Underspecification and contextual faithfulness in analysing opacity with OT and rule-based serialism

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Overview: Self-destructive feeding (SDF) always occurs with non-derived environment blocking (NDEB) processes and attempts to resolve consonant clusters, leading us to reanalyse SDF not as a type of opaque rule interaction but as an epiphenomenon of allomorph optimisation, which no longer poses challenges to Standard OT.

Data: SDF is a type of opacity where 'an earlier rule feeds a later rule that in turn crucially changes the string such that the earlier rule's application is no longer justified' (Baković 2011:59). Documented examples come from Turkish (1), Javanese (2) and Japanese (3). The first rule always removes C_2 in a C_1C_2 cluster or breaks it by epenthesis, and the second rule always removes C_1 which motivated the removal of C_2 earlier. All these cases co-occur with two edge-specific phenomena.

(1a) Turkish	
UR	/ajag+sɯ/
s/j → ∅ / C _	∅
k/g → ∅ / V_V	∅
SF	[ajaɯ]

(1b) Turkish	
UR	/bebek+n/
∅ → i / C_C	i
k/g → ∅ / V_V	∅
SF	[bebein]

(2) Javanese	
UR	/omah+ne/
n → ∅ / C _	∅
h → ∅ / V_V	∅
SF	[omae]

(3) Japanese	
UR	/kaw+ru/
r → ∅ / C _	∅
w → ∅ / _ [–low]	∅
SF	[kau]

(4a) Turkish	UR	SF	Gloss
Elision	/tʃan+sɯ/	[tʃanɯ]	'his bell'
	/isjan/	[isjan]	'rebel'
	/iksiɾ/	[iksiɾ]	'potion'
Velar Deletion	/bebek+i/	[bebei]	'baby (ACC.)'
	/avukat/	[avukat]	'lawyer'
(4b) Javanese	UR	SF	Gloss
n-deletion	/kulit+ne/	[kulite]	'skin (DEF.)'
	/muŋgʊhne/	[muŋgʊhne]	'supposing'
h-deletion	/səkolah+an/	[səkolaan]	'school building'
	/dihin/	[dihin]	'the first'
(4c) Japanese	UR	SF	Gloss
r-deletion	/tob+ru/	[tobu]	'fly (INF.)'
	/nenrei/	[nenrei]	'age'

(5a) Turkish	(5b) Javanese	(5c) Japanese
/tʃan+sɯ/ → [tʃanɯ]	/kulit+ne/ → [kulite]	/tob+ru/ → [tobu]
/ʃiʃe+si/ → [ʃiʃe+si]	/kopi+ne/ → [kopine]	/ne+ru/ → [neru]

② When resolving consonant clusters, C_2 instead of C_1 always gets removed, contrary to the crosslinguistic tendency (Wilson 2001). This is better explained by the 'edge' nature of the cluster too. Because of root-faithfulness (Beckman 1998, a.o.), C_1 which always appears in the root is protected, and C_2 in the suffix must be removed. Such dominance of C_1 in the root over C_2 in the adjacent suffix also explains why the first rule in each interaction is always NDEB.

① I propose that rules in SDF (except w-deletion in Japanese) are all NDEB (4), processes that only happen in morphologically or phonologically derived environments (Kiparsky 1993). All rules in (4) always occur at affixation cites.

Question: Do these phenomena related to morpheme boundaries appear with SDF by accident? Is there anything that causes them to appear together?

Proposal: Underspecification plus contextual faithfulness can explain the co-occurrence of SDF and NDEB + CC resolution, and reanalyse SDF as a result of allomorph optimisation.

① Underspecification (Kiparsky 1993) with morpheme structure constraints is the best way of capturing NDEB (Rasin 2023). Segments alternating on the surface should be underspecified (Inkelas 1995). To control the presence and absence of a segment, the 'feature' underspecified should be whether a segment is linked to a C/V slot on the skeletal tier (following Kiparsky 1993 and Rasin 2023). Underspecified segments are not linked to C/V slots, but fully-specified ones are. Under the OT framework, a constraint SPECIFY penalises underspecified segments on the surface.

A faithfulness constraint DEPLINK penalises insertions of such links. NDEB effects are captured by the contrast between under- and full specification with the constraint MAXfull, which penalises the removal of each fully-specified segment only.

② Contextual faithfulness (Steriade 2009, a.o.): This assumption captures these languages' strong preference for the CV syllable structure. This is why a V-initial suffix always appears after a C-ending root, and a C-initial suffix appears after a V-ending one in these languages (5). Contextual faithfulness constraints like Max-C/V_V penalising deletions of consonants already between vowels in the input ensure segments already contributing to an alternating CV pattern get preserved.

With the assumptions above and basic marked-ness constraints in each language, all SDF can be captured by Standard OT with the same set of relatively ranked constraints (e.g., Javanese, 6-8). In brief, the proposal builds on three key points: ① NDEB is a result of the contrast between fully- and under-specified segments. ② The resolution to consonant cluster is a result of the root-suffix asymmetry. ③ Underspecified segments only surface when they contribute to a more harmonic phonological pattern e.g., syllable structure.

(6) /omaH+Ne/	SPECIFY	MAXfull	*VhV	MAX-C/V_V	DEPLINK	MAX
a.☞ omae						**
b. omane					*!	*
c. omahne					*!*	
d. omahe			*!		*	*
e. omaHNe	*!*					

(7) /kulit+Ne/	SPECIFY	MAXfull	*VhV	MAX-C/V_V	DEPLINK	MAX
a.☞ kulite						*
b. kulitne					*!	
c. kuline		*!			*	*
d. kulie		*!				**
e. kulitNe	*!					

(8) /kopi+Ne/	SPECIFY	MAXfull	*VhV	MAX-C/V_V	DEPLINK	MAX
a.☞ kopine					*	
b. kopie				*!		*
c. kopiNe	*!					

(9) New Javanese rules
N → n / V_V
H → h / _ #

UR	/omaH+Ne/
N → n / V_V	
H → h / _ #	
N → ∅	∅
H → ∅	∅
SF	[omae]

UR	/omaH+Ne/
H → h / _ #	
N → n / V_V	
H → ∅	∅
N → ∅	∅
SF	[omae]

Implications: ① SDF posed problems for OT because its OT solutions (Sympathy, OT-CC, and Turbidity, Baković 2007) always needed sub-optimal modifications to the standard framework. Contextual faithfulness constraints were used to solve opacity by Hauser and Hughto (2020) but was not applied to SDF. This paper shows that, with appropriate assumptions and constraints, SDF can be handled by Standard OT. ② The key points responsible for this proposal above are also compatible and even yield more compelling results with rule-based serialism. The original SDF rules can be written as 'specification rules', whose ordering no longer creates SDF, and a type of opacity might be dispensed with as in (9). ③ This proposal shows that SDF is an epiphenomenon of phonologically-conditioned allomorph optimisation when two morphemes with underspecified segments on the edge are adjacent. The new viewpoint explains the peculiarities of SDF: 1) SDF always appears on morpheme edges unlike other rule interactions because underspecified segments in these languages are on morpheme edges. 2) The atypical choice of the deleted C in a cluster falls out from the asymmetry between the root-final fully-specified and the adjacent suffix-initial underspecified segment. In conclusion, this proposal has not only descriptive ability but also explanatory power for the so-called SDF and all its relating characteristics.