

Infixation, blocking, and reduplication in Muna verbal inflection: an OT-account of allomorphy selection and back-copying

The verbal morphology of the Sulawesi language Muna as described in van den Berg (1989) exhibits an intriguing interaction of affixation and reduplication. In our talk, we develop a comprehensive account of (i) the selection of irrealis allomorphs and (ii) the different patterns that emerge when the irrealis is applied to reduplicated stems, such as infixation into the reduplicant, and back-copying of an initial segment from the reduplicant to the base. Our use of the framework of Optimality Theory, including the ‘standard’ version of Correspondence Theory (McCarthy & Prince 1995), does not deny the possibility of a morphological subcategorisation account to allomorphy, neither does it deny the feasibility of a morphological theory of reduplication. Rather, the choice has been made in order to make the interplay of specific morphological environments and phonological regularity explicit.

Irrealis mood is, for one major verb class, expressed by the affix *um-* (which is the form that we take to be underlying) and its allomorphs. With vowel-initial verb-stems the allomorph *m-* is prefixed. With consonant-initial verb-stems, by contrast, *-um-* is infixal – except, however, for initial labials or nasals: with initial voiceless labials so-called nasal substitution is chosen, and with voiced labial or nasal(ised) stops any realisation of the irrealis is blocked. These four environments are illustrated in turn in (1 a-d).

It is obvious that this allomorphy is as such phonologically governed. It is equally obvious that both the infix variant and the vowel-less prefix variant occur in their respective contexts in order to optimise the syllable structure. Somewhat less obvious is the motivation of the zero variant, that is the blocking of irrealis realisation. We argue that both blocking and nasal substitution emerge in order to avoid sequences of labial or nasal consonants, which we formalise in terms of a well-formedness constraint interacting with general and context-specific IO-faithfulness, where the latter concerns voiced stops.

The analysis is then extended to the context of reduplicated verb-stems. The reduplication type at issue serves various functions, among them that of progressive aspect. Irrespective of the number of syllables of the stem, the initial two syllables are reduplicated, as shown in (2). When it comes to the realisation of the irrealis with reduplicated stems, nasal substitution of initial voiceless labials by *m* is applied both to the reduplicant and to the base (see 3c). While *m* on the reduplicant is expected, given that the reduplicant is prefixed to the stem and the irrealis is prefixed in turn, it is ‘overapplied’ to the base since here it occurs outside of its original context. This situation is known as back-copying, suggesting (in derivational terms, for the sake of better illustration) the scenario *foni* (verb stem) → *foni-foni* (after reduplication) → *um-foni-moni* (after prefixing the Irrealis) → *moni-foni* (after nasal substitution) → *moni-moni* (after back-copying). Back-copying of the irrealis allomorph to the stem does not, however, occur with either prefixation or infixation (cf. 3a,b), not even where the prosodic structure would be optimised, which is clear from the preference of *m-ala-ala* over **m-ala-mala*. The conclusion is that the function of back-copying in Muna is indeed that of maximising the similarity between base and reduplicant, rather than the emergence of structural unmarkedness. We show that integrating two morpheme-specific versions of well-established markedness constraints into the ranking enables a uniform account under which the four patterns in (1) as well as those in (3) are adequately captured.

Examples

(1) irrealis with non-reduplicated verb-stems:

	realis:		irrealis:		
a.	<i>ala</i>	'take'	<i>m-ala</i>	'will take'	= prefixation
b.	<i>solo</i>	'flow'	<i>sumolo</i>	'will flow'	= infixation
c.	<i>foni</i>	'climb'	<i>moni</i>	'will climb'	= nasal substitution
d. (i)	<i>baru</i>	'be happy'	<i>baru</i>	'will be happy'	= blocking
(ii)	<i>ndiwawa</i>	'yawn'	<i>ndiwawa</i>	'will yawn'	

(2) foot-reduplication with verb-stems:

	stem:		reduplicated:	
a.	<i>solo</i>		<i>solo-solo</i>	'flow'
b.	<i>ndiwawa</i>		<i>ndiwa-ndiwawa</i>	'yawn'

(3) irrealis and foot-reduplication combined:

a.	<i>ala</i>	<i>m-ala-ala</i>
b.	<i>solo</i>	<i>sumolo-solo</i>
c.	<i>foni</i>	<i>moni-moni</i>
d. (i)	<i>baru</i>	<i>baru-baru</i>
(ii)	<i>ndiwawa</i>	<i>ndiwa-ndiwawa</i>

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Phonologically Conditioned Affix Order as an Illusory Phenomenon

There are several claims in the literature of ‘phonologically conditioned affix order’ (PCAO), where a phonological property of an affix and/or stem determines the position and ordering of the morphemes within a word. Two types of PCAO are described; the first is the type in which the ordering in question is between two or more affixes on the same side of a stem. An example is found in Hargus & Tuttle’s 1997 analysis of Witsuwit’en, in which the position of the *s-* negative prefix relative to the neighboring Tense/Aspect and Subject prefixes is claimed to be determined by a constraint requiring the *s-* prefix to be syllabified as a coda, along with another constraint prohibiting complex codas.

The second type of PCAO described in the literature involves ‘mobile affixation’, a phenomenon in which the position of an affix relative to the root (i.e., whether it occurs as a prefix or a suffix) is variable. It has been claimed that an affix may be unspecified as to whether it is a prefix or a suffix, and that the placement can be determined by phonological factors such as syllable structure considerations (in Huave; Noyer 1994 and Kim to appear), the identity of the root-initial segment (in Afar; Fulmer 1991), and homophony avoidance (in Akan; Ofori 2006).

The existence (or non-existence) of PCAO is crucial to formulating an accurate model of the phonology-morphology interface since it distinguishes between two types of theories. Theories in which phonology and morphology operate in tandem (e.g., a version of Optimality Theory in which phonological constraints can outrank morphological constraints in a single ‘P >> M’ ranking schema (McCarthy & Prince 1993a,b)) predict that PCAO should be attested in the world’s languages. On the other hand, theories in which morphology precedes phonology (as a whole, as in Distributed Morphology (Halle & Marantz 1993), or at each individual level in a derivation, as in Lexical Phonology and Morphology (Kiparsky 1982)) disallow PCAO.

In this paper, I claim that there is no such thing as ‘true’ PCAO. I begin by recapping the results of a cross-linguistic search for cases of the first type of PCAO described above (Paster 2005), showing that the few reported cases (e.g., Witsuwit’en) constitute ‘fake’ PCAO and can be explained without assuming any effect of the phonology on the affixation process itself. Most examples involve affixes consisting of a single segment, so the apparent reversal of the ordering of two affixes can be explained as straightforward phonological metathesis which takes place *after* affixation; i.e., the segments are reordered but the morphemes themselves are not.

I go on to discuss mobile affixation, arguing that no example requires the assumption that phonology and morphology operate in tandem. Rather, each of the few documented cases is compatible with the assumption that affixation takes place in morphology prior to the operation of regular phonological processes. For example, in Afar, I argue that the apparent mobile affix is really two separate affixes, a prefix and a suffix, that have the same shape. Though this admits some redundancy into the analysis, it is preferable to an approach based on phonological constraints because the position of the affixes, while phonologically *determined*, is not phonologically *optimizing*. Therefore, the P constraint in a P >> M analysis would be an arbitrary, language specific constraint with no functional grounding or external motivation in Afar or any other language. I show how the Afar case is comparable to an example in Chimariko (Conathan 2002) where some subjects are marked by either a prefix or a suffix depending on the phonological characteristics of the root, but where it is clear that the two forms are distinct underlyingly because they have a slightly different phonological shape (though they are similar enough to suggest that they come from a single etymological source). Analyses without P >> M are possible and, I argue, preferable for the Huave and Akan examples as well.

Based on these cross-linguistic findings, I conclude that the ‘P >> M’ / OT approach to phonology/morphology overgenerates and should be abandoned in favor of a more restrictive model in which morphology precedes phonology, and the limited types of phonological conditions on affixation are all located within the subcategorization frame of an affix rather than in the interranking of phonological and morphological constraints.

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Two arguments in defense of allomorphy as phonological optimization

The controversy. Several researchers (Mester 1994, Kager 1996, Mascaró 1996a,b, *etc.*) have proposed that suppletive allomorphy conditioned by the phonological context is due to optimization in the phonology (as in (1)). Recently, however, Paster (2005, 2006, to appear) and Bye (2006) have questioned this position, arguing instead that all suppletion occurs in the morphology, and that competing allomorphs can arbitrarily subcategorize for phonological properties of their bases. In this talk I present two arguments in favor of the optimization approach, as compared with the subcategorization approach. **Argument 1: Conspiracies.** Many instances are reported (Kiparsky 1972 *et seq.*) where the phonological conditions on allomorph selection duplicate the alternations and/or static phonotactics of the same language in avoiding some marked structure. Such cases argue for putting allomorph selection in the phonology so that a single markedness constraint can drive both the allomorphy and the “real” phonology. Examples include: **(a)** In Kõnni (Cahill 2007) there are five noun classes, and stems whose rightmost consonant is /r/ are never assigned to class 1—the only class which includes a /r/-initial suffix (the sing.def /-rÍ/: see (2)). In addition, there are a number of “mixed” nouns which combine suffixes from different noun classes, but there are no /r/-final “mixed” stems which take /-rÍ/ in the sing.def. This pattern of allomorphy conspires with several other features of the language: first, [rɹ] and [rVr] sequences never occur in any context in Kõnni, implying a phonotactic constraint against them. Second, the agentive suffix, normally [-rÚ], surfaces as [-tÚ] with stems that have [r] as the rightmost consonant (see (3)). The masculine suffix shows a similar alternation between [-ra:ŋ] and [-da:ŋ] (see (4)). **(b)** In Tsuut’ina (aka Sarcee), there are four prefixes (see (5)) which are normally omitted in certain morphosyntactic contexts (see (6)). However, these prefixes *do* surface in those same contexts if omitting them would result in the absence of any syllabic nuclei in the prefix string (see (7)). In words where the inflectional features of these four prefixes aren’t present, [i] is epenthesized if there would otherwise be no vowels before the root (see (8)). As noted by Cook (1971), this represents a clear case of a conspiracy between prefix allomorphy and a phonological process. **(c)** In Halq’emélem (Urbanczyk 1998), the continuative is marked by CV- reduplication with bases which begin in a single C and a stressed non-schwa vowel; in this case the reduplicant V gets stress and the first stem V reduces to schwa (see (9)). An exception occurs when the initial C of the base is a glottal. In that case, the continuative is marked by lengthening of the first vowel of the base. Reduplication with these bases would yield a word-medial [ʔə] syllable, but [ʔə] is never found in Halq’emélem except PWD-initially. Allomorph selection thus conspires with the language’s phonotactics. **Argument 2: Negative generalizations.** In many cases, an affix will be avoided with bases that begin/end in the same segment that the affix ends/begins with, for example Kõnni /-rÍ/ or English *-less, -ly* (Martin 2007). In a markedness account, this can be attributed to OCP or *GEMINATE constraints. But in a subcategorization framework, an affix like /-rÍ/ would have to subcategorize for bases ending in ‘something besides /r/’, which is not a natural class. The pertinent generalization is which bases an affix *avoids*, not which ones it subcategorizes *for*, and markedness constraints, unlike subcategorization frames, are perfectly suited for expressing negative generalizations.

(1) Moroccan Arabic: 3rd masc. sg. allomorph selection in 'his error' vs. 'his book'

/xt ^s a - {h, u}/		ONSET	No CODA	/ktab - {h, u}/		ONSET	No CODA
Inputs:	Outputs:			Inputs:	Outputs:		
/xt ^s a-h/	[xt ^s ah]		1	/ktab-u/	[kta.bu]		
/xt ^s a-u/	[xt ^s a.u]	W ₁	L	/ktab-h/	[ktabh]		W ₁

(2) Kɔnni noun class suffixes

	Class 1	Class 2	Class 3	Class 4	Class 5
Singular	-ɨ́	-ɨ́	-ɨ́	-ɨ́	∅
Singular definite	-rɨ́	-kú	-kÁ	-bú	-wÁ
Plural	-A	-tɨ́	-sɨ́	-tɨ́	(irregular)
Plural definite	-A-hÁ	-tɨ́-tɨ́	-sɨ́-sɨ́	-tɨ́-tɨ́	(irregular)
% of nouns	26	12	31	7	13

- (3) [d̩i-dà:-ró] 'buyer' [gb̩i-gbàr̩-tó] 'watcher'
 (4) [kpá-^lráj] 'male guinea fowl' [gàr̩àrà-dàáj] 'male weaver bird'
 (5) /mi/ 3rd person singular direct object, /ni/2nd person singular subject, /ni/ terminative, /si/ perfective

- (6) terminative /ni/normally omitted with 3rd persons subject
 a. t̩i-n̩i-s-ná theme-terminative-1sg.subj-√move.camp 'I will move camp'
 b. t̩i-∅-ná theme-3sg.def.subj-√move.camp 'He will move camp'

- (7) a. n̩i-s-nà terminative-1sg.subj-√travel 'I have finished travelling'
 b. ní-∅-na terminative-3sg.def.subj-√travel 'He has finished traveling'

- (8) /∅-zi/ 3sg.def.subj-√be.numb → ì.zí 'it will be numb'

- (9) [t̩í:ləm] 'sing' [t̩í-t̩'ələm] 'singing'
 (10) [ʔíməx] 'walk' [ʔí:məx] 'walking'

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Exceptional Morpho-phonemic processes and emergent unmarkedness

In this paper I discuss morpheme-specific exceptional occurrences in Assamese and the role of indexed markedness constraints (Ito & Mester 1999, 2001, Pater 2000, 2006 etc.) in accounting for these exceptions. Assamese vowel harmony is a ‘directional’ right-to-left regressive harmony system, which normally ignores morphological boundaries. In this system, the [+ATR] values of /i/ and /u/ trigger harmony in the preceding [-ATR] vowels such that $\varepsilon/ \rightarrow [e]$, /ɔ/ $\rightarrow [o]$, and /ʊ/ $\rightarrow /u/$. The harmony constraint *[+ATR][-ATR] prohibits adjoining sequences of vowels with [ATR] mismatch and therefore results in outputs (Ex. 1). This constraint interacts with the highly ranked faithfulness constraints IDENT [High] and IDENT [Low] and along with other featural markedness constraints give rise to directional right-to-left harmony. In this harmonising environment, /a/ is opaque to vowel harmony (Ex. 2) and therefore IDENT [Low] is highly ranked. However, /a/ exceptionally undergoes harmony under the influence of the morphemes /-iya/ and /-uwa/.

It is shown that the exceptional occurrences in Assamese lend themselves to an account based on indexation of markedness constraints. However, this work shows that the caveat in Pater (2006) about such constraints’ ability to subvert the universal metaconstraint FAITH ROOT \gg FAITH AFFIX (McCarthy and Prince 1993) is indeed borne true. Consequently, the Assamese examples show that indexed constraints lead to an exceptional alternation where [\pm Back] harmony occurs only in the root and the suffixal [\pm Back] values remain unaltered. I argue that this reversal is a result of the confluence of several factors leading to the theoretically motivated observation that some unexpected processes in OT are emergent. It is shown that when the two constraints indexed to the morphemes /-iya/ and /-uwa/, i.e. the [ATR] harmony constraint *[+ATR][-ATR] and the front harmony constraint *[-Back -High] [+Back -High] are ranked above IDENT [Low], they result in exceptional patterns with the following three things occurring simultaneously: a) /a/ raising b) iterative [ATR] harmony in the word, and c) non-iterative [Front] harmony occurring in the root (Ex. 4). Note that there is no [Front] harmony when /a/ occurs root-initially. In those cases where /a/ occurs adjacent to the triggering morpheme, raising is strictly local and there is no iterativity in the harmony process (Ex. 3).

The occurrence of these processes are co-dependent but they underscore several important points: a) front harmony, although emergent is nonetheless progressive conforming to the universal preference for the direction of the process b) the exceptional process is confined to the smallest domain of the root c) the special role of the vowel adjacent to the indexed morpheme. Consequently, the relevant constraint *[-Back -High] [+Back -High]_L is violated when a minimal string XY contains a [-Back -High] vowel followed by a [+Back -High] vowel, only if a part of the string is adjacent to a morpheme indexed as L. Consequently, this paper also shows that the restriction on absolute local application of exceptions introduced in Pater requires modification for a complete analysis of the Assamese facts. This paper explores how in contexts like these the metaconstraint FAITH ROOT \gg FAITH AFFIX needs reconsideration. In a morphologically driven exceptional pattern, various factors pertaining to minimal domain and universally well-attested root outward harmony conspire to produce an output which fatally violates this particular metaconstraint. This paper also discusses how some instances of Markedness requirements and reversals may be often emergent, and therefore a result of a particular relation that a specific morpheme construes to be the least marked (see also Inkelas and Zoll 2003).

Examples

(1) Regular harmony triggered by /-iya/ and /-uwa/

	Root/Stem	Gloss	Suffix	Derived	Gloss
a.	bɔyɔx	'age'	-iya	boyoxiya	'aged'
c.	mer	'wind'	-uwa	meruwa	'wind'(causative)

(2) Assamese trisyllables with medial /a/ and final /i/

a.	kɔpɑh	'cotton'	-i	kɔpɑhi	'made of cotton'
b.	zɔkɑr	'shake'	-i	zɔkɑri	'shake' (inf)

(3) /a/ does not change when it is not adjacent to the triggering vowel

a.	pɑtɔl	'light'	-iya	pɑtoliya	'lightly'
b.	ɑpɔd	'danger'	-iya	ɑpodiya	'in danger'
c.	ɑlɑx	'luxury'	-uwa	ɑloxuwa	'pampered'

(4) /a/-raising and front harmony triggered by /-iya/ and /-uwa/

a.	kɔpɑl	'destiny'	-iya	kɔpoliya	'destined'
b.	d ^h emɑli	'play'	-iya	d ^h emeliya	'playful'
c.	elɑh	'laziness'	-uwa	elehuwa	'laziness'

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The division of labour between phonology and morphology in verbal paradigms: evidence from vowel variation in Romance

The talk aims to investigate two types of variation in the verbal paradigms of Italo-Romance, namely a) the variation of pretonic vowels and b) the variation of stressed vowels, also known as *metaphony* (see, among others, Rohlfs, 1966; Calabrese, 1985; Maiden, 1991).

Variation of pretonic vowels can be observed in a Campanian dialect (Southern Italy), for example (Gaglia, 2007). Pretonic /e/ is lowered, while all the back vowels are raised (TABLE 1). The phenomenon typically occurs in 1PL and 2PL of the present tense. Hence, it could potentially be explained as *inner inflection*, where the stem functions as exponent of morphological information (Maturi, 2002).

The second type of variation is metaphony. Metaphony generally means raising and diphthongisation of stressed mid vowels, originally triggered by word-final *-u and *-i (Maiden, 1991; among others). For verbs, the phenomenon occurs in 2SG. The examples in TABLE 1 are taken from the Campanian dialect mentioned above, which shows metaphonic raising (Gaglia, 2007). Since Schürr (1962), metaphony has also been attributed to inner inflection.

We will compare data from Campanian and from other Italo-Romance dialects with data from Portuguese and Castilian Spanish and claim that the synchronic conditions of the phenomena may differ cross-linguistically, concerning the division of labour between phonology and morphology. It will be shown in detail, that

- a) pretonic variation is purely phonological in Italo-Romance, but not in Castilian Spanish, where it is a case of *autonomous morphology*. We call a morphological constituent autonomous (or a *morphome*) if it does not serve for the realisation of syntactic or semantic features. For example, the morphomic status of English perfect participles is based (i.) on the diversity of morpho-phonological realisations attributed to an abstract morphological function (F_{en}) and (ii.) on mapping F_{en} from either Passive or Perfect (Aronoff, 1994: 22-25; TABLE 2). On the other hand, constituents which are markers for number, gender, etc. are not autonomous.
- b) while metaphony is purely morphological in Portuguese and in many Italo-Romance dialects, this is not true with respect to the Campanian dialect mentioned above, where the phenomenon can be analysed as a morphologically conditioned phonological rule (Gaglia, 2007). Additionally, metaphony can also be the result of stem selection. We follow Lieber (1982) using evidence from *derivational morphology*.

Data

TABLE 1 VOWEL VARIATION IN A CAMPANIAN DIALECT

2SG (METAPHONY)	3SG (NO VARIATION)	1PL/2PL (PRETONIC VARIATION)	GLOSS
[ˈperdi]	[ˈperde]	([ˈperd + X])	‘lose’
[ˈmitti]	[ˈmette]	[ˈmett + X]	‘put’
[ˈmo:vi]	[ˈmɔ:ve]	[ˈmuv + X]	‘move’
[ˈrumbi]	[ˈrombe]	[ˈrumb + X]	‘destroy’

TABLE 2 ENGLISH PERFECT PARTICIPLES

MORPHOLOGICAL FUNCTION	MORPHO-SYNTACTIC VALUES	MORPHO-PHONOLOGICAL REALISATIONS
F _{en} (= <i>morphomic</i>)	passive / perfect	-n, -d, -t, Ablaut

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Three Challenges for Morphological Doubling Theory

Morphological Doubling Theory (MDT) (Inkelas and Zoll 2005) abandons the phonological copying approach inherent to most theories of reduplication and proposes instead that reduplication involves semantic (rather than phonological) identity between two (potentially identical) daughters in a compounding construction where both daughters and the construction itself have their own co-phonologies (1). Three theoretical and empirical areas, which should be accounted for by any morphological theory of reduplication, present a challenge for MDT: (i) reduplication in compounding contexts; (ii) phonological targets for reduplication; and (iii) morphological mora augmentation in reduplication contexts.

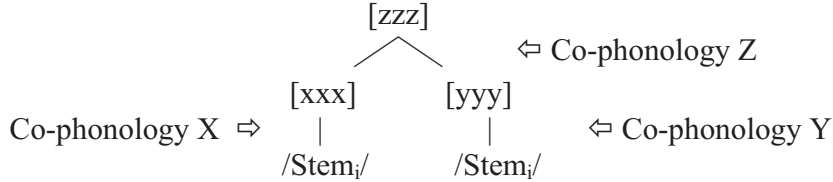
1. Reduplication and Compounding. Languages that reduplicate morphological compounds sometimes target a single member of the compound for the reduplication. In cases like those in Yaqui (2), MDT straightforwardly accounts for the semantic contribution of the “reduplicant” (daughter X), which is related to (takes scope over) the verb stem it attaches to (daughter Y) (e.g. *speak-speak-want* vs. *speak-want-want* in 2). However, Pima (3) poses a problem for this view, in that the reduplication of *either* (or *both*) of the nominal stems indicates plurality of the entire compound. In short, MDT would propose a semantic input along the lines of *salt-salt-tree* or *salt-tree-tree* or *salt-salt-tree-tree* for the plural of ‘tamarack’ in example (3), whereas the semantic contribution of the reduplication consistently involves simple quantification of the entire compound (and not ‘salt’, ‘tree’, etc.).

2. Phonological Targets. MDT crucially relies on the thesis of morphological targets: the idea that “a reduplication construction calls for morphological constituents (affix, root, stem, or word), and not phonological constituents (mora, syllable, foot)” (p. 25). However, cases of reduplication targeting phonological constituents are attested, including a disyllabic target in Yidin^y (Marantz 1982, McCarthy and Prince 1986) (4), a monosyllabic target in Mayo (Hagberg 1993) (5b), and other phonological targets documented in Shaw (2005).

3. Morphological Moras. MDT crucially distinguishes two types of morpho-phonological duplication: reduplication and phonological copying. Phonological copying is supposedly differentiable from reduplication because: it is not morphological; it is proximal (targeting the closest eligible element); it only copies one segment; it involves phonological identity (not semantic identity). MDT does not address at all the morphology of “morphological mora augmentation” (Davis 2001) (~ “mora affixation” in Samek-Lodovici 1992), which like phonological copying involves phonological identity between a proximal single segment, but which also serves a morphological purpose. For example, one expression of habituality in Yaqui is mora augmentation where a morphological mora surfaces differentially according to the shape of the stem it applies to: gemination in CV.CV- initial stems (e.g. *ma.ve.ta* > *ma.v.ve.ta*) but vowel-lengthening in CVC.CV- initial stems (e.g. *yep.sa* > *yēep.sa*, **yep.psa*) (Haugen 2003). Whereas MDT handles partial reduplication via truncation regulated by the co-phonology of only one of the daughters (e.g. X or Y in 1), infixal mora augmentation would be handled by a rule at the mother node (Co-phonology Z). Thus, MDT would posit two different mechanisms to handle the two phenomena. This non-unified approach faces an empirical challenge from Tawala, where mora augmentation (vowel-lengthening) only occurs in contexts where prefixal syllabic reduplication would otherwise result in three adjacent identical syllables (6a). Hicks Kennard’s (2003) constraint-based analysis, which utilizes the *REPEAT constraint to penalize adjacent syllables in reduplicants (but not stems, because of MAX_{IO}>>*REPEAT_[σ]>>MAX_{BR}), also accounts for the unusual pattern of reduplication in (6b), where copying the second vowel of a stem’s two vowel sequence is preferable to copying the first vowel, otherwise leading to the non-optimal repetition of identical adjacent syllables (thus, *bi-be.i.ha* and **be-be.i.ha*).

Data

(1) Schematic for Reduplication in Morphological Doubling Theory (Inkelas and Zoll 2005)



(2) Reduplication of V-V Compounds in Yaqui: RED w/ Scope Over Reduplicated Verb Only
(Harley & Haugen 2008)

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'		'be wanting to speak'		'be wanting to be speaking'

(3) Reduplication of Noun-Noun Compounds in Pima (Munro & Riggle 2004)

'ònk-'ús	→	' ò -'ònk-'ús	~	'ònk-' ú -'us	~	' ò -'ònk-' ú -'us
salt-tree		RED -salt-tree		salt- RED -tree		RED -salt- RED -tree
'tamarack'		'tamaracks'		'tamaracks'		'tamaracks'

(4) Reduplication in Yidin^y—Targeting a Foot for Reduplication (Marantz 1982)

a. [mu.la].ri	'initiated man'	>	mu.la.[mu.la].ri		*mu.lar.mu.la.ri
b. [kin.tal].pa	'lizard sp.'	>	kin.tal.[kin.tal].pa		*kin.ta.kin.tal.pa

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

a. Class 1 Verbs: Reduplicant = $\sigma_{\mu\mu}$; Target = Entire Verb Stem

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

b. Class 2 Verbs: Reduplicant = $\sigma_{\mu\mu}$; Target = 1st Syllable of Verb Stem Only

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

s

(6) Reduplication in Tawala—Identical Adjacent Syllables are Prohibited in RED

(Hicks Kennard 2003)

a. to.to.go	'be sick'	>	to.to.go		*to-to.to.go
b. be.i.ha	'search'	>	bi-be.i.ha		*be-be.i.ha

Defective Paradigms in Derivational Morphology: Hebrew Valence Changing

This talk sheds light on the correlation between defectiveness and valence changing operations. I examine the productivity of valence changing manifested in Hebrew by relations among prosodically distinct configurations, called binyanim (e.g. *niCCaC*, *hitCaCeC*). Decausativization is an operation that derives decausative verbs (e.g. *hirtiv* ‘make wet’ → *nirtav* ‘become wet’), by eliminating an external theta role of cause (Reinhart 2002). Following Reinhart & Siloni (2005) I assume that decausativization applies in the lexicon. I address the productivity of decausativization with regard to morpho-phonology. I argue that the latter restricts the application of valence changing, thereby creating paradigmatic defectiveness.

In contrast to other operations (e.g. reflexivization), decausativization is relatively productive and its morphology can be predicted. However, some transitive verbs demonstrate an intriguing morphological behavior with regard to decausativization. I argue that this results from their irregular morpho-phonology, as most of them of them are stems with only two consonants. These verbs demonstrate three distinct patterns.

1. Defectiveness: Some verbs simply do not have decausative counterparts (*he'ik* ‘oppress’). I argue that their irregular morphology blocks the application of decausativization. Examining their thematic grids does not explain why they do not undergo this operation, as there is no observed difference with other verbs that undergo this operation. This results in defectiveness of the transitive-decausative derivational paradigm.

2. Melodic overwriting: Verbs can undergo decausativization that is manifested by melodic overwriting (e.g. *hetiš* ‘exhaust’ → *hutaš* ‘become exhausted’). The vocalic pattern of the verbs change into *u-a*, similarly to the passivization (e.g. *siper* ‘tell’ → *supar* ‘be told’). This results in the unification of the form some passive and decausative verbs. The verb *huvax* ‘be/become embarrassed’, for instance, can be interpreted as both passive and decausative.

3. Lexicalization: Other decausative verb are formed by reduplication of the second stem consonant (e.g. *hit'orer* ‘wake up’), while others occur in irregular templates (e.g. *nizok* ‘get damaged’). Their morphology is considered exceptional and unproductive in terms of innovation. I assume such forms are lexicalized and their formation is not a part of the morphological component.

The morphology of decausativization demonstrates three distinct patterns with regard to defective verbs. These patterns of irregular morphology and morphological blocking reveal the role of morphology as part of an active lexicon and its interaction with thematic operations. It provides an account for the gaps and irregularities within derivational paradigms. The analysis also gives rise to a surface-based account, in which forms are derived from actually occurring words (Aronoff 1976), rather than a system in which forms are derived by relating to an entity that never occurs in isolation on the surface (Bat-El 1994, Ussishkin 2000). If we assumed that such decausative verbs are derived on the base of roots, there would be no reason for their relatively low productivity. Time permitting, I will discuss defective paradigms of other valence changing operations.

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Morphology and Phonology in Karimojong Verbal Affixation: Multiple Interfaces within an Amphichronic Model

In Karimojong, an Eastern Nilotic language, morphologized Advanced Tongue Root (ATR) harmony domains provide evidence for an amphichronic model (Kiparsky 2004, 2006) that accounts for synchronic data, diachronic evolution and morpheme genesis, in which morphology and phonology interact at multiple levels.

The morphosyntactic and prosodic structures of the lexical entry are proposed to be created simultaneously, with both available for the application of phonological rules. The M-structure includes the morpheme/phoneme string, a meaning, the marking of a phonological head, and the encoding of morphophonological level for each affix. The P-structure consists of the linkage within the morpheme of the phonological head to the alternating vowels and the connection of this linked structure to a recursive Prosodic Word (PW) structure. A harmony process occurs when an ATR feature percolates from the head vowel in a privileged position to the PW node, and is then subsequently applied to the phonological head and to the vowels to which it is linked. Non-alternating vowels from the harmony set which are contained within active morphemes are thus explained, as shown in examples (1).

As shown in example (2), within the word three morphophonological levels are identified by the distinct ATR harmony processes and are proposed to reflect separate periods in the history of the language. On the first level occur bidirectional root-controlled [\pm ATR] spreading and a localized domain of suffix-controlled [-ATR] spreading, the latter of which is attributed to the phonologization of tongue retraction in conjunction with rhotic pronunciation. The second level is restricted to a dominant suffix-initiated [+ATR] process. The third level has no ATR harmony alternations but includes two affix types: those that are proposed to be in process of incorporation and those in the initial stages of attrition and loss. The incorporation of a given affix is tied to its behavior under ATR harmony rules, which assigns its level of affixation.

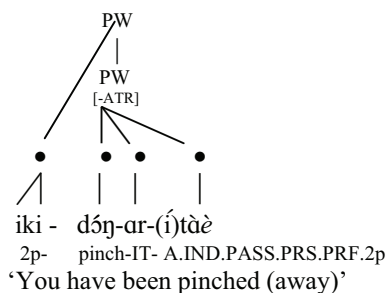
Affixes in transitional phases of the incorporation provide evidence for the model. Pronominal prefixes, descended historically from proclitics and free-standing pronouns, are largely neutral to processes of harmony as shown in examples (3-a,b). Those found in some high-frequency narrative forms that alternate under Level 1 and Level 2 processes are seen in contrasting examples in (3-c,d). Spreading under the affixation of continuous aspect marker [-ere] shows differences between passive and active voice, and sensitivity to the presence of other affixes, as seen in examples (4-a-d).

This evidence is part of a larger process of diachronic evolution of agreement morphology in the language. In its suffixal and prefixal morphology, Karimojong follows the universal path, in that earlier full pronouns have undergone successive transformations to weak pronouns, clitics, agglutinated then fused agreement markers, and finally reduction to zero. Yet within this, there are subsidiary processes of templatic grammaticalization, in which reduplication, splitting and reanalysis lead to the genesis of infixes never previously described, of which there are successive generations. Examples of this are shown in examples (5) through (9).

Employing this model allows the determination of multiple patterns of person and number differentiation, tendencies toward paradigmatic leveling, loss, and subsequent loss, which indicate that verbal paradigms in Karimojong are undergoing dynamic change historically.

(1) /iki-/ + /-dɔŋ-/ + /-Ar-/ + /-tAe/ →

(2) Level 1 dɔŋ-Akin → dɔŋakin
 Level 2 dɔŋakin-jo → dɔŋɔkinjo
 Level 3 ɛ- dɔŋɔkinjo → ɛdɔŋɔkinjo



- (3) a. **εκε**-aki-tàè áεδῆ 1s-send PASS.IND.PRS PRF 1s 'I have been sent'
 b. **εκε**-aki-tetèì áεδῆ 1s -send-PASS.NAR.PRS PRF 1s '...and I have been sent'
 c. **δκα**-rutʃuruf-ùì áεδῆ 1s-tie repeatedly, NAR.PST 1s '...and I was repeatedly tied'
 d. **όκο**-rutʃ-itetèì áεδῆ 1s-tie-PASS.NAR.PRS PRF 1s '...and I have been tied'
- (4) a. **ε-δῆ**-éenén-é-éré 3s-pinch-FREQ-B.ACT.IND. FUT 'He will frequently pinch'
 b. **ε-δῆ**-éenén-é-érè 3s-pinch-FREQ-B.PASS.IND. FUT 'He will be frequently pinched'
- (5) *Non-Alternating Perfect Aspect TAM marker*
 a. **à-δῆ**-ít 1s-pinch-ACT. A. PRS.PERF.1s 'I have pinched'
 b. **è-δῆ**-ito 3p-pinch-ACT. A. PRS.PERF.3p 'They have pinched.'
- (6) *Affix Reduplication*
 a. **ì-δῆ**-ítít íjḍḅ 2s-pinch-ACT.A.FREQ.PST.PERF. 2s 'You (s) had freq.pinchèd.'
 b. **ì-δῆ**-ítito iéz 2p-pinch-ACT.A.FREQ.PST.PERF. 2p 'You (p.) had freq. pinchèd.'
 c. **è-tìjā**-ítít 1s-do-FREQ-PST.PERF '..I used to do'
- (7) *The Frequentive Becomes a Derivational Affix*
 a. **ì-δῆ**-éenén-èt íjḍḅ 2-pinch-FREQ-PRS.PERF. 2s 'You (s) have frequently pinched'
 b. **ì-δῆ**-eenen-eto iéz 2-pinch-FREQ-PRS.PERF. 2p 'You (p) have frequently pinched.'
- (8) *Incorporation of Reduplicated Affix into Harmony Processes*
 a. **ábú-ún-ún -ùn** INF-return-FREQ-VEN 'to frequently return this way'
 b. **ábú-án-án-àr** INF-return-FREQ-IT 'to frequently return that way'
- (9) *Loss of Reduplicant*
 a. **ábú-ún -ùn** INF-restrain-FREQ-VEN 'to frequently return this way'
 b. **ábú-án-àr** INF-restrain-FREQ-IT 'to frequently return that way'

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Phonology and Morphology in Lakota

Lakota is a Native American language spoken by several thousand people in the northern part of the central U.S. and neighboring Canada. Its grammar mingles morphology and phonology in several different ways, including several of the examples in the call for papers for this workshop. I present a purely descriptive inventory of these phenomena in as framework-free a format as possible, both to inspire the proponents of particular frameworks and to illustrate the hypothesis that a strict division of labor between phonology and morphology is unlikely to succeed in explaining how the language works.

The phenomena I discuss are reduplication, infixing, morphologically conditioned allomorphy, and phonologically conditioned allomorphy. There is also one case of an allophone appearing in the wrong environment just in case the right environment was (is?) present in the underlying representation. You need to know the morphological history of the form to know which allophone to use.

Reduplication: the element that is copied is the historical root morpheme, but synchronically that is often opaque, so those learning the language today must do a lot of memorizing to know which syllable to copy. There are post-reduplication sound changes as well. Inkelas and Zoll discuss one of these (coronal dissimilation) for the closely related dialect Dakota. Given a loose enough definition of “semantic features”, the Inkelas and Zoll model can account for what is going on, but it seems to me it can actually account for anything at all.

Infixing: many verbs infix personal affixes; many more infix some of them and prefix others; one conflict arises when both a prefixing and an infixing morpheme occur in the same word but are restricted to a particular ordering (see data page): Is the copying of the prefix phonologically or morphologically conditioned?

Morphologically conditioned allomorphy: Many verbs show an alternation in the final stem vowel conditioned by the following enclitic. There is no way to predict whether a verb will ablaut or not, and speakers sometimes disagree. In one case, the singular imperative (female speaking), the conditioning enclitic is no longer pronounced, so the only indication of the form is the ablaut vowel. Does that make the vowel grade into a morpheme instead of a conditioned variant? Is this phonology or morphology, or does it even matter?

Phonologically conditioned allomorphy (almost): first and second person agent prefixes show allomorphic variation if they precede a /y/ in the verb stem, except that sometimes they don't. The clue to the listener that the prefix is present is in the way the verb is pronounced. Speakers react to these forms as “different words”. Does that mean that it's phonology, not morphology, which is carrying all the meaning?

Data (Phonology and morphology in Lakota):

Examples of reduplication from the numerals: waŋži, waŋžiŋži 'oné, nupa, numnupa 'two, yamni yamnimi 'three', topa tobtopa 'four', záptaŋ, záptaŋptaŋ 'five'... naŋpćiyuŋka, naŋpćiyuŋgyuŋka 'niné.

Examples of infix vs. prefix and the resolution of the conflict which arises when one of the infixes must precede a prefix:

a<wicha>phe 'he is waiting for them' but unk-aphapi 'we are waiting for him'.

If the combination meaning 'we ... them' occurs, the affixes must occur in the order wicha-unk. Two resolutions of the conflict are in use. One creates a portmanteau and infixes it (a-wichunk-pħapi); the other duplicates the vowel prefix, so both the infixing and the prefixing positions can be filled: a-wichunk-aphapi.

ablaut illustrations:

citation form:	apħa 'wait for'	yatkáŋ 'drink'
finite indicative form:	apħé 'he waited for her'	yatké 'he drank it'
negative:	apħé šni 'he didn't wait for her'	yatké šni 'he didn't drink it'
irrealis:	apħíŋ kte 'he will wait for her'	yatkíŋ kte 'he will drink it'
male imperative:	amapha yo 'wait for me'	yatkáŋ yo 'drink it'
female imperative:	amapha	yatkáŋ

contrast non-ablauting verbs: yuha 'hold' (yuhá yuhá šni, yuhá kte, yuhá yo, yuhá) kté 'kill' (kté, kté šni, kté kte, kté yo, kté) čhiŋ 'want' (čhíŋ, čhíŋ šni, čhíŋ kte, (?čhíŋ yo, čhíŋ)

y-stem verb illustrations: yuha 'hold', bluhá 'I hold it', ayúštaŋ 'to stop annoying', ablúštaŋ 'I stopped annoying her', but slolya 'to know', slolwaye 'I know it'.

Phoneme problem: aspiration of voiceless stops is phonemic, manifested as laryngeal [h] before i, u, and iŋ (nasalized "i") but as velar [x] before a, aŋ, e, o, and uŋ. However, if the nasalized /iŋ/ is the ablaut vowel, i.e. if the underlying conditioner is /a/, then the velar allophone is used. You need to know the history of the /iŋ/ to know how to aspirate in front of it.

Universal Restrictions on Circumfixes and Reduplication: Where the morphology cannot tread

In this talk we are going to present two reasonably well known but seldom discussed facts and combine them into an understanding of the division of labour between morphology and phonology which will assign pre/su/circum-fixes to the morphological domain and infixes and reduplication to the phonological domain.

The first of these facts leads from known distributions of infixes and circumfixes (see 1, 2). From these, we could predict there to exist an affix distribution where one part of a (single) circumfix is located on an edge of the root while another of its parts is located word-internally (cf. Prince and Smolensky 1993), this however, is unattested (see 3 for hypothetical example). However, this pattern is predicted to exist by non-representational frameworks such as OT and connectionist grammars, as this would simply require an appropriate ranking of alignment constraints or activation strengths.

The second fact comes from the early Marantzian view (1982) on reduplication where melodically empty, syllabic structure is concatenated with a root which would trigger spreading of the roots melody; thus producing reduplication. This view of reduplication, upheld by the representational framework Strict-CV (Aboufarah 2007), would undoubtedly predict that we could find the reduplication pattern shown in (4), where one part of the reduplicand occurs at the margin of the root while the second part occurs inside the root. This pattern also appears to be unattested.

What these two facts boil down to is a supposedly morphologically-conditioned linearization restriction and a supposedly phonologically-conditioned linearization restriction pointing to the same fact: *once exited the phonological domain it is not possible to re-enter it* (cf. Strict Cyclicity Principle Kaye 1995) (see 6). This would explain the distribution shown in (5) which we believe to be universal.

However, this conclusion makes a *very* strong claim about affixation and reduplication. It would claim that pre-/suf-/circum- -fixes are to be handled by the morphology outside of the phonological domain and that infixes and reduplication are to be handled by the phonology inside the phonological domain. Therefore, cases where affixes seem to switch from prefix to infix would be impossible. In these cases (Tagalog (French 1988)) we would have to assume that *initially*, any infix (even if alternating word-initially) is *base-generated* as an infix and if placed at the beginning (but inside) the phonological domain of a root, it is still, *in natura* an infix.

We believe this not to be too large a price to pay in order to explain the restrictions seen in (5) with one generalisation, but we will end our talk with the problems it raises, in particular with phonological material *leaving* the phonological domain in *syntactically* conditioned processes (Raddoppiamento Sintattico in Abruzzese (Biberauer and D'Alessandro 2006)).

Data and Diagrams

1) Tagalog (French 1988)

[**um**] [sulat] → [s-**um**-ulat] ‘write’

2) Georgian (Hewitt 1995)

[**v- -t**] [ts'er] → [v-ts'er-**t**] ‘we are writing’

3) Unattested Affixation (variant of circumfixes) (hypothetical language)

* [**ta, ra**] [bama] → [**ta-ba-ra**-ma]

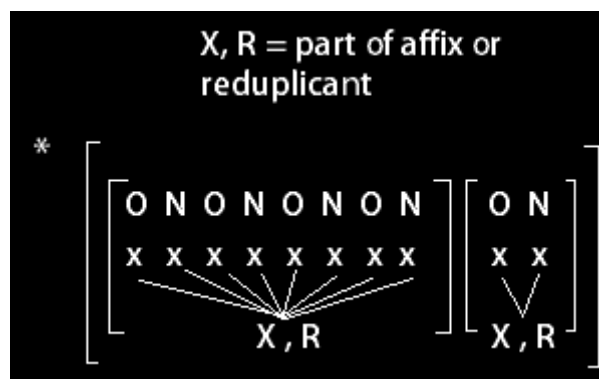
4) Unattested Reduplication (hypothetical language)

*[bama] → [ba-CV-ma-CV] → [babamama]

5) Distribution of Morphology and Universal Restriction

Dist.	Example
[(X)]	‘infix’
X [(Y)]	‘prefix and an infix’
X [] Y	‘prefix and a suffix’
X [] X	‘circumfix’
* [(X)] X	‘part-internal, part-external morpheme’

6) Restrictions in Kaye 1995-like domains



Why *-it* is and why is *-et*: The distribution of two (?) Modern Hebrew feminine suffixes

Two nominal suffixes in Modern Hebrew (MH), *-it* and *-et*, spell out a single feature [(+)gender]. In this talk, I ask what determines the spelled-out form and the distribution of these suffixes, which have both been hitherto considered lexical. I show that the underlying form of both suffixes is identical, and that what determines the surface form is their relation to their base, formalized in terms of cycles/phases. The phenomenon is thus an instance of form-structure correspondence.

I start by examining the two most productive *masculine* suffixes, agentive *-an* and diminutive *-on*, which contrast minimally with respect to their feminine suffix (*X-an-it* vs. *X-ón-et*). As (1) shows, a single stem behaves differently according to whether its suffix is *-an* or *-on*.¹

Diminutive *-on* is shown to be compositional and non-templatic (it does not impose a vocalization on the stem), whereas agentive *-an* is templatic and possibly non-compositional. This difference is formulated as follows (following Lowenstamm 2007): {item-an} vs. {{item}-on}.

The different ways to distinguish between the contrasting [+gender] sequences (*safr-an-it* ‘fem. librarian’; *yalda-yald-ón-et* ‘girl-(dim.)’) are considered. The fact that the diminutive of an inanimate feminine nouns must agree in gender with its base (e.g. *map-it* => *map-iy-on-et* ‘serviette-(dim.)’, **mapiy-on*²) is claimed to be evidence for the distinction in (2).

I move on to examine the hypothesis that this distinction holds not only for the feminine forms of *-an* and *-on*, but for all occurrences of *-it* and *-et*: *-et* is always in the same cycle as its base; *-it* never is. The table in (3) summarizes the distribution of *-it* and *-et* suffixes within the nominal system. Examples are provided in (4).

The data in (3) and (4) are taken to support an extension of the distinction in (2) to all occurrences. How so? First, *-et* can be non-compositional exactly where *-it* cannot (namely with CaCaC bases): *-et* is not dependent on the meaning of its base. Secondly, the fact that the distribution of *-et* is limited in terms of its base suggests that the suffix is sensitive to its base *form*; *-it* clearly isn’t. The latter claim is given further support by the fact that it is *-it* that is used with loan bases, which presumably are cases of a closed {X}. The examples in (4c), where a *CaCaC base is only deducible from an item CaCeC-et, suggest that *-et* imposes a vocalization on its base; no such pattern is found with *-it*. A final remark concerns (4i): *pétek* ‘note’, is of the same nominal type as *séfer* ‘book’ (1a). An analogy with {{sifr}on} (suggested for (1c)) lends further support to a {{pitk}it} analysis.

I move on to discuss two problematic cases: 1. the non-compositionality of inanimate bases with a suffix *-it* (like (4e-i)); and 2. the existence of *-it* forms with no apparent base (*xavit* ‘barrel’). I show that these are in fact not problematic for the analysis.

The segmental resemblance, the mere functional [+fem] role and the structural differences described above all make it extremely plausible that *-it* and *-et* are underlyingly one and the same. The second part of the talk shows how the structural differences lead to the difference in form.

I make use of two theoretical tools: the apophonic chain (Ø>i>a>u - Guerssel & Lowenstamm 1996) and Government phonology (GP- Kaye et al. 1990). According to the latter, there are no consonant final representations; all “syllables” are of a CV (or Onset-Nucleus) form. For the present purpose, this means that all domains end with a V-slot (or a Nucleus). In addition, a parameter of GP determines whether a language may have final empty nuclei. MH is clearly a language that may do so.

Following proposals made for French (Rucart 2008) and Somali (Godon 1998), I submit that the feminine morpheme is a mere elaboration of the size of the item: it is but an additional CV unit. The relevant representations are shown (for the shared stem form CaCaC) in (5). The phonology of (5a) is presented in (6a): an epenthetic consonant [t] is inserted in order to identify the feminine CV unit; *tayas-t* surfaces as *tayéset*. In contrast, the phonology of (5b) proceeds in two phases, as in (6b) (See Kaye 1995): first, the internal domain is spelled out. As in Bobaljik (2000), the inner domain is sensitive to the existence of additional material in the outer domain: the former’s last V slot is not final and has to be filled. This is achieved through apophony: Ø>i. In the outer domain, an epenthetic *t* is inserted anyway. The last V-slot, as mentioned, stays empty.

The analysis thus explains *how* the different structures lead to different realizations of the same morpheme. However, it does not explain *why*; that is, why it is that the diminutive suffix is in the same

¹ The talk treats only diminutive *-on*. Stress is marked only when not final.

² See Bat El (to appear (a)) for an account of the t=>y change.

cycle as its feminine form, whereas the agentive suffix is separated from its feminine suffix. Time permitting, this and other implications (e.g. the third feminine suffix *-a*) of the analysis are explored.

- (1) Basic an~on distinction (stress is not marked when final; regular alternation e~i)
 a) séfer ‘book’ b) sifr-i ‘my book’ c) sifr-on ‘book (dim)’ d) safr-an ‘librarian’

- (2) The distinction between *an-it* and *on-et*
 {{x-an}-it} ; {{x}-on-et}

- (3) Summary of *-t* and *-it* in nominal system

fem. Suffix	suffixed to loanwords	productive native MH bases	compositionality of CaCaC+X
<i>-et</i>	never	mainly CaCaC bases (4a-c)	possibly non compositional (4a,b), base may not exist (4c)
<i>-it</i>	yes (4e,f)	all nouns, including CaCaC. (4d-i)	always compositional (4d), CaCaC must exist

- (4) Examples (phonological rule: $a \Rightarrow e / _C -et$ (Bat-El, to appear (a)))

	<i>ms.</i>	<i>fm.</i>	
/CaCaC- <i>et</i> /	a. tayas ‘pilot’	tayéset ‘pilot’	or ‘air squadron’
	b. šayat ‘oarsman’	šayéset ‘oarswoman’	or ‘sea squadron’
	c. *dabaš, *kavar	dabéšet ‘hump’, kavéret ‘hive’	
/CaCaC- <i>it</i> /	d. sapar ‘barber’	saparit ‘barber’	but nothing else!
/loan- <i>it</i> /	e. star ‘celebrity’	stár-it ‘celebrity’, *stár-et	
	f. flannel ‘flannel’	flanelit ‘flannel ribbon’	
/X- <i>it</i> /	g. itur ‘location’	iturit ‘locating device’	
	h. pax ‘tin’	paxit ‘can’	
	i. pétek ‘note’	pitkit ‘small note’	

- (5) The feminine suffix as an additional CV
 a. [tayasV-CV] => tayéset ‘pilot (fem)’ b. [[saparV]-CV] => saparit ‘barber (fem)’

- (6) Spell-out of different forms
 a. [tayasV-tV] => [tayas-t] (C-epenthesis) => [tayaset] (V-epenthesis) => tayéset
 b. [[saparV]-CV] => [[sapari]-tV] (apophony, C-epenthesis) => saparit

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