an MDT analysis of a sub-set of the Tawala data in (15); see Haugen and Hicks Kennard (2009) for a critique of their analysis, as well as a more detailed discussion of the problem presented above.

[3] This account does present a problem for lexicalist theories of NI (e.g. Mithun 1984, Rosen 1989), on the other hand, where the compounding of the N and V is presumed to take place in the lexicon in order

(17) Verb-Verb compounds in Hiaki (Harley and Haugen 2008)

a. nok-ii'aa	→	**no**-nok-ii'aa	nok-**ii**-ii'aa	**no**-nok-**ii**-ii'aa
speak-want		**RED**-speak-want	speak-**RED**-want	**RED**-speak-**RED**-want
'want to speak'		'want to be speaking'	'wanting to speak'	'wanting to be speaking'
b. nok-taite	→	**no**-nok-taite	nok-**tai**-taite	**no**-nok-**tai**-taite
talk-INCEP		**RED**-talk-start	talk-**RED**-INCEP	**RED**-talk-**RED**-start
'begin to talk'		'starting to speak (hab)'	'starts to talk (hesitates)'	'starting speaking'

As can be seen from the glosses in (17), the semantics of the reduplicant take scope only over the reduplicated verbal element, i.e. not over the entire compound *qua* compound. MDT would posit semantic inputs like the following for the data in (17):

(18) MDT inputs for the different reduplication possibilities in Hiaki V-V Compounds:

a. [no]	[nok]	[ii'aa]	b. [nok]	[ii]	[ii'aa]	c. [no]	[nok]	[ii]	[ii'aa]
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
/noka/	/noka/	/ii'aa/	/noka/	/ii'aa/	/ii'aa/	/noka/	/noka/	/ii'aa/	/ii'aa/
|	|	|	|	|	|	|	|	|	|
'speak'	'speak'	'want'	'speak	'want'	'want'	'speak'	'speak'	'want'	'want'

Semantically, this account seems quite reasonable. Doubling the verb root semantically leads to doubling that verb root morphologically (and perhaps vice versa?).

For a language like Pima, on the other hand, where reduplicating (~ morphologically doubling) *any* element in a noun-noun compound leads to the pluralization of the entire compound (qua compound), this semantic identity story is not so satisfactory. Recall the data from (6) above, partially repeated here as (19):

(19) Reduplication of Noun-Noun compounds in Pima (Munro and Riggle 2004)

'ònk-'ús	→	a. **'ò**-'onk-'ús	~	b. 'ònk-**'ú**-'us	~	c. **'ò**-'onk-**'ú**-'us
salt-tree		**RED**-salt-tree		salt-**RED**-tree		**RED**-salt-**RED**-tree
'tamarack'		'tamaracks'	~	'tamaracks'	~	'tamaracks'

Here there are no scope distinctions for the reduplication. In MDT's semantic identity account the plural of 'tamarack' would have three distinct but functionally equivalent possible inputs:

(20) MDT inputs for the different reduplication possibilities:

a. ['o]	['onk]	['us]	b. ['onk]	['u]	['us]	c. ['o]	['onk]	['u]	['us]
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
/'ònk /	/'ònk /	/'ús /	/'ònk /	/'ús /	/'ús /	/'ònk /	/'ònk /	/'ús /	/'ús /
|	|	|	|	|	|	|	|	|	|
'salt'	'salt'	'tree'	'salt'	'tree'	'tree'	'salt'	'salt'	'tree'	'tree'

---

to create a new V. Thus, [N]+[V_1] ought to yield V_2: i.e. $[N+V_1]_{V2}$. V_2, given the thesis of the atomicity of words, should be the element that gets reduplicated, rather than the grammar allowing the inflectional process to "peek" down into the structure to identify the underlying (and word-internal) V_1.

A semantically-driven account of reduplication should lead us to expect the kinds of scope that we see above in Hiaki. Doubling the head of the compound in (20), *'ús* 'tree', yields the expected pluralization of the entire compound: the plural of a particular kind of tree, the 'salt tree' (~ 'tamarack'). What is unexpected is why the doubling of the noun root for 'salt' would have an impact on the number for 'tree'. Even worse would be all of the possible equivalent semantic inputs for a five-noun compound like that in (6c) above.

An important generalization that the semantic identity basis for reduplication posited by MDT seems to miss is that the process of reduplication itself typically has its own (only sometimes iconic) semantic function: i.e. to indicate plurality (of Entities or Events) (Moravcsik 1978). If the reduplicant itself is a morpheme (i.e. an affix, *RED*), as is held in most phonological copying approaches, then it can be regarded as a Vocabulary Item inserted into morphological structure to spell out some morphosyntactic feature (e.g. [PLURAL]) (cf. Haugen 2008). This kind of approach does not face the objection that is raised by a semantic identity motivation for reduplication.

To summarize this section on the analysis of reduplication and compounding in MDT, the above discussion leads me to conclude that MDT faces several serious theoretical and empirical challenges based on evidence from reduplication in compounding contexts.

3. Reduplication and Compounding in Correspondence Theory

CT was primarily designed to account for reduplication via the phonological association of a reduplicative affix with the stem to which it attaches, i.e. its "base", so it is a traditional "phonological copying" theory according to the definition of Inkelas and Zoll (2005). I will argue below that little by way of additional machinery is actually required to address the question of reduplication in compounding contexts if we first answer a surprisingly under-theorized question: *What is the base for reduplication*?

The default assumption in practice for most discussions of reduplication, whether invoking "phonological copying" or otherwise, seems to have been that the base is the entire stem to which a reduplicant attaches. This assumption required the use of "Stray Erasure" for non-associated segmental material in early skeletal theories (e.g. Marantz 1982), and the equivalent idea has been implicitly maintained in most of CT (for example, in assessing violations of the constraint MAX_{BR}).

However, very little discussion has actually been devoted to explicitly defining the notion of "base". One definition which nicely makes overt the default "whole stem" approach discussed above is provided by Hogoboom (2004): "[t]he Base of a reduplicative morpheme consists of all of the segments in the output with the exception of the reduplicant". Haugen (2009) reviews several prominent definitions of the base, including Hogoboom's and the Adjacent String Hypothesis (McCarthy and Prince 1993, Urbanczyk 2000), and there I conclude that the Constituent Base Hypothesis proposed by Shaw (2005) alone adequately predicts the necessary range of both *morphological* and *prosodic* constituents that may serve as a base for reduplication. Shaw proposes that the

base for reduplication must be specified as a constituent, the definition of which is limited to a small range of independently attested morphological and prosodic categories:

(21) The Constituent Base Hypothesis: Definition of the Base (Shaw 2005: 167 [6])
The Base in a Reduplicant-Base correspondence relation is a constituent, i.e.

a. MCat:	Word, Stem, Root
b. PCat:	Prosodic Word, Foot, Syllable, Nucleus, Mora
c. PHead:	HeadFoot, σ́ = FootHead, Nuc = σHead, Headμ
d. CanonicalCat:	Canonical Root = [CVC] Canonical Stem = [CVCV]

In Shaw's approach, the definition of the base as either a morphological or prosodic constituent occurs in the independently necessary ANCHOR constraint that defines the reduplicant. Her proposal is formalized as follows:

(22) $\text{ANCHOR}_{\text{R-B}}$ L/R (Redup; MCat/PCat) (Shaw 2005: 172 [11a])
The left/right peripheral element of a Redup[licant] corresponds to the left/right peripheral element of a constituent in the Base-Output.

Since ANCHOR constraints are already needed in CT no new machinery is necessary to account for the targeting of specific sub-constituents for reduplication. The only novel thing that is required is the recognition that different possible morphological or prosodic constituents can be targeted for reduplication. Shaw (2005) provides several cases of different morphological and prosodic constituents serving as bases for reduplication. Haugen (2009) adds an additional case of each type, which I will briefly review here.

One clear case of a language exhibiting different morphological bases is Ndebele (Bantu), where reduplication can variably apply to a verb root alone or, when derivational suffixes are attached to the root, to the stem created by this suffixation. Ndebele reduplication is disyllabic; the final vowel is thematic and is not a part of the root:

(23) Ndebele Reduplication with Simple Verbs (Hyman 2007)

a. lim-a	'cultivate'	**lim-a** + lim-a	'. . . a little here and there'
b. nambith-a	'taste'	**nambi** + nambith-a	

Reduplication with derivational suffixes such as *–el* or *–is* allows two possible patterns of reduplication: the first copying from the complex stem (where the base is composed of the root plus the derivational suffix, as in 25a), and the second copying from the root only (where the base therefore is simply the root, as in 25b):

(24)a. Ndebele Reduplication with Complex Verbs: Base = Root + Derivational Suffix

i. lim-el-a	→	**lim-e** + [lim-el]-a	'cultivate for/at'	(applicative *-el-*)	
ii. lim-is-a	→	**lim-i** + [lim-is]-a	'make cultivate'	(causative *-is-*)	

b. Ndebele Reduplication with Complex Verbs: Base = Root Only

i´. lim-el-a	→	**lim**-a + [lim]-el-a

ii´. lim-is-a → **lim**-a + [lim]-is-a

This free variation in base assignment can be captured in Shaw's approach by allowing for optionality in the morphological constituent included in the ANCHOR constraint defining the reduplicant:

(25)i. $\text{ANCHOR}_{\text{R-B}}$ L (Redup; Verb Stem) OR ii. $\text{ANCHOR}_{\text{R-B}}$ L (Redup; Verb Root)

A case of different prosodic bases is found in Mayo (Uto-Aztecan), where the base for reduplication correlates with the placement of accent in the unreduplicated form (Hagberg 1993).[4] In verbs of the "unaccented" class the accent falls on the second syllable of the stem, and heavy syllable reduplication can copy into that second syllable (27a). In the "accented" class, on the other hand, the accent falls on the first syllable and heavy syllable reduplication can only copy from the first syllable (27b):

(26) Variable Reduplication in Mayo: Different Bases for Copying (Hagberg 1993)

a. "Unaccented" Verbs: Reduplicant = $\sigma_{\mu\mu}$; Base=Entire Verb Stem

i.	[om.té]	**om**.[óm.te]	***o**'.['om.te]	'hate'
ii.	[no.ká]	**nok**.[nó.ka]	***no**n.[no.ka]	'speak'

b. "Accented" Verbs: Reduplicant = $\sigma_{\mu\mu}$; Base =1st Syllable of Verb Stem Only

i.	[wóm].te	**wóm**.[wom].te	***wów**.[wom].te	'be frightened'
ii.	[nó].ka	**nó**n.[no].ka	***nók**.[no].ka	'know a language'

These different bases can be defined in Shaw's approach by Anchor constraints such as the following:

(27)a. $\text{ANCHOR}_{\text{R-B}}$ L ($\text{Redup}_{\text{unaccented.class}}$; Verb Stem)
b. $\text{ANCHOR}_{\text{R-B}}$ L ($\text{Redup}_{\text{accented.class}}$; σ_1 of Verb Stem)

The upshot of the present discussion is that Shaw's CBH correctly predicts that either morphological or prosodic constituents may be targeted and therefore serve as bases for reduplication. MDT recognizes the need for morphological targets but explicitly rejects the possibility of prosodic targets, as codified in Inkelas and Zoll's *thesis of morphological targets* ("a reduplication construction calls for morphological constituents (affix, root, stem, or word), and not phonological constituents (mora, syllable, foot)" p.25). The evidence reviewed here suggests that Shaw's CBH is more empirically adequate than Inkelas and Zoll's thesis of morphological targets.

Finally, to return to our issue of reduplication in compounding contexts, then, I suggest here that nothing unique needs to be said about anchoring the reduplicant to one

[4] The accent shifts to the left under reduplication, therefore the assignment of the base according to the placement of the accent in the unreduplicated form is an example of opacity. See Haugen (2004) for an Optimality Theoretic account that addresses this opacity by invoking different alignment constraints for the placement of the accent and the definition of the base.

of the members of a given compound. The relevant morphological target can be explicitly defined in the reduplicant's ANCHOR constraint:

(28)a. Hiaki N-V and V-V Compounds
ANCHOR$_{R\text{-}B}$ L (Redup; Verb Stem)

b. Pima N-N Compounds
ANCHOR$_{R\text{-}B}$ L (Redup; Noun Stem)

4. Conclusion

Any theory of reduplication must address the fact that different morphological constituents may be targets for reduplication; compounding is only one context where such a necessity emerges.

Our comparison of MDT with CT leads to several conclusions. First, we observed several challenges to MDT. One is that although MDT treats reduplication as the process of compounding a stem with its Doppelgänger, reduplication constructions in some languages are distinct from other, more clear cases of compounding. The example from Tawala of a prohibition on identical adjacent syllables between a reduplicant and its base but not between two compounds is one such case, and was presented as a garden-variety instantiation of TETU in CT. Additionally, MDT does not recognize phonological targets, nor the intrinsic (pluralizing) semantic contribution of most reduplications. Compounding contexts do not seem to pose as significant a challenge for CT, on the other hand. Shaw's Constituent Base Hypothesis already contains what we need to account for specific prosodic and morphological constituents, including sub-constituents of compounds. In CT reduplication is not equivalent to compounding so it is not expected to behave the same. Rather, RED itself is a morpheme, which is inserted into the input to spell out some morphosyntactic feature, e.g. {PLURAL}.

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