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The Lookahead Effect in the Reduplication-Phonology Interaction

1. Introduction. Base-reduplicant Correspondence Theory in parallel Optimality Theory (P-OT) (McCarthy & Prince 1995) and Serial Template Satisfaction Theory (STS, McCarthy et al. 2012) in Harmonic Serialism (HS) (McCarthy 2000 et seq.) make different predictions about certain phonology-reduplication interactions. One of these is the ***lookahead effect*** (McCarthy et al. 2012), a pattern where the amount of material copied depends on its potential to undergo some subsequent phonological change. HS differs from P-OT in two key ways. HS has a GEN → EVAL loop, and GEN is restricted to making just one change at each step (*gradualness*). Due to this architecture, STS theory predicts that the lookahead effect is impossible. This study (i) demonstrates that a reduplication pattern in Mbe instantiates the lookahead effect, (ii) shows that the lookahead effect presents problems for STS while being straightforwardly captured by P-OT, and (iii) shows that a 'Copy + Deletion' alternative for STS is not viable. We conclude that the attested lookahead effect provides an argument in favor of a P-OT based theory of reduplication over STS.

2. The lookahead effect. McCarthy et al. 2012 illustrates the lookahead effect with a hypothetical case. Suppose that a language allows a coda only if it is a nasal homorganic with a following onset consonant (enforced by CODA-COND). Suppose further that this language exhibits a reduplication pattern where the reduplicant is of CV shape (1a), but CVC where a nasal can be copied and place-assimilated (1b).

(1) Assimilation-dependent copying (McCarthy et al. 2012: 213)

a.	pa.ta	pa-pa.ta
b.	pa.na	pam-pa.na

In STS, reduplicative affixes are templates in the form of prosodic constituents. An operation relevant to satisfying a reduplicative template is Copy(X), which involves copying a string of one or more constituents of type X (e.g. *ft*, σ, seg). The hypothetical case presents a derivational paradox concerning the copy operation and the feature-changing operation (assimilation): the nasal cannot be copied unless it is assimilated but it cannot assimilate until it has been copied; copying and assimilation cannot apply in the same derivational step. Selective copy of a nasal but not other consonants requires lookahead to assimilation. STS thus predicts lookahead effects to be impossible, and McCarthy et al. make note that their existence would present a serious challenge to STS theory.

3. Reduplication in Mbe. In the imperative reduplication of Mbe (Benue-Congo; Bamgboṣe 1967, 1971, Walker 2000), when the stem contains only oral consonant(s), the reduplicant is of CV shape without copying the onset of the second syllable into the coda position (2a-d). The presence of a post-vocalic nasal in the stem triggers the occurrence of a nasal coda in the reduplicant homorganic to the following onset (2e-h). The vowel in the reduplicant is an identical copy of a high stem vowel (2a-b) and [ə] when the stem vowel is non-high (2c-f). When the stem contains a diphthong, only the first vowel is copied (2g-h). This pattern exemplifies the lookahead effect predicted to be impossible by STS. Note that the pattern cannot be taken on a par with the CV and CVC allomorphy in Southern Paiute, as analyzed in McCarthy et al. 2012. In Mbe, it is fully predictable whether a given stem will have a CV or CVC reduplicant in the imperative form.

(2)

a.	rû	rû-rû	'pull'	e.	tâŋ	tân-tâŋ	'teach'
b.	jú.bò	jû-jú.bò	'go out'	f.	gbé.nò	gbânm-gbé.nò	'collide'
c.	só.rò	sâ-só.rò	'descend'	g.	pûɔ.nì	pûm-pûɔ.nì	'mix'
d.	tá.rò	tâ-tá.rò	'throw'	h.	dzûɔŋ	dzûn-dzûɔŋ	'be higher'

4. The STS and P-OT analyses. STS cannot fully account for the Mbe imperative reduplication. Assume a syllable template for the reduplicative prefix; copying CV or CVC segment strings (violating (*COPY(seg)) satisfies the template. STS cannot give rise to a path for the output [pûm-pûɔ.nì], based on the input {RED$_\sigma$+pûɔ.nì}. In Step 1 below, HD(σ), the

constraint requiring a syllable to have a head, is satisfied by the Copy(seg) operation. It is more harmonic to not copy the nasal onset because it will violate CODA-COND. Assimilation cannot be applied simultaneously to avoid the violation of CODA-COND, due to gradualness, and (3b) will be wrongly selected as the winner.

(3) Step 1 of [pûm-pûɔ.nì]

σ + pûɔnì	HD(σ)	CODA-COND	*COPY(seg)
a. pûɔn-pûɔ.nì		*!	*
☹ b. pûɔ-pûɔ.nì			*

On the other hand, the Mbe pattern is captured by P-OT as shown in (4), the key theoretical apparatuses being BR-correspondence and parallel evaluation.

(4)

	CODA-COND	MAX-BR	IDENT-BR-PL
→ a. tə̂-tá.rò		**	
b. tə̂r-tá.rò	*!W	*L	
→ c. pûm-pûɔ.nì		**	*
d. pû-pûɔ.nì		***!W	L

5. The 'Copy + Deletion' alternative of STS for Mbe reduplication. We consider an alternative analysis within STS for Mbe reduplication. To trigger copy of the nasal in Step 1, it must not initially violate CODACOND, so the template needs to be larger than a σ. Thus, we assume that the reduplicative prefix has the *ft* template instead of a σ. In Step 1 for the input {RED_{ft}+pûɔ.nì}, the whole stem is copied into the template, enforced by the constraint FTBIN(σ). Subsequently, several operations apply to the intermediate output /pûɔ.nì-pûɔ.nì/ to (i) reduce the size of the reduplicant, and (ii) to adjust the place feature of the nasal. Suppose the constraint that triggers the size reduction is AFFIX≤σ (McCarthy & Prince 1994).

A ranking paradox occurs between FTBIN(σ) and AFFIX≤σ: to trigger the copy of the nasal segment in the second syllable of the stem, FTBIN(σ) must dominate AFFIX≤σ, because the reverse ranking would reduce the *ft* template into a σ size before the nasal is copied; however, upholding the ranking of FTBIN(σ) over AFFIX≤σ would block the full copy from being truncated into a CV-sized reduplicant if the two size-related constraints are evaluated the same. To resolve the ranking paradox, it has to be assumed that AFFIX≤σ and FT-BIN(σ) are assessed distinctly, with FT-BIN(σ) inspecting only the prosodic structure without reference to its segmental realization, while AFFIX≤σ is obeyed on the basis of segments and their affiliated prosodic structure. This treatment seems to be stipulative: it seems inconsistent to interpret the prefix's *ft* template as at once satisfying foot bisyllabicity and also AFFIX≤σ.

6. Conclusion. The lookahead effect in Mbe imperative instantiates a type of reduplication-phonology interaction that is non-local in terms of the derivation steps and does not seem reducible to some serial ordering of operations. Alternatively, to account for the lookahead effect, STS requires inconsistent evaluation of two size-related constraints that seems to us unprincipled. Therefore, the alternative undermines the integrity of the template, a pillar of the STS theory alongside the serial derivation.

Selected references:

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