Correspondence in Temiar: No Need for Long-Distance Spreading Here

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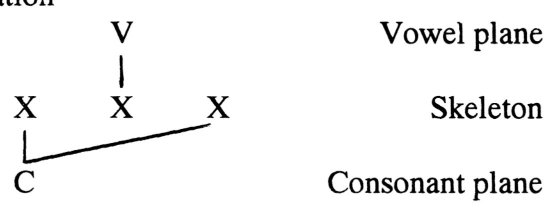
1 Introduction

Current phonological theory claims that in some languages, typically those with nonconcatenative morphology, a configuration such as C_iVC_i, where the two consonants are identical, may result because the familiar autosegmental operation of spreading applies to spread the root of a single underlying consonant to the two C positions. Spreading proceeds unobstructed from the intervening vowel by putting vowels and consonants on different planes, as shown in (1). The corresponding representation is known as V/C planar segregation (McCarthy 1989). V/C planar segregation is necessitated by the assumption that the identity of the two consonants is the result of spreading. Because spreading is always local, nothing may intervene between target and trigger in the representation.

1. V/C planar segregation



The biplanar representation, however, faces two embarrassing problems. First, since by segregation on a different plane the two consonants are made adjacent, this representation predicts other types of assimilations which are found in language after language between adjacent consonants. I have in mind cases such as voicing assimilation (/pad/ → [bad]) or place assimilation (/nap/ → [map]). However, these types of spreading are attested in neither concatenative nor nonconcatenative languages (Clements 1985). Second, two distinct mechanisms are available by which languages create copies of segments. These are long-distance spreading, and of course, reduplication. In some languages (e.g. Arabic, Temiar), to account for the different patterns of copying, it has even been necessary to assume that both mechanisms are at work. However, cross-linguistic patterns of copying show that both long-distance spreading and reduplication serve to fill empty positions in a prosodic template usually supplied by the morphology. Thus these two operations apply under identical conditions. This similarity between long-distance spreading and reduplication is simply ignored, not explained, by the current theory.

In light of these observations, this paper reexamines long-distance consonantal spreading in Temiar, a language where it appears necessary to assume that both reduplication and long-distance consonantal spreading are necessary. My proposal will be that the operation of long-distance consonantal spreading is unnecessary, because it can be reduced to the same formal mechanism used for reduplication. Eliminating long-distance consonantal spreading obviates the need for the biplanar representation in (1). Formally, there is nothing particular to the 'nonconcatenative' morphology of Temiar which distinguishes it from other 'concatenative' languages (representationally, as in biplanarity, or operationally, as in long-distance spreading). This result also agrees with Archangeli & Pulleyblank (AP), who argue that 'gapped' configurations, such as that of (1) are universally prohibited (AP 1994).

The analysis crucially assumes the framework of Optimality Theory (OT) of Prince & Smolensky (PS) (PS 1993). It also assumes Correspondence Theory of McCarthy & Prince (MP) (MP 1994a,b), a recent development in the OT framework. Correspondence constraints so far have been used successfully to capture the cross-linguistic facts of reduplication. This paper shows that the same notion of correspondence can be extended to root-and-pattern systems. Consonantal copying, previously analyzed as long-distance consonantal spreading, follows from a correspondence constraint holding between the segments of the output and the segments of the morphological base.

2 Theoretical Framework

I begin with a brief and necessarily incomplete characterization of OT. In OT thinking, Universal Grammar (UG) consists of a set of well-formedness conditions or *constraints*. The output of phonology is not constructed by a step-by-step application of rules. Instead, given an input form, the grammar first generates a set of *candidate* outputs. This candidate set, which must be large enough to contain the correct output, is then evaluated by the constraints. The output of the grammar is the candidate that best satisfies the constraints, called the *optimal* candidate. The set of constraints, the function that generates all candidates (GEN) and the evaluation procedure (EVAL) are all assumed to be fixed parts of the architecture of UG.

Grammars of particular languages are constructed by ranking the universal constraint set. Constraints are ranked whenever they are in conflict. Let us assume the mini-grammar of two constraints, A and B. Assume also that an underlying form *ur* gives rise via GEN to two candidate forms, $cand_1$ and $cand_2$. Candidates may not always satisfy all the constraints. One possible state of affairs is shown in tabular form in (2a). Violation of a constraint is marked by "*", and satisfaction by a blank cell. $Cand_1$ violates B but satisfies A, and $cand_2$ violates A but satisfies B. If $cand_1$ is the correct output (the surface form) associated with the input *ur*, then A must be ranked higher than B ("A dominates B" or A >> B). The symbol "!" means that the violation of the constraint is fatal, i.e. the candidate is not the winner, and "☞" indicates the winning candidate.

2. a. A >> B

Candidates	A	B
☞ $cand_1$		*
$cand_2$	* !	

b. B decides

Candidates	A	B
$cand_1$	*	*
☞ $cand_2$	*	

Evaluation of candidates is based on the ranking of the constraints, and proceeds recursively, as follows. In the first step, it compares the candidates' performance at the highest constraint.

If this step fails to decide, it evaluates with respect to the rest of the hierarchy. For example, using the established constraint ranking, (2b) depicts a case where both candidates violate A. In this case, A fails to decide which candidate is the optimal one, and evaluation proceeds to the next lower constraint, B. Here, $cand_2$ is the optimal one, because $cand_1$ violates B but $cand_2$ does not.

Building on MP (MP 1994a,b), I will also assume that Input and Output pairs are related by a *correspondence* relation. There are two basic constraints on the correspondence relation.

3. The Max and Dependence constraints

MAX^{IO}:	Every segment of the Input has a correspondent in the Output.
DEP^{IO}:	Every segment of the Output has a correspondent in the Input.

MAX^{IO} essentially bans phonological deletion and DEP^{IO} bans epenthetic segments. A similar pair of constraints governs the Base-Reduplicant relation. The root-and-pattern morphology of Temiar necessitates an extension to correspondence theory. Correspondence constraints can also make reference to the morphological Base. The correspondence relation holds between segments of the Base and segments of the Output[1].

3 Temiar Verbal Morphology

Temiar [tmɛ:r] belongs to the Senoic group of Mon-Khmer languages (Benjamin 1976, Diffloth 1976). The Northern dialect of Temiar, the main subject of Benjamin's study, is spoken by an *Orang Asli* population in the Betis and lower Perolak valleys of the Kelantan region in Malaysia. The morphology of this language is notorious for its complexity, exhibiting about twenty-two patterns of intricate affix and copy combinations. For reasons of space, I will concentrate on four patterns in the verbal active aspectual paradigm, sufficient to illustrate the main point of this paper. A detailed analysis of Temiar verbal morphology is presented in my dissertation (Gafos 1996).

Let me first introduce some general properties of syllable and word structure of Temiar. All syllables must have onsets and only single consonants can occupy the onset or coda position. The two constraints of OT responsible for these generalizations are given in (4) and (5). These constraints are undominated in the constraint hierarchy of the language.

4. ONS

   Every syllable must have an onset.

5. *COMPLEX

   No more than one C may associate to any syllable position.

The distinguishing characteristic of Temiar (and Mon-Khmer) syllabic organization is that it allows for syllables with no vowels, called *minor* syllables, as well as *major* syllables which have a phonologically specified vowel. In (6a), **t**.lɛk, **t** is the minor syllable, followed by the major syllable lɛk. The consonant /t/ is the onset of the minor syllable. In (6c), **br**.ca:ʔ, the sequence **br** is the minor syllable, followed by the major syllable ca:ʔ; /b/ is the onset and /r/ is the coda of the minor syllable. Words such as those in (6), with a major syllable preceded by a minor, are called 'sesquisyllabic,' a term coined by Matisoff (Matisoff 1973). Benjamin transcribes minor syllables by using two completely predictable vowel qualities. Open minor syllables are transcribed with the vowel [ə] (6a-b) and closed minor syllables with the vowel [ɛ] (6c-d). I will assume that these phonetic vowels [ə],[ɛ] are merely transitions between successive articulatory targets (James Matisoff agrees with this interpretation of minor syllable nuclei). Thus, phonologically minor syllables consist entirely of consonants. The second consonant in a CC minor syllable, being in the coda position, is moraic.

6.

Example	Gloss	Phonetic Transcription
a. **t**.lɛk	'to teach'	[**tə**.lɛk]
b. **s**.lɔg	'to lie down'	[**sə**.lɔg]
c. **br**.ca:ʔ	'to feed'	[**bɛr**.ca:ʔ]
d. **cb**.ni:b	'going'	[**cɛb**.ni:b]

Another accepted generalization about Mon-Khmer languages is that they allow only one major syllable per word. Stress in Mon-Khmer languages is typically final, and final syllables can contain any vowel. This generalization can be seen as the extreme case of a widely attested tendency of languages to reduce the contrasts in the vowel inventory of unstressed syllables. Mon-Khmer languages, in this view, reduce the vowel inventory of unstressed syllables to the minimum, i.e. to the empty set. How to express this generalization using current resources is a problem beyond the scope of this paper. Therefore, I will use the constraint 1-v (read 'one vowel') as a cover name for the set of constraints that lie behind this generalization.

7. 1-v
Only one major syllable per word.

However, Temiar and other Senoic languages (Semai, Jah-Hut) share feature very unusual for Mon-Khmer, having a large number of bisyllabic words with phonologically specified penultimate vowels (Diffloth 1976). These words clearly violate 1-v. What forces the violation of this constraint? The tableau in (8) provides us with the first example of optimality grammar construction. Let's assume a word with two vowels such as the verb golap 'to carry on shoulder.' The Input to the grammar, i.e. the underlying form, is the form golap. Tableau (8) shows two candidates generated from this Input. One the one hand, constraint 1-v requires that the prefinal syllable contain no vowel, favoring candidate (8a) where the Input vowel /o/ does not surface in the Output. This candidate, however, incurs a violation of MAX^{IO} which requires that every segment in the Input have a correspondent segment in the Output (the vowel /o/ has no correspondent in the Output). On the other hand, candidate (8b) is in perfect correspondence with the Input but incurs a violation of 1-v. The two constraints are thus in conflict. The surface form of the verb is golap. To choose the correct candidate then, MAX^{IO} must dominate 1-v, i.e. the ranking is MAX^{IO} >> 1-v.

8. Ranking argument: MAX^{IO} >> 1-v

Input: golap	MAX^{IO}	1-v
a. glap	*!	
b. ☞ golap		*

Two-vowel verbs do not participate in the canonical morphology of the language (except when nominalized, a situation irrelevant to the point made in this paper).

We are now in a position to discuss the active verbal paradigm of the language, shown in (9). There are two bases (c^1vc^2, $\overset{1}{c}$ə.$\overset{2}{c}$v$\overset{3}{c}$) and three aspects, the perfective (P), the simulfactive (S), and the continuative (C). P is the unmarked category and corresponds to the base. The two P forms are also the bases for the formation of the S and C. Informally, the S is formed by affixing the vowel /*a*/ and copying a base consonant in the biconsonantal case. In the triconsonantal case, formation of S involves affixation /*a*/ but no copying. The C is formed exclusively by consonant copying. Two consonants are copied in the case of biconsonantals and one in the case of triconsonantal bases. The vowels [ə, ε] that may occur are a consequence of the general conditions of minor syllables.

9. Active voice-aspect (copies are shown in boldface)

	Biconsonantal	Triconsonantal
P	c^1vc^2	c^1ə.c^2vc^3
	kɔ:w 'to call'	sə.log 'to lie down'
S	$\mathbf{c^1}$*a*.c^1vc^2	c^1*a*.c^2vc^3
	k*a*.kɔ:w	s*a*.log
C	$\mathbf{c^1}$ε$\mathbf{c^2}$.c^1vc^2	c^1ε$\mathbf{c^3}$.c^2vc^3
	kεw.kɔ:w	sεg.log

An important property of affixation in Temiar is that affixes appear prefixed to the left edge of the major syllable of the base. For example, the P affix /*a*/ is always the nucleus of the prefinal syllable, preceding the major syllable of the base. In the C too, a new copied consonant precedes the major syllable of the base.

Thus, in all morphologically complex forms (S and C), a new segment (/*a*/, or a copied consonant) occupies a moraic position which immediately precedes the major syllable of the base. A major syllable, being stressed, is the head of the prosodic word (PrWd) in Temiar. The constraint responsible for this generalization is statable in the alignment schema of MP (MP 1993b), as in (10).

10. ALIGN(μ, R, Head(PrWd), L)
The right edge of a mora must be aligned with the left edge of the major syllable of the base (henceforth μ-HEAD).

The input for the formation of the S and C patterns will include a mora, μ, which must be affixed under the requirements of μ-HEAD. The following analysis shows that differences in the output of the S and C patterns follow from independent properties of the language.

3.1 Simulfactive

This section examines the S patterns of (9). All S forms have a prefinal syllable with the vowel /*a*/, a clear violation of 1-v. The input of S formation will consist of the vowel /*a*/, linked to the mora μ and the perfective base. The situation is similar to that examined with two-vowel verbs (see 8). The constraint ranking MAX^{IO} >> 1-v ensures that the vowel /*a*/ will be part of the output, incurring a violation of 1-v.

Let me now focus on pattern **c^1*a***.c^1vc^2. Here, affixation of /*a*/ is accompanied by a copy of a base consonant. Constraint μ-HEAD requires that /*a*/ be in a prefinal syllable, as in the partial output /*a*.cvc/. This syllable must have an onset (constraint ONS is undominated). This then explains the presence of the new consonant. It also explains the absence of such a consonant in the case of triconsonantal bases, c^1***a***.c^2vc^3. There is no need here for an onset, since there is already a consonant in the base which can serve that role. I must still explain why the needed onset, in the case of biconsonantals, is a copy of a base consonant.

Correspondence theory, so far, has assumed that correspondence relations apply only between the pairs Input-

Output and Reduplicant-Base. The requirement that the copied consonant be a copy of c^1 could perhaps be attributed to one of these two types of correspondence. However, the new copied segment is epenthetic, and thus does not correspond to any segment in the Input, i.e. it incurs a violation of DEP^{IO}. Also, formation of S certainly involves no reduplicant, as seen in the triconsonantal output c^1*a*.c^2vc^3 where no copying takes place. I conclude that the requirement of featural identity between the new onset and c^1 can be attributed neither to Base-Reduplicant correspondence nor to Input-Output correspondence. I propose that a new correspondence constraint is involved. DEP^{BO}, in (11), requires a correspondence relation between the Output and the morphological Base. Following MP (MP1994b), I also assume that the featural identity of correspondents is required independently by another constraint IDENT^{BO}(F) in (12).

11. DEP^{BO}

Every segment of the Output corresponds to some segment in the Base.

12. IDENT^{BO} (F)

Correspondent segments in Base and Output have identical values for the feature F.

DEP^{BO} explains why the needed onset cannot be some 'default' epenthetic consonant T. Had that consonant been a 'default' epenthetic segment, no correspondence relation would have existed between it and a Base segment, a violation of DEP^{BO}. Of course in some languages, when onset consonants are needed, the language uses epenthesis of a 'default' consonant instead of copying a segment. For example, Axininca Campa always epenthesizes a coronal stop T (MP 1993a). This inter-linguistic variation can be captured by ranking DEP^{BO} with respect to other constraints characterizing segmental markedness. This issue, which will not concern us further here, is elaborated in my dissertation (Gafos 1996).

Tableau (13) formalizes the preceding discussion in terms of the introduced constraints. ONS is undominated while DEP^{BO} and

DEP^{IO} are unranked with respect to each other (indicated by the dotted line). Candidate (13a) has affix /*a*/ prefixed to the major syllable of the word. No onset is provided for the prefinal syllable, however, which causes a fatal violation of ONS. DEP^{BO} is also violated because /*a*/ has no correspondent in the base. Candidate (13b) provides an onset by epenthesizing a 'default' consonant T with no correspondent in the Base. This causes a second fatal violation of DEP^{BO}. Finally, candidate (13c) avoids the second violation of DEP^{BO} by copying a base consonant (both 13a-b also violate DEP^{IO} because of the new onset).

13. Copying induced by DEP^{BO}

a + c^1vc^2	ONS	DEP^{BO}	DEP^{IO}
a. $a.c^1vc^2$	*!	*	
b. T$a.c^1vc^2$		**!	*
c.☞ $c^1a.c^1vc^2$		*	*

The next question to be answered is what determines the choice of the consonant to be copied. Because there are two consonants in the input of biconsonantal actives, there are two possible candidates, $c^1a.c^1vc^2$ and $c^2a.c^1vc^2$. Both candidates satisfy DEP^{BO} and also IDENT^{BO}(F). Once two segments are in correspondence, there may be other constraints involved in determining the quality of their relation. In this case the syllabic roles of segments play a crucial role in determining the optimal candidate. The relevant constraint is SROLE[2].

14. SROLE (MP 1993a:134, 1994a)

A segment and its correspondent must have identical syllabic roles.

Tableau (15) shows the two relevant candidates. In candidate (15a), c^2 is parsed as an onset, while its correspondent in the base is parsed as a coda. Candidate (15b) copies c^1, which is assigned the same syllabic role as its correspondent. Because SROLE settles a tie between these two candidates, it can be ranked anywhere with respect to the rest of the constraints.

15. Which consonant is copied?

a + c^1vc^2	SROLE
a. $\mathbf{c^2}a.c^1vc^2$	*!
b. ☞ $\mathbf{c^1}a.c^1vc^2$	

This completes the analysis of the S of biconsonantals. For the S of triconsonantals the output form is $c^1a.c^2vc^3$. Here, again, the placement of /*a*/ is determined by μ-HEAD, and no further action is necessary. This completes the analysis of the S patterns.

3.2 Continuative

I proceed with the analysis of the C patterns, repeated here in (16). The only formal difference between S and C lies in their Input specifications. The S Input contains, in addition to the Base, the vowel /a/ linked to a mora μ. The C Input, on the other hand, contains just a mora μ (with no phonologically specified segment attached) and the Base. Everything else will be seen to follow from this difference.

16. Continuative Active (copies appear in boldface)

	Biconsonantal	Triconsonantal
Perf. Base	c^1vc^2	$c^1ə.c^2vc^3$
C	$\mathbf{c^1}ɛ\mathbf{c^2}.c^1vc^2$	$c^1ɛ\mathbf{c^3}.c^2vc^3$

The first important property of the C patterns is that the vowel of the base is never copied. Only consonants of the base are copied. Constraint μ-HEAD requires that the mora μ be prefixed to the major syllable of the base. Various ways to give segmental content to this mora are explored in (17) and show that the optimal candidate must copy a consonant of the base. Candidate (17a) realizes the added μ by epenthesizing a 'default' vowel, V. This incurs a violation of 1-v, and a violation of DEP^{BO}, because /V/ has no correspondent in the Base. Candidate (17b) avoids violation of 1-v by realizing the mora with a 'default' consonant T. This also incurs a violation of DEP^{BO}. Candidate (17c) avoids the violation of DEP^{BO} by copying the vowel of the base. This, however, incurs a violation of 1-v. Finally, candidate (17d) avoids both violations by realizing the mora with a consonant of the base. The question of which consonant of the base is copied will be addressed shortly.

17. 1-v in action

μ + $c^1ə.c^2vc^3$	DEP^{BO}	1-v
a. $c^1V.c^2vc^3$	*	*
b. $c^1εT.c^2vc^3$	*	
c. $c^1\mathbf{v}.c^2vc^3$		*
d.☞ $c^1ε\mathbf{c^3}.c^2vc^3$		

I now turn to the difference between the two C patterns. The C of biconsonantals ($\mathbf{c^1}ε\mathbf{c^2}.c^1vc^2$) involves copying of two consonants, while the C of triconsonantals ($c^1ε\mathbf{c^3}.c^2vc^3$) copies only one consonant. μ-HEAD requires that the mora μ be in the coda position of the penultimate syllable. In the case of triconsonantals, the new mora (realized with a consonant) is placed in the configuration /...$\mathbf{c^3}.c^2vc^3$/. This partial output combined with the rest of the input, gives the actual output $c^1ε\boldsymbol{c^3}.c^2vc^3$. In the other pattern, however, the partial output /....$\mathbf{c^1}.c^1vc^2$/, with $\mathbf{c^1}$ at the coda position of the prefinal syllable, needs an onset for this syllable. A second consonant of the base is copied in order to provide this onset (as in the S pattern).

To summarize, tableau (18) evaluates a representative candidate set (the constraint ranking is μ-HEAD, ONS >> DEP^{BO}). Candidate (18a) copies a base consonant which is not aligned with the left edge of the prefinal syllable but is instead an onset of the prefinal syllable. This causes a violation of μ-HEAD. Candidate (18b) has an onsetless syllable, causing a fatal ONS violation. Candidates (18c-e) realize at least one of the consonants of the prefinal syllable by epenthesizing a segment T with no base correspondent. This causes at least one DEP^{BO} violation. The optimal candidate (18f) copies both consonants of the base, avoiding all DEP^{BO} violations.

18. Continuative (T is an epenthetic 'default' consonant)

μ + c^1vc^2	μ-HEAD	ONS	DEP^{BO}
a. $\mathbf{c^1ə}.c^1vc^2$	*!		
b. $\mathbf{εc^2}.c^1vc^2$		*!	
c. TεT.c^1vc^2			*!*
d. Tε$\mathbf{c^2}$.c^1vc^2			*!
e. $\mathbf{c^1}$εT.c^1vc^2			*!
f.☞$\mathbf{c^1εc^2}.c^1vc^2$			

I turn finally to the question of which consonants are copied, addressed in tableau (19). As in the S patterns, constraint SROLE, requiring the identity of the syllabic roles of correspondent segments, chooses the correct candidate.

19. Which consonants are copied?

Input: μ + c^1vc^2	SROLE
a. $\mathbf{c^1εc^1}.c^1vc^2$	*!
b. $\mathbf{c^2εc^2}.c^1vc^2$	*!
c. $\mathbf{c^2εc^1}.c^1vc^2$	*!*
d. ☞ $\mathbf{c^1εc^2}.c^1vc^2$	

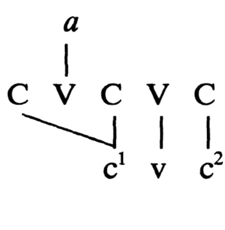
The analysis has shown that consonantal copying in Temiar follows from the interaction of DEP^{BO} with other general constraints of the language, such as ONS and 1-v. It is appropriate at this point to note another interesting aspect of this analysis. Previous analyses of the verbal paradigm of Temiar have posited the existence of templates, such as C*a*CVC for the S patterns, and CCCVC for the C patterns (McCarthy 1982, Broselow & McCarthy 1983). There are a number of problems with positing these templates. For current purposes it suffices to indicate only one. As shown here, the first C position in C*a*CVC and CCCVC is not arbitrary, but follows from the language-wide requirement ONS. In accordance with recent work of MP (MP 1993a), this analysis has shown that general constraints on affixation, together with other prosodic requirements of the language, such as ONS and 1-v, derive the shape of templates that previous analyses had to stipulate.

4 Conclusion: No Need for Long Distance Spreading

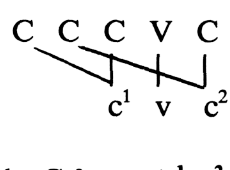
The main point of this analysis has been that copying in both the S and C is derived by the same mechanisms of the theory. In particular, copying is driven by a correspondence constraint and its interaction with other constraints expressing general properties of the language. Previous analyses had to posit two different mechanisms. The S was formed by the operation of long-distance consonantal spreading and the C by reduplication (McCarthy 1982, Broselow & McCarthy 1983). I first review the reasons why two different mechanisms were needed and then state why this is problematic.

Specifically, the derivation of the S of biconsonantals, $\mathbf{c^1}\boldsymbol{a}.c^1vc^2$, used the operation of 'spreading' in the fashion shown in (20a). The consonant c^1 automatically 'spreads' to fill the unassociated position in the C*a*CVC template. A 'spreading' solution is necessitated because S does not involve any reduplicative morpheme, as shown by the other S form $c^1\boldsymbol{a}.c^2vc^3$.

20. a. Simulfactive



b. Continuative



On the other hand, derivation of the C forms ($\mathbf{c^1\varepsilon c^2}.c^1vc^2$ and

$c^1\varepsilon\mathbf{c^3}.c^2vc^3$) used a reduplicative template [Root Root]. Essentially this stipulated that a copy of the whole Root must be created. The two copies of the Root were then linked to the template CCCVC by a complex set of linking operations (whose details are irrelevant here). A 'spreading' solution is impossible for the C. Spreading to get $\mathbf{c^1}\varepsilon\mathbf{c^2}.c^1vc^2$ would create crossing of association lines, as shown in (20b), which is absolutely prohibited in the autosegmental model (similar considerations apparently necessitating both spreading and reduplication also exist in Arabic, Modern Hebrew, Sierra Miwok and Yawelmani).

The problem with this situation is that two different mechanisms for creating copies of melodies are involved. In the S, 'spreading' occurs to fill an empty C slot in the template C*a*CVC. In the C, the same need for filling the template CCCVC exists. However, here copying is not automatically induced (by 'spreading') but must be stipulated by the template [Root Root].

In the OT analysis, copying is induced by a constraint DEP^{BO} *requiring a correspondence relation between segments of the* Base and segments of the Output. Two other constraints on this correspondence relation, IDENT^{BO} (F) and SROLE, require featural and syllabic-role identity between correspondent segments. The S and C patterns follow from the interaction of these constraints with other constraints reflecting general properties of the language, such as 1-v and ONS.

There are wider implications to be drawn from this result. Returning to (1), this paper has demonstrated that the the long-distance structure of (1) generated by 'spreading' is not needed. Consequently, the biplanar representation of (1), i.e. V/C planar segregation, is also obviated. This, in turn, leads to a unification of the formal apparatus used in concatenative and nonconcatenative languages. This issue and its relation to a concrete proposal about the locality of spreading are discussed in detail in my dissertation (Gafos 1996).

Notes

1. Recent unpublished work by John McCarthy also argues for similar extensions to correspondence theory.

2. Other constraints of correspondence theory come to mind here (e.g. ANCHORING in MP 1994a). The fact that SROLE is the crucial constraint becomes clear when the continuative patterns are discussed.

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