Too-many-solutions and reference to position in serial OT

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The talk addresses the problem for phonological theory known as *too-many-solutions* (TMS de Lacy 2003, Blumenfeld 2006) in light of serial OT (Prince&Smolensky 1993/2004, McCarthy 2006, 2007, 2008a, 2008b). The interaction of stress and syncope will be my main focus.

The term *too-many-solutions problem* is used to refer to any situation where a given markedness constraint universally cannot give rise to certain imaginable repairs. The problem has become visible in the context of OT since this theory predicts that every marked configuration can be repaired by violating any relevant faithfulness constraint. Examples of TMS-problems include, but are not limited to: stressing a vowel to avoid syncopating it (1) (Blumenfeld 2006, McCarthy 2008a); deleting the voiced consonant in a coda or epenthesizing a vowel after it instead of devoicing (2) (Lombardi 1995/2001, de Lacy 2003); syllabifying the voiced consonant as a coda in order to be able to devoice it and conform with positional faithfulness (4) (McCarthy 2007, Jesney 2008 among others); deleting or epenthesizing a tone-bearing-unit in order to satisfy OCP (3) (Lombardi 1995/2001, de Lacy 2003). All of these are predicted to be attested solutions while unattested in natural languages.

In (1)-(4), the constraints that penalize or preserve marked elements in certain positions are satisfied by modifying the position, not the marked element. I will demonstrate that serial OT offers a way of excluding such repairs if we adopt the following assumption: constraints can refer to the position in the previous form in the derivation (cf. Jesney 2008 for a similar solution in the case of (4)).

I propose that there is a class of constraints for which the difference between position and the phonological substance in this position is crucial (including positional faithfulness (Beckman 1998) and a special class of markedness constraints). I will call the whole class RPPS-constraints (for reference to position in the previous step). I argue that the constraints in this class refer to the position specified in the previous step in the derivation. Therefore modifying the position cannot satisfy those constraints. However, if a segment's (or other structural unit's) position is modified because of the non-positional constraints, the constraints targeting its original position will no longer apply to that unit.

For example, syncope constraints referring to the previous step position (e. g. *V-PLACE$_{\text{WEAK-RPPS}}$ after *V-PLACE$_{\text{WEAK}}$ in McCarthy 2008a) are not active when stress is assigned, because there is no weak position in the previous step (cf. (5) where I assume trochaic stress). The metrical well-formedness constraints such as FT-BIN and NONFIN determine the output of the stress step even if they are ranked lower than syncope constraints. The undesired repair (5)b is harmonically bounded by better parses. When metrical structure is assigned (I assume FT-BIN >> NONFIN for the sake of argument), the constraint against weak vowel place gets active and can cause deletion if ranked high enough (6).

I will discuss some problems for the previous aproaches to TMS. Arguments against de Lacy (2003) and Blumenfeld (2006) have been presented in the literature (cf. Blumenfeld 2006, McCarthy 2008a). A recent approach to the syncope-stress interaction problem advocated by McCarthy (2008a) does not succeede in excluding all the unattested patterns. On this account, feet are assigned one-by-one in an iterative fashion (see also Pruitt 2008). This assumption implies that there will be forms in the chain where just one foot has been assigned and all the others are missing: |(páta)kabadagana|. In this form, all of the unstressed vowels violate *V-PL$_{\text{WEAK}}$. Therefore if *V-PL$_{\text{WEAK}}$ is ranked high enough to cause syncope, deleting any of those vowels would improve harmony. Additinally, the constraint *V-PL$_{\text{WEAK-IN-FOOT}}$ (McCarthy 2008a) is able to favor forming monopod feet as a possible next step: |(pá)(tá)kabadagana|.

If we assume that *V-PLACE$_{\text{WEAK}}$ refers to position specified in the previous step, the results in McCarthy (2008) can be achieved without assuming iterative footing. In a similar fashion, I will show that reference to position or adjacency in the previous step guarantees that modifying a structural position is never a solution in all the cases (1)-(4) as well as in other examples of TMS-problems.

Examples[1]

(1) */pata/ → (ˈpa)(ˈta)* because *(ˈpata)* is disfavored by a syncope constraint (instead of *(ˈpat)*)

(2) */ab/ → a* or *aba* because of dispreference for voiced codas (instead of *ap*)

(3) */ábá/ → áb, ábìá* because of OCP-H (instead of *ábà*)

(4) */pada/ → pat.a* but */pata/ → pa.ta* because of the ban on voiced obstruents and faithfulness to onsets

(5) Serial OT with RPPS: syncope cannot intervene at the stress assignment step
Input: pata

Previous Step Output: pata	*V-PLACE$_{WEAK\text{-}RPPS}$	FT-BIN	NONFIN
a. → |(páta)|			1
b. |(pá)(tá)|		2	1
c. → |(pá)ta|		1	

(6) Serial OT with RPPS: syncope applies after the stress has been assigned
Input: pata

Previous Step Output: |(páta)|	*V-PLACE$_{WEAK\text{-}RPPS}$	FT-BIN	MAX
a. |(páta)|	W_1	L_1	L_1
b. → |(pát)|		1	1

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[1] Nontrivial notation in the examples: "| |" indicate prosodic word boundaries, "ˈ" sign marks stressed syllables, dots are used to signify syllabification. "V́" indicates the vowel with high tone and "V̀" stands for the vowel bearing low tone. Possible continuations in a chain are marked with "→".