Reduplication as fission: The argument from multiple reduplication

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Main Claim The assumption that reduplication is the result of a general phonological copying operation that repairs on otherwise phonologically marked structure allows a straightforward account of the intricate system of different-sized reduplicants and their interaction in Nuuchahulth from the simple affixation of different prosodic nodes.

Different-sized reduplicants Nuuchahnulth (Stonham, 1999, 2004, 2007) exemplifies the complex reduplication patterns found in Wakashan languages: Examples like *maḥt'iː* 'house' → *maː-maḥt'iː* 'houses' or *huɬ* 'dance' → *huːɬ-huːɬa* 'dancing' (Stonham, 2007, 117+119) illustrate that the language employs an interesting variety of differently shaped reduplicants. In the former example, plural is expressed via copying of a minimal CV-syllable whereas iterative progressive aspect in the latter example involves copied segments that form a closed CVC syllable. In addition, the vowel of both the copied and the initial base syllable is lengthened in the latter morphological context. There are in total four basic parameters that distinguish the different reduplication patterns in Nuuchahnulth: a.) the reduplicant is a minimal syllable without a coda (=Min) or is maximal and copies all stem consonants following the initial vowel (=Max), b.) the weight of the initial base syllable (whereas only sonorant codas contribute to syllable weight) is transferred to the reduplicant (=WT) or not, c.) a fixed segment is present in the reduplicant (=fS) or not, d.) the vowel of the reduplicant is long (=L) or not, e.) the initial vowel of the base is lengthened (=+L) or not. (1) gives a list of some of the different combinations of these parameters: most of which can be combined freely with each other.

(Stonham, 2007)

(1)	**MinL**	maḥtiː	maː-maḥtiː	p.117
	Min+L	ʔaki	ʔa-ʔaːki	p.120
	MinL+fS+L	pumaɬ	puːʦ-puːmaɬ	p.120
	MaxL+L	ʦiq	ʦiːq-ʦiːq	p.118
	MaxWT	ʧ'it	ʧ'it-ʧ'it	p.119
		muː	muː-muː	p.119

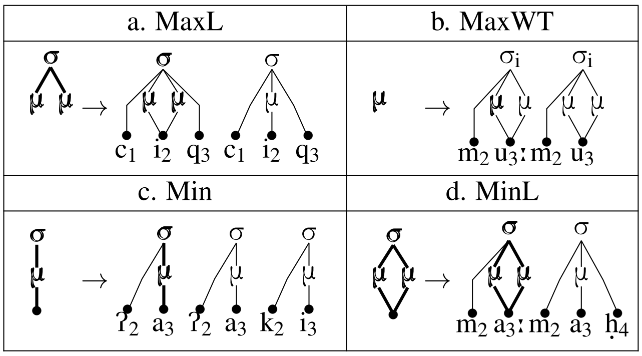
(simplified: only stem is given; suffixes are never copied)

Analysis I: Different-sized reduplicants It is argued that this intricate pattern follows from the very basic mechanism of affixing prosodic moras or syllables. Reduplication is hence not the result of a special RED-morpheme (McCarthy and Prince, 1995) or morphological doubling (e.g. Inkelas, 2008) but the result of a general phonological copying mechanism triggered either by phonotactic markedness constraints or by empty prosodic structure (=Theory of Minimal Reduplication, Saba Kirchner, 2007, 2010). This copy operation is formally modeled as segment fission (Struijke, 2000; Gafos, 2003; Nelson, 2003): one input segment is split up into two output correspondents under violation of INTEGRITY. The crucial generalizations about affixation of prosodic nodes in Nuuchahnulth and its effects are summarized in (2) and some exemplifying patterns how these basic exponents can be combined are given in (3). First, the presence of a fixed segment in the reduplicant is assumed to straightforwardly follow from simple affixation: a segment is part of the reduplicative morpheme along with a floating prosodic node that triggers copying. Second, affixation of an empty σ node results in copying of base material to fill this otherwise empty node with segmental content (3-a). This copying is maximal and includes as many stem consonants following the initial vowel as possible in the coda of this new reduplicant-syllable. This increases the number of INTEG violations since many segments have multiple output correspondents, but is enforced by a CONTIG constraint demanding that every morpheme should be contiguous and no pair of adjacent input segments belonging to one morpheme should be discontiguous in the output: full morpheme copying is hence preferred. Third, prefixation of a μ (3-b), on the other hand, results in copying and weight transfer: the output weight of the initial base syllable is transferred to the copied syllable since the initial syllable of the base and the syllable of the reduplicant are enforced to be in an OO-correspondence relation and a faithfulness constraint ensures that they dominate the same number of μ's. This OO-correspondence between syllable nodes is predicted since the two syllable dominate the 'same' segments (=corresponding to the same input segments) and identical segments are preferably dominated by the same syllable as well. Crucially, this is only possible if neither of the two syllables is an affix syllable since OO-correspondence for affix-syllables is prohibited. In the presence of a floating affix syllable, no weight is hence ever transferred. Fourth, affixation of a floating μ that dominates a segmental root node (=major class features [$\pm$son] and [$\pm$cons] that form the root node of a segmental feature tree (Schein and Steriade, 1986; McCarthy, 1988; Clements and Hume, 1995)) (3-c+d) results yet again in copying to provide this radically underspecified segment with more featural content. In contrast to the copying to fill σ's and μ's without segmental root nodes, this copying is now minimal due to TAUTOMORPHEMICITY demanding that a segmental morpheme boundary should coincide with a syllable boundary (Crowhurst, 1994; Bickel, 1998). This constraint is not very high-ranked in Nuuchahnulth but above CONTIGUITY ensuring full morpheme copying. Fifth, the reduplication patterns where the reduplicant syllable has a long vowel straightforwardly follow if two μ's are present: either μ's under a syllable node for maximal copying (3-a) or μ's dominating segmental root nodes for minimal syllable copying (3-e). Lengthening of a vowel in the base, finally, is taken to follow yet again from affixation of a floating μ that is infixed and realized after the first μ dominating base material. This μ cannot be 'realized' via copying – in contrast to a prefixed μ – since that would result in a dispreferred infixing reduplication violating CONTIGUITY and it rather results in vowel lengthening for an underlying vowel.

(2) Different floating prosodic nodes= Different reduplicants

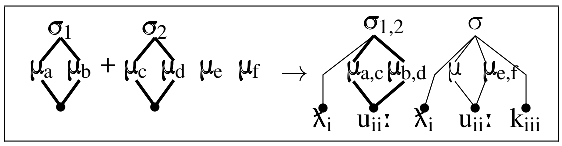
•	minimal copy: TAUTOM
μ	maximal copy & weight transfer
μ μ	long V in the reduplicant
μ-infix	lengthening in the base
σ	no weight transfer

(3) Different reduplication-triggering morphemes



Analysis II: Multiple reduplication This account based on the simple affixation of empty prosodic nodes can now straightforwardly predict the blocking of multiple reduplication found in Nuuchahnulth: In the presence of multiple reduplication-triggering suffixes, only a single reduplicant surfaces. In the present account, this simply implies the presence of multiple empty prosodic nodes. Given that filling all these nodes with segmental material on their own results in multiple violations of INTEG-S, copying is preferably reduced to a minimum. Coalescence of different prosodic affix-nodes to only one output correspondent is one possible strategy to avoid additional copying and is predicted since UNIF-σ_{AF} and UNIF-μ_{AF} are relatively low-ranked in Nuuchahnulth. In (1), a MinL+L and a MinL morpheme are both adjacent to a stem and only a single MinL-reduplicant and lengthening of the initial base vowel surfaces: the affixed σ-μ-templates and the two infixed μ's belonging to different morphemes undergo coalescence to avoid abundant copying.

(4) *Multiple red.-affixes=one reduplicant*



The crucial phonological repair operations in the present account are hence fission (of segments to provide 'copied' material) and coalescence (of prosodic affix nodes to avoid abundant copying). The latter operation is restricted by faithfulness constraints that are sensitive to the distinction into affix- and stem material (Trommer, 2010; Urbanczyk, 2011): whereas prosodic affix-nodes can undergo coalescence to avoid additional copying, affix nodes can never undergo coalescence with an adjacent stem node to avoid copying altogether.

Summary The present account predicts the intricate pattern of reduplication in Nuuchahulth in an OT analysis where reduplication is simply one available repair strategy to supply floating prosodic nodes with segmental material and hence formalizes the original insight of Stonham (2004) that the different reduplicants are the result of different-sized templates. Abundant copying in the presence of multiple empty prosodic nodes can be avoided via coalescence of adjacent prosodic affix-nodes and hence predicts the absence of multiple reduplication straightforwardly. That multiple reduplication indeed surfaces in other languages (Broselow, 1983; Urbanczyk, 1999; Stonham, 2004) is then a simple consequence from a different ranking of UNIF in another grammar.