Revisiting Self-destructive feeding in Javanese

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March 16, 2024

Roadmap

- Background on SDF
- What I found
- What we need
- Proposal
- Future directions

Background

Opacity

A phonological rule $\mathbb{P}$ of the form $A \longrightarrow B \ / \ C \_ \ D$ is opaque if there are surface structures with either of the following characteristics:

- instances of A in the environment $C \_ \ D$ = **underapplication**,
- instances of B derived by $\mathbb{P}$ that occur in environments other than $C \_ \ D$ = **overapplication**.

(Kiparsky, 1973, p. 79)

Can be derived by:

- Counterfeeding → underapplication;
- Counterbleeding → overapplication.

Background

Self-destructive feeding (SDF)

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, p. 59)

SDF

Example 1: Turkish

(1)

		a.	b.	c.
	UR	/bebek+n/	/ip+n/	/bebek+i/
Epenthesis:	$\varnothing \longrightarrow$ i / C_C#	i	i	
Velar Deletion:	k/g $\longrightarrow \varnothing$ / V_+V	$\varnothing$		$\varnothing$
	SF	[bebein]	[ipin]	[bebei]

(adapted from Sprouse, 1997)

SDF

Example 2: Turkish

(2)

		a.	b.	c.
	UR	/ajag+sɯ/	/ʧan+sɯ/	/bebek+i/
Elision:	s/j ⟶ ∅ / C_	∅	∅	
Velar Deletion:	k/g ⟶ ∅ / V_V	∅		∅
	SF	[ajaɯ]	[ʧanɯ]	[bebei]

(adapted from Kenstowicz & Kisseberth, 1979)

SDF

Example 3: Javanese

(3)

	UR	a. /omah+ne/	b. /kuliṯ+ne/	c. /səkolah+an/
/n/-deletion: n ⟶ ∅ / C_		∅	∅	
/h/-deletion: h ⟶ ∅ / V_V		∅		∅
	SF	[omae]	[kuliṯe]	[səkolaan]

(Lee, 1999, 2007)

What I found

NEW!!

/n/-deletion and /h/-deletion in Javanese are in fact cases of **non-derived environment blocking** (NDEB).

NDEB

Non-derived Environment Blocking (NDEB)

Cases where a phonological process is blocked unless the structural description is morphologically or phonologically derived.

(Kiparsky, 1982, 1993)

Finnish Assibilation

(4)

		a.	b.	c.	d.
UR		/halut+i/	/vete/	/sata/	/tila/
Vowel Raising: e ⟶ i / _#			i		
Assibilation: t ⟶ s / _i		s	s		
SF		[halusi]	[vesi]	[sata]	[tila]

NDEB in Javanese

/n/-deletion: /n/ is not deleted in word-medial consonant sequences.

(5)

		SF	Gloss
a.	sakwèhning	[sakˀwɛhniŋ]	'all'
b.	prayitna	[prajɪt̪ˀnɒ]	'cautious, carefully'
c.	ningnang	[niŋnaŋ]	'no different, exactly the same'
d.	pêrnahé	[pərnae]	'the family relationship'
e.	rèhné	[rɛhne]	'seeing that, in view of the fact that'
f.	wahné	[wahne]	'besides'
g.	mungguhné	[muŋgʊhne]	'supposing'

NDEB in Javanese

/h/-deletion: /h/ is not deleted in word-medial V_V environments.

(6)

	SF	Gloss
a. dhihin	[dihin]	'the first'
b. prihatin	[prɪhatɪn]	'anxious'
c. bihal	[bihal]	'mule (smuggler)' (borrowed from Arabic)
d. trahing	[tra(h)iŋ]	'being a family member of'
e. mihun	[mihun]	'rice flour noodle' (borrowed from Chinese)

Previous OT accounts

1. Sympathy (Lee, 1999)
   - /n/-deletion: *CN ≫ Max
   - /h/-deletion: *VhV ≫ Max
   - N deletes in a CN cluster: Max-Stem ≫ Max-Seg
   - Sympathy constraint:
     - ★ ❀ DepO Max-Stem = Assign one violation (AOV) for any insertion of segments in comparison with the sympathetic candidate which is picked out by Max-Stem
     - ★ The winning candidate must also be faithful to the ❀ constraint.
     - ★ ❀ DepO Max-Stem ≫ Max-Seg

(7)

/omah+ne/			*CN	*VhV	Max-Stem	❀	Max-Seg
a.		omahne	*!		✓	*	
b.	❀	omahe		*!	✓		*
c.		omane			*	*!	*
d.	☞	omae			*		**

Previous OT accounts

2. OT-CC (Lee, 2007)
   - Prec constraints care about the order of the violation of faithfulness constraints between candidates in a chain, which is arranged with improved markedness (McCarthy, 2006).
   - Prec(Max-Suffix,Max-Stem) = Candidates in a chain must violate Max-Suffix first, and then Max-Stem

Previous OT accounts

(8)

/omah+ne/		*CN	*VhV	Max-Stem	Prec	Max-Suffix
a.	<omahne> < >	*!				
b.	<omahne,omahe> <Max-Suffix>		*!			*
c.	<omahne,omane> <Max-Stem>			*	*!	
d. ☞	<omahne,omahe,omae> <Max-Suffix,Max-Stem>			*		*
e.	<omahne,omane,omae> <Max-Stem,Max-Suffix>			*	*!*	*

Problems

- Both Sympathy and OT-CC are considered obsolete because they somewhat acknowledge the intermediate stages in a derivation, making them not much different from rule-based serialism.
- Some nitty-gritties: Max-Suffix is not a viable constraint?
- Cannot account for NDEB effects!!! For example...

Previous accounts fail on NDEB

(9) There is no way of letting [dihin] win over [diin]

a.

/dihin/	*CN	*VhV	Max-Stem	❀	Max-Seg
a. ☹ dihin		*!			
b. 💣 diin			*		*

b.

/dihin/	*CN	*VhV	Max-Stem	Prec	Max-Suffix
a. ☹ <dihin> < >		*!			
b. 💣 <dihin,diin> <Max-Stem>			*!		*

Interim summary

- /n/-deletion self-destructively feeds /h/-deletion in Javanese.
- Both /n/-deletion and /h/-deletion are cases of NDEB.
- Previous 'old-fashioned' OT accounts fail to capture both phenomena simultaneously.

So, we need a 'newer' account that captures both.

Proposal

With appropriate assumptions including:

- Underspecification (Kiparsky, 1993)
- Contextual faithfulness constraints (Wilson, 2001, a.o.)

we can do this in Standard OT!

Underspecification

- Segments can be underspecified for certain features underlyingly (Archangeli & Pulleyblank, 1989; Kiparsky, 1982).
- The best (or only) way to account for NDEB[1] (Rasin, 2023).

(10) MSC: /t/ before /i/ in a morpheme, /T/ elsewhere.

	UR	a. /haluT+i/	b. /veTe/	c. /saTa/	d. /tila/
Vowel Raising:	e ⟶ i /_#		i		
Assibilation:	T ⟶ s /_#	s	s		
t-filling:	T ⟶ t			t	
	SF	[halusi]	[vesi]	[sata]	[tila]

(adapted from Kiparsky, 1993 and Rasin, 2023)

[1] When used with Morpheme Structure Constraints (MSC).

Underspecification for Javanese?

Two questions await answering:

1. Which segment(s)?

2. Which feature(s)?

Underspecification for Javanese?

Two questions await answering:

1. Which segment(s)?
   → H and N
2. Which feature(s)?
   → Slot linkage

Which segment(s)?

- Finnish:

(11)

	SF	UR
a.	[halusi]	/haluT+i/
b.	[vesi]	/veTe/
c.	[sata]	/saTa/
d.	[tila]	/tila/

→ fully-specified /t/ in the environment you want it to be protected.

- Javanese: Morpheme-internal /h/ and /n/ are fully-specified, underspecified elsewhere.

What feature(s)?

- Finnish: [t] ~ [s] ⇒ [cont]
  - Assibilation fills in [+cont], T ⟶ s
  - t-filling fills in [−cont], T ⟶ t
- Javanese: segment ~ ∅ ⇒ ?
  - Linkage to a C/V slot (Kiparsky, 1993)
  - Underspecified = not linked to C/V, Fully-specified = linked to C/V
  - A segment must be linked to a slot in order to appear in SF

Constraint faithfulness

General idea

Extra faithfulness is required in some specific contexts (Beckman, 1998; Lombardi, 1999, 2001; Steriade, 2009; Wilson, 2001).

Why do we need it here? → Preserve the CV syllable structure.

- [n] shows up after V-ending roots, and does not show up after C-ending roots;
- CV is the preferred syllable structure in Javanese e.g., the most common word shape in Javanese is CVCVC (Yip, 1989, p. 353).

Constraints needed

(12)
a. Specify: AOV for each segment that is not linked to a C/V slot.
b. Max_{full}: AOV for each underlying fully-specified segment removed.
c. *VhV: AOV for each fully-specified [h] between two vowels.
d. DepLink: AOV for each association line added between a segment and a C/V slot.
e. Max-C/V_V: AOV for each consonant between two vowels in the input that is deleted in the output.
f. Max: AOV for each segment removed.

Success!

(13) a. SDF case:

/omaH+Ne/	Specify	Max_{full}	*VhV	Max-C/V_V	DepLink	Max
a. ☞ omae						**
b. omane					*!	*
c. omahne					*!*	
d. omahe			*!		*	*
e. omaNe	*!					*
f. omaHe	*!					*
g. omaHne	*!				*	
h. omahNe	*!				*	
i. omaHNe	*!*					

Success!

(13) b. C-ending root:

/kulit̪+Ne/	Specify	Max$_{full}$	*VhV	Max-C/V_V	DepLink	Max
a. ☞ kulit̪e						*
b. kulit̪ne					*!	
c. kuline		*!			*	*
d. kulie		*!				**
e. kuliNe	*!	*				*
f. kulit̪Ne	*!					

Success!

(13) c. V-ending root:

/kopi+Ne/	Specify	Max_{full}	*VhV	Max-C/V_V	DepLink	Max
a. ☞ kopine					*	
b. kopie				*!		*
c. kopiNe	*!					

Success!

(13) d. h/H at other positions:

/dihin/	Specify	Max_{full}	*VhV	Max-C/V_V	DepLink	Max
a. ☞ dihin			*			
b. diin		*!		*		*

/səkolaH+an/	Specify	Max_{full}	*VhV	Max-C/V_V	DepLink	Max
a. ☞ səkolaan				*		*
b. səkolahan			*!		*	
c. səkolaHan	*!					

Discussion

- Applies to other cases of SDF i.e., Turkish

(14) a. V-SDF:

/bebeK+In/	Specify	Max_{full}	*VkV	Max-V/C_C	DepLink	Max
a. ☞ bebein					*	*
b. beben				*!		**
c. bebekn				*!	*	*
d. bebekin			*!		**	
e. bebeIn	*!					*
f. bebeKn	*!			*		*
g. bebeKin	*!				*	
h. bebekIn	*!		*		*	
i. bebeKIn	*!*					

Discussion

(14) b. C-SDF:

/ajaG+Sɯ/	Specify	Max_{full}	*VgV	Max-C/V_V	DepLink	Max
a. ☞ ajaɯ						⋆⋆
b. ajasɯ					⋆!	⋆
c. ajagsɯ					⋆!⋆	
d. ajagɯ			⋆!		⋆	⋆
e. ajaSɯ	⋆!					⋆
f. ajaGɯ	⋆!					⋆
g. ajaGsɯ	⋆!				⋆	
h. ajagSɯ	⋆!				⋆	
i. ajaGSɯ	⋆!⋆					

Discussion

- Might be able to remove a kind of opacity?

(15) Ordering of these new rules does not matter any more

a.

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

b.

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

Thank You!

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