Reduplication in Kuuk Thaayorre

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1 Introduction

This paper tackles an unusual reduplication pattern in Kuuk Thaayorre (KT), a Paman language spoken on the west coast of the Cape York Peninsula.* The data, first discussed in Gaby (2006), have been analyzed by Round (2013) in Base-Reduplicant Correspondence Theory; this paper provides an alternative analysis within Morphological Doubling Theory and examines the relevance of the reduplication patterns for the long-standing question of syllable structure in KT.

2 The data

In KT, words whose first syllable has a short vowel exhibit internal VC* duplication (1a, b), while those whose first syllable contains a long vowel exhibit internal CV duplication (1c, d). Forms in square brackets show the surface effects of consonant lenition, which targets the output of CV duplication but not the output of VC* reduplication. The fact that vowel length is not preserved across reduplication follows from a more general fact in KT: length is allowed only in stressed syllables, i.e. word-initially and in a few lexically stressed suffixes. Data are given in IPA:

(1)	a.	ɻok	‘enter’	ɻ**okok**	‘keep entering’
		ɻip	‘exit’	ɻ**ipip**	‘keep exiting’
		jak	‘cut’	j**akak**	‘keep cutting’
		pat̪	‘bite’	pa**t̪at̪**	‘keep biting’
		kal	‘carry’	k**alal**	‘keep carrying’
		peɻp	‘cover’	pe**ɻpeɻp**	‘keep covering’
		katp	‘grasp’	k**atpatp**	‘keep grasping’
		piɻmp	‘float up’	pi**ɻmpiɻmp**	‘keep floating up’

* We are pleased to contribute this paper in honor of Wim Zonneveld, whose lifelong attention to morphophonology and syllabification has inspired our work. We thank audiences at UC Berkeley and the 2014 Australian Languages Workshop, Erich Round and Jonah Katz for discussion of KT reduplication and consonant lenition. All data are from Gaby (2006).

b.	kunut	‘remove’	k**unun**ut	‘keep removing’
	piniɻm	‘imagine’	p**inin**iɻm	‘keep imagining’
	jompar	‘become’	j**ompomp**ar	‘becoming
	ŋeɻnkan	‘yesterday’	ŋ**eɻnkeɻnk**an	‘morning’
c.	waːt̪	‘search for’	**waːwa**t̪	‘keep searching for’
	n̪iːn	‘sit’	**n̪iːn̪i**n	‘keep sitting’
	ɻiːc	‘run’	**ɻiːɻi**c	‘keep running’
	waːn̪t̪ar	‘call out for’	**waːwa**n̪t̪ar	‘keep calling out for’
	t̪uːt̪	‘crawl’	**t̪uːt̪u**t̪ [t̪uːðut̪]	‘keep crawling’
	t̪eːɻk	‘return’	**t̪eːt̪e**ɻk [t̪eːðeɻk]	‘keep returning’
	paːt̪	‘fire’	**paːpa**t̪ [paːβat̪]	‘hot’
	t̪aːŋk	‘climb’	**t̪aːt̪a**ŋk [t̪aːðaŋk]	‘keep climbing’
d.	waːɻin	‘chase’	**waːwa**ɻin	‘keep chasing’
	koːpe	‘wait for’	**koːko**pe [koːɣope]	‘keep waiting for’

Any account of KT reduplication must account for these key details:

- The position of the reduplicant
- The shape of the reduplicant (VC* or CV)
- The application of lention to plosives in CV but not VC* reduplicants

By bolding the relevant portion of the words in (1), we are deliberately being neutral as to which copy is the reduplicant and which is the base. That is because the analyses we compare in this sketch make different assumptions in this regard. Gaby (2006) treats the reduplicant as the second copy in all cases. Round (2013) analyzes the reduplicant as the first copy in VC* reduplication and the second copy in CV reduplication. In this Morphological Doubling Theory account, the reduplicant is the first copy in all cases — not, contrary to appearances, an infix.

In section 3 we introduce our Morphological Doubling account of these data. In so doing, we also suggest a resolution to the outstanding question of whether KT has VC or CV syllabification (Gaby 2006). Section 4 briefly compares our account to that of Round (2013), constructed within BRCT.

3 KT reduplication in Morphological Doubling Theory (MDT)

In MDT (Inkelas and Zoll 2005), morphological reduplication results from the juxtaposition of two identical morphological constituents in the same word. Reduplication is a two-level construction in which phonological modifications can affect either or both daughters individually, as well as the concatenation of the two.

The input to a reduplication construction in MDT consists of two full copies of the morphological constituent in question. In KT, the targets of productive reduplication are words. The first copy is truncated to a maximal syllable, which we will argue in section 3.1 is, for KT, CVXCC, where X varies over vowel length or C. The concatenation of the two copies necessitates phonological repairs: overlarge consonant clusters at the reduplicant-base juncture are reduced, and long vowels in the second copy are shortened.

From the MDT perspective, the apparent infixation and VC* ~ CV allomorphic alternations are emergent effects of truncation and junctural cluster reduction. The process of VC* reduplication (1a,b) is depicted informally in (2):

(2)		a.		b.	
	Output:	[kalal]		[ŋeɻnkeɻnkan]	
	Truncation:	[kal]	[kal]	[ŋeɻnk]	[ŋeɻnkan]
	Input:	/kal/	/kal/	/ŋeɻnkan/	/ŋeɻnkan/

In both (2a) and (2b), the appearance of infixation is generated even though infixation proper is not part of the analysis. All that is required for the analysis to work is truncation (the counterpart of which is needed in any partial reduplication analysis) and the simplification of the junctural clusters *l-k* in (2a) and *ɻnk-ŋ* in (2b). Constraints to accomplish these effects, independently motivated by syllable structure considerations in KT, will be provided in section 3.3.

The CV reduplication pattern is generated in the same way, as illustrated in (3), in which the inputs have long vowels. The first copy is truncated to a maximal syllable (vacuously, in the case of the monosyllabic input /t̪eːɻk/ in (3a). The truncatum and full copy are concatenated, with the same simplification of junctural clusters observed in (2). In addition, the long vowel in the second copy is shortened, since it is no longer in the requisite initial syllable (Gaby 2006:62):

(3)		a.		b.	
	Output:	[t̪eːt̪eɻk]		[koːɣope]	
	Truncation:	[t̪eːɻk]	[t̪eːɻk]	[koːp]	[koːpe]
	Input:	/t̪eːɻk/	/t̪eːɻk/	/koːpe/	/koːpe/

Just as seen above in (2), the appearance of infixation in these examples is generated without the need to appeal to infixation. Deleting the end of the first copy and the beginning of the second copy can give the appearance of infixation. The constraints involved are all purely phonological.

The ultimate persuasiveness of this account lies in the validity of the phonological constraints required to implement it. These are discussed below in sections 3.1 and 3.2 (syllabification) and section 3.3 (reduplication). We begin with a brief analysis of KT syllable structure, the backbone to a solid understanding of KT reduplication.

3.1. Syllabification

KT exhibits many of the same patterns that led Breen and Pensalfini (1999) to propose VC syllabification in other Australian languages. According to Gaby (2006), the evidence for whether KT has VC or CV syllabification is equivocal. Favouring VC syllabification are these facts: most content words end with consonants; clusters are found word-finally, but never word-initially; one of the reduplication patterns illustrated above copies VC*. However, most native KT content words also begin with consonants.[1] Moreover, not all clusters are possible codas; those violating sonority sequencing, as in [mop.ŋun] 'butterfly', must be split. Such clusters do not occur word-finally (unless the final C is syllabic).

We argue below for a nuanced version of VC syllabification in KT in which a tautomorphemic intervocalic C is syllabified as a coda, but, departing from the strong no-onset approach applied by Breen and Pensalfini (1999) to Arrernte, a word-initial C is an onset. Onset consonants are also allowed under two specific other conditions: (a) morpheme-initially, and (b) in case a given consonant cluster violates sonority sequencing and must be split. (In this sketch we will focus only on condition (a); readers are referred to Gaby 2006:48 ff. for a discussion of sonority sequencing, which plays no significant role in the issues discussed here.) Evidence for VC syllabification is provided by word-level phonotactics and lenition.

Phonotactics. The following table, from Gaby (2006), illustrates the possible native monosyllabic content words in KT. Clearly, these are all possible syllables:[2]

(4)	CVːC	puːn	'breeze'
	CVːCC	paːnt	'head'
	CVC	pan	'bait'
	CVCC	punt	'elbow'
	CVCCC	n̪eɻŋk	'male's child'

Based on these data alone, it is reasonable to propose a CVXCC maximal syllable, where X represents either vowel length or a consonant. However, concatenating maximal syllables incorrectly predicts the possibility of tautomorphemic …CCC)(C… or …Vː CC)(C… strings in KT's many polysyllabic words. Since strings of this type do not exist, it must therefore either be the case that C onsets are limited to word (or morpheme-initial) position, or that VXCC rimes are

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[1]The one exception, based on consulting Foote and Hall 1992, Gaby 2006 and Gaby's unpublished notes, is [otonci] 'hill', sometimes produced as [ŋotonci]. KT does exhibit vowel-initial function words, including VC and VCC [in̪] 'this' and [ulp] 'the' as well as longer vowel-initial function words such as [awiʔi] 'right here', [aŋar] 'PURPOSIVE', [it̪arkow] 'wow!', [oŋkor] 'PROHIBITIVE', etc. The function word [iː] 'there' can, as a prefix, create V-initial content words, namely directional adverbs such as [iripar], [it̪ipar], [iluŋkar]. KT also possess vowel-initial loanwords.

[2] The only (C)Vː words in KT are function words, [iː] 'there' and [koː] (a discourse particle).

limited to word (or morpheme-final) position.[3] The lenition facts, below, support the first of these two options — i.e. that KT employs VC* syllabification, supplemented with the possibility of morpheme-initial onsets. Recall that the application of lenition to CV reduplicants, not to VC* ones, is a key datum that any analysis of KT reduplication should account for.

A process which voices, fricates, and sometimes sonorises plosives, **lenition** applies in morphologically derived environments, targeting suffix-initial consonants as well as the initial consonants of the second members of compounds. (Word-final consonantal suffixes, however, do not lenite.) Examples of polymorphemic words exhibiting lenition are given below (from Gaby 2006: 33):

(5) a. /iː-r-kaw/ → [irɣaw] 'there-to-EAST'
  cf. [park-ɻ] 'shine-NONPAST'; no lenition of morpheme-final [k]
 b. /kuta-t̪ak/ → [kutad̪^{ð}ak] 'dog-DAT'
  cf. [kat̪-ej-ɻ] 'tie-RFL-P.PFV'; no lenition of morpheme-final [t̪]
  [puːt̪-ak] 'nest-DAT'; no lenition of morpheme-final [t̪], [k]
  [paːn̪t̪-ak] 'woman-DAT'; no lenition of morpheme-final [t̪], [k]
 c. /meːɻ-puŋk/ → [meːɻβuŋk] 'eyebrow'
  cf. [peɻp] 'cover'; no lenition of morpheme-final [p]

The simplest analysis of lenition is, as Gaby (2006) states, that it targets word-internal syllable onsets — on the VC syllabification hypothesis, stated above, that the only internal onsets in KT are morpheme-initial. On a CV syllabification hypothesis, lenition would be harder to capture. A form like /kat̪-ej-ɻ/ would be expected to syllabify as (ka)(t̪e)(jɻ) '….', and there would be no explanation for the failure of [t̪] to lenite like it does in (7b), i.e. (ku)(ta)-(t̪ak) → [kutad̪^{ð}ak].

The VC syllabification analysis offers some purchase on the otherwise puzzling question of why KT lenition applies in CV but not VC* reduplication:

(6)	(jak)$_σ$	→	(jak)$_σ$-(ak)$_σ$	No internal onset; no lenition
	(t̪eːɻk)$_σ$	→	(t̪eː)$_σ$-(ðeɻk)$_σ$	Lenition applies to internal onset
	(koːp)$_σ$(e)$_σ$	→	(koː)$_σ$-(ɣop)$_σ$(e)$_σ$	Lenition applies to internal onset

Cross-linguistically, the kind of non-neutralizing lenition exhibited in KT, or what Katz (ms) calls 'low-boost lenition', typically targets sonorant-adjacent consonants in weak prosodic position. Syllable codas and unstressed onsets are particularly common targets, as in Spanish. Katz argues that this kind of lenition is 'is fundamentally about helping the listener distinguish between the presence and absence of a prosodic boundary….'. Languages that lenite weak consonants tend also to exhibit fortition of consonants in strong position, maximizing the acoustic difference between weak and strong position. Strong positions are auditorily the most disruptive; weak positions, the least.

[3] CCCC strings do occur in polymorphemic words when the last C is syllabic (Gaby 2006). We do not discuss syllabic sonorants here as they do not affect the analysis of reduplication.

In languages with CV syllabification, i.e. most languages and all of the cases Katz examines, strong position is word-initial or the onset of a stressed syllable. Weak position is typically a coda or the intervocalic onset of an unstressed syllable, or on a syllable coda. This is not the case in KT, where codas and morpheme-internal intervocalic plosives never lenite. Moreover, in Katz's database, domain-internal consonant clusters either lenite as a unit or resit lenition as a unit. None display the KT pattern of leniting only the last consonant in a cluster (when that consonant is morpheme-initial). But Katz's hypothesis could explain the KT pattern, once the difference in syllabification is taken into account, if we hypothesise that the domain in question is the syllable, and that what distinguishes KT is that the syllable boundary which matters most is the end.

In a CV language where the syllable is the domain of perceptual boundary enhancement, the best place for auditory disruption is at the beginning of the syllable. In a VC language, by contrast, it is reasonable to suppose that the *end* of the syllable should be the best place for auditory disruption. In a VC.CV string, lenition of the second C makes the string more similar to VC.V, and enhances the auditory disruption associated with the coda of the first syllable. By contrast, in a VCC.V string, lenition of the second C would be counterproductive, by weakening the acoustic impact of the element in syllable-final position.[4]

In sum, the lenition facts, coupled with the phonotactics of monosyllabic words, support a syllabification process in which word-internal consonants are syllabified as codas unless they are morpheme-initial and precede a vowel. The MDT analysis lends itself to this outcome, as seen in (8). In sections 3.2 and 3.3 we will introduce the Optimality-Theoretic constraints needed to make this happen.

3.2. Syllabification constraints

The following constraints implement the VC syllabification analysis described above, in which consonants syllabify leftward as codas whenever possible, but not across a morpheme boundary. Thus morpheme-initial consonants are always onsets:

(7)	CODA	Penalises open syllables (cf. better-known ONSET)
	NOONSET	Penalises onsets (cf. better-known NOCODA)
	STROLE-IO	Requires input syllable roles to be preserved in output

CODA and NOONSET ensure that, morpheme internally, a consonant will syllabify leftward if at all possible. STROLE-IO, which ensures the exact preservation of input syllables, prevents the syllabification of morpheme-initial material leftward into an existing syllable. The principled exception is consonantal suffixes, which have no choice but to violate STROLE-IO by syllabifying leftward. STROLE-IO has no effect on the root cycle, on the assumption that morphemes enter

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[4]For Katz, fortition and lenition follow from the same principle: minimise auditory disruption at weak boundaries, maximise it at strong boundaries. Stressed syllable onsets in KT exhibit fortition (aspiration), suggesting a three-way split: strong onsets = fortition, weak onsets = lenition, and strong codas = faithful preservation. Aspiration is not transcribed here.

the derivation unsyllabified, but works to preserve input syllable structure on subsequent cycles of morphology.[5]

The following tableau illustrates the syllabification of word-initial and word-internal prevocalic consonants, and shows that epenthesis and deletion (which violate FAITHfulness) are not utilised in order to satisfy CODA. The famous ONSET constraint, active in so many languages, is low-ranked in KT:

(8) Syllabification of /koːpe/

	/koːpe/	FAITH	CODA	NOONSET	ONSET
☞ a.	(koːp)(e)		*	*	*
b.	(koː)(pe)		**!	**	
c.	(ək)(oːp)(e)	ə!	*		***
d.	(oːp)(e)	k!	*		**

(NOONSET and ONSET turn out to be too low-ranked to figure in subsequent tableaux, and will not be mentioned again.)

The following tableau shows STROLE-IO at work, ensuring that syllabification does not normally cross morpheme boundaries. In reduplication, both inputs (the two copies) are already syllabified, making STROLE-IO relevant. The effect of STROLE-IO is that compounding (shown here) and suffixation can result in word-internal onset consonants. (Lenition of these is represented in the tableau, but the constraints responsible are not shown.)

(9) Syllabification of /meːɻ-puŋk/

	/meːɻ -puŋk/	FAITH	STROLE-IO	CODA	NOONSET
☞ a.	(meːɻ)-(βuŋk)				*
b.	(meːɻ -p)(uŋk)		*!		

3.3. Reduplication constraints

Having established the basics of the syllabification analysis, we turn next to the constraints responsible for effecting the morphophonological processes applying to the concatenation of the two copies in reduplication. Truncation of the first copy is presupposed here.

(10) *V̆ː: No long vowels in unstressed syllables
*CC_{New}: No output consonant clusters that don't exist in input
*VːC]$_σ$ No long vowels in closed syllables

These constraints are shown operating below, in the derivation of the reduplicated forms in (2)-(5). *CC_{New} is the key constraint. A Comparative

[5] Examples of consonantal suffixes include 'pragmatic' /-t̪/, e.g. [ŋaj-t̪] 'I-PRAG, [puŋ=t̪] 'sun=PRAG' (Gaby 2006:57). However, pragmatic /-t̪/ can form its own syllable, too (Gaby 2006:34, 51 fn. 38, 53), as sonorant consonantal suffixes often do.

Markedness constraint (McCarthy 2003), it penalises consonant clusters which do not appear in the input. *CC_{New} is triggered by clusters in derived environments, in this case at the juncture between (truncated) reduplicant and base. Tautomorphemic clusters are unaffected, meaning that *CC_{OLD} must be ranked very low in KT. *CC_{New} compels the deletion of one half of the cluster or the other (resyllabification of a heteromorphemic cluster being ruled out by STROLE-IO, as seen above). Whether it is the C2 (the onset) or C1 (the coda) that deletes in such cases is adjudicated by *V:C]$_σ$, which favours coda deletion just in case the result would be reduction of an initial V:C] syllable rime to V:]. Otherwise, i.e. when *V:C]$_σ$ is inapplicable, CODA favours the preservation of C1 and the deletion of C2. This is the case in (12). Note that the faithfulness constraint which is violated by consonant deletion in this analysis is MAX-MAR(GIN), a constraint against the deletion of onset or coda clusters. The reason for not simply invoking Max-C is forms like *t̺e:ɻk-t̺e:ɻk* → *t̺e:t̺eɻk*. Like *ko:p-ko:pe* → *ko:-kope*, this form undergoes coda loss; it does not matter that *t̺e:ɻk* loses two C's and *ko:p-* loses only one. Correspondingly, MAX-MARGIN is violated equally by the deletion of a single onset or coda consonant (as in *ko:p-ko:pe* → *ko:kope*) or a coda cluster (as in *t̺e:ɻk-t̺e:ɻk* → *t̺e:t̺eɻk*).

(11)

		*V̆:	STROLE-IO	*CC_{NEW}	MAX-MAR	*V:C]$_σ$	CODA
i.	/(kal)-(kal)/						
a.	(kal)(ɣal)			*!			
b.	(ka)(ɣal)				*		*!
☞ c.	(kal)(al)				*		
d.	(ka-k)(al)		*!		**		
ii.	/(jomp)-(jompar)/						
a.	(jomp)(jompar)			*!			
b.	(jo)(jompar)				*		*!
☞ c.	(jomp)(ompar)				*		
d.	(jo-j)(ompar)		*!		**		
iii.	/(ko:p)-(ko:p)(e)/						
a.	(ko:p)-(ɣop)(e)			*!		*	
☞ b.	(ko:)-(ɣop)(e)				*		*
c.	(ko:p)-(op)(e)				*	*!	
d.	(ko:-k)(op)(e)		*!		**	*	
iv.	/(t̺e:ɻk)-(t̺e:ɻk)/						
a.	(t̺e:ɻk)(ðeɻk)			*!		*	
☞ b.	(t̺e:)(ðeɻk)				*		*
c.	(t̺e:ɻk)(eɻk)				*	*!	
d.	(t̺e:-t̺)(eɻk)		*!		**	*	

Both VC* and CV reduplicants are syllables in the output on this analysis. The consonant(s) in the VC* reduplicant are codas; the initial consonant of the CV reduplicant is an onset. This is why the consonant in the CV reduplicant, but not in the VC* reduplicant, undergoes lenition, which targets word-internal onsets:

The MDT analysis covers the reduplication and lenition facts without requiring infixation. Its persuasiveness lies in the plausibility of the constraints it uses. So are *V̆, *CC_{New}, and *V:C]$_σ$ plausible constraints?

*V̆ is clearly supported in KT by the restriction of long vowels to stressed syllables. Primary stress is usually root-initial (Gaby 2006:33, 66), typically with secondary stress on alternating syllables thereafter (e.g. (12a)). Two clitics, /=(k)aːk/ 'proprietive' and /=(k)aːɻ/ 'privative', exceptionally bear primary stress (Gaby 2006:34, 66); they license long vowels. When they attach, the word-initial syllable is demoted to secondary stress, but can still license vowel length (12b). Compounds bear primary stress on their second member and secondary stress on their first member; due to the presence of stress, vowel length is licensed in the first syllable in either member (12c). Data from Gaby (2006: 34, 67):[6]

(12) a. /máŋkwarkàntɻ/ 'going circuitously around'
b. /jiːram = okun = kaːk/ → [jìːramokun = ɣáːk] 'another =
DUB. = RELATIONAL.PROP. = perhaps having another'
c. /paːn̪t̪ kunjaŋkaɻ/ → [paːn̪t̪ ɣunjaŋkaɻ] 'sister, lit. woman sibling'
/pam t̪uːmp/ → [pam ðuːmp] 'old man', lit. 'man gray.hair'
/ɻiːŋ-kaːl/ → [ɻɪːŋ.ɣaːl] 'leaf'

*CC is a common constraint cross-linguistically. *CC_{NEW} is specifically motivated within KT in that it is substantively related to the lenition effect. Both lenition and outright deletion, in reduplication, repair heteromorphemic consonant clusters by decreasing the constriction and auditory impact of the final consonant in the cluster. *CC is also implicated in a fast speech phenomenon in which the second consonant is deleted from a heteromorphemic cluster within compounds (as below) or across words (Gaby 2006:97, notes):

(13) a. /pam + ŋoːŋkom/ → [pamŋoŋkom] ~ [pamoŋkom]
'man' + 'ignorant' = 'ignorant of'
b. /paːn̪t̪ + kunjaŋkaɻ/ → [paːn̪t̪ɣunjaŋkaɻ] ~ [paːn̪t̪unjaŋkaɻ]
'woman + 'sibling' = 'sister'
c. /pam + kunjaŋkaɻ/ → [pamunjaŋkaɻ]
'man + 'sibling' = 'brother'

*V:C]$_σ$, although commonly enforced cross-linguistically, is the most difficult of the constraints to motivate independently within KT, which regularly exhibits not only V:C but also V:CC syllable rimes. It is true that V:CCC is not

[6] The second member of each compound shows the effects of initial consonant lenition.

tolerated in KT, whereas VCCC is acceptable, suggesting some kind of complementarity between vowel length and syllable codas. However, the competition is subtle, given the existence of V:C(C) rimes.

In conclusion, the MDT analysis has addressed the following questions, posed at the beginning.

- The position of the reduplicant: on the MDT account, if we apply the term 'reduplicant' to the truncated copy, the reduplicant is always initial
- The shape of the reduplicant (VC* or CV): on the MDT account, this follows from syllable structure
- The application of lenition to plosives in CV but not VC* reduplicants: on the MDT account, this follows from syllable structure

4 Reduplication as infixation: Round 2013

Round (2013) develops an analysis of KT internal reduplication within Base-Reduplicant Correspondence Theory (McCarthy and Prince 1995, 1999) which addresses the first two of the questions listed above. In Round's elegant BRCT analysis, reduplicant shape (VC or CV) follows from reduplicant position, which in turn emerges from the interaction of alignment constraints and the restriction of long vowels to initial syllables.

Round's starting point is a constraint, ANCHOR-L-IO, which ensures that reduplication will be internal. ANCHOR-L-IO states that the initial consonant of the input stem remains word-initial in output, forcing any would-be prefixes inside the stem. The lower-ranked constraint ALIGNL-RED pushes the reduplicant into the leftmost phonotactically possible — but noninitial — position. Reduplicant shape — VC* or CV — is predictable from placement location. For an input like /RED, kal/, the reduplicant is positioned after the first consonant, and copies as much of the following base as possible. This is illustrated in the tableau in (14), constructed from Round's analysis and using Round's notation. (Reduplicants are underlined; infixation is encoded via angled brackets; square brackets enclose bases.) Constraints not shown in the tableau ensure that reduplication adds exactly one syllable to the word:

(14) **kal → kalal**

	/RED, kal/	LONG/HEAD	ID(long)-IO	ANCHORL-IO	ALIGNL-RED	ALIGNL-BASE	MAX-BR	ID(long)-BR
☞ a.	k<al>-[al]				k	kal		
b.	<ka>-[kal]			*!		ka	*	
c.	[ka]<ka>-l				ka!			

If, however, the vowel of the first syllable is long, the reduplicant is forced into second syllable position. The responsible constraints are LONG/HEAD, which prohibits vowel length outside the first syllable (15d,e) and ID(long)-IO, which prevents input vowels from shortening (15c). ALIGNL-RED and Max-BR favour CV reduplication (15a) over VC reduplication (15b):

(15) **ko:pe → ko:kope**

	/RED, ko:pe/	LONG/HEAD	ID(long)-IO	ANCHORL-IO	ALIGNL-RED	ALIGNL-BASE	MAX-BR	ID(long)-BR
☞ a.	[ko:]<ko>pe				ko:		:	*
b.	[ko:p]<op>e				ko:p!		k,:	*
c.	[ko]<ko>pe		*!		ko			
d.	[ko:]<ko:>pe	*!			ko:			
e.	ko-[ko:pe]	*!		*		ko	:pe	*
f.	ko:-<pe>[pe]				ko:	ko:pe!		

ALIGNL-Base (Round p.c.) prefers the base to be word-initial, which is possible in the case of CV reduplication (1c-d), (16). For an input like [ko:pe], either [ko:] or [pe] could in principle be the base of infixing reduplication. ALIGNL-BASE prefers [ko:], as seen by comparing (16a) to (16f). By contrast, in VC* reduplication in which the reduplicant follows only a single C, as in (15), that initial material is not sufficient to serve as a base for the reduplicant. In such cases, the following string is the only viable base, and ALIGNL-BASE is violated.

Round's analysis is broadly successful in relating the position of the reduplicant to its shape.[7] In comparing the BRCT account to the MDT account, however, we note two possible reasons to might favour the MDT account. One, specific to KT, is its integration with KT phonology. The MDT analysis of KT reduplication, including duplication sites and types and the conditioning of lenition, crucially supports the VC syllabification analysis for which there is independent evidence in the language. From a broader typological perspective, the MDT approach to the kind of apparently infixing reduplication in KT also has certain advantages. MDT predicts two kinds of internal duplication. The first, as seen in this paper, is only epiphenomenally infixing, and results from principled phonological truncation of both members (ABC+ABC → ABBC). The second is what Inkelas and Zoll (2005) and Yu (2007) call 'phonological reduplication' or 'compensatory reduplication', i.e. insertion of an empty mora or syllable node which assimilates to

[7] A constraint would need to be added to Round's account in order to correctly predict the outcome of reduplicating *jompar;* ALIGNL-RED » ALIGNL-BASE predicts **j<om>[ompar]* instead of *j<omp>[ompar]*. We are sure this could be done, possibly with a constraint related to our MAX-MARGIN, which preserves (coda) cluster integrity.

an adjacent phonological structure. Internal reduplication usually involves small amounts of phonological structure, making it amenable to this phonological account.

What MDT cannot describe is true infixation of one daughter morpheme inside the other (as can be forced by morpheme-specific Alignment constraints of the type needed to drive infixation on BRCT analyses). As a result, MDT correctly predicts that infixation will not target compounding. MDT allows for either or both members of morphological compounds to be truncated (as in Japanese *waado purosessaa* → *waa puro* 'word processor'; Itô 1990), but not the infixation of one member inside the other (e.g. **waa-purosessaa-do*).[8]

In conclusion, MDT and KT reduplication illuminate one another in potentially useful ways.

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[8]Expressive morphology often flouts linguistic generalisations, see McCarthy 1982:574-576 on English expletive infixation and Yu 2007:134 on an infixing Cantonese language game.