Phonology-Morphology Interface
Jadertina Summer School
University of Zadar
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Handout 5

1 Paradigm Uniformity: Underapplication (part 2)
1.1 Introduction

(1) Definition of opacity [Kiparsky 1973: 79]:
A phonological rule P of the form A → B / C __ D is opaque if there are surface structures with any of the following characteristics:

a. Instances of A in the environment C __ D (underapplication)

b. Instances of B derived by P that occur in environments other than C __ D. (overapplication)

1.2 Northern Irish Dentalization
1.2.1 The data and a rule-based analysis

(2) The noncontinuants (i.e. /t d n l/) surface as dental befor [] and [] and as alveolar elsewhere. The process which captures the distribution of dentals vs. alveolars (i.e. the canonical pattern) is referred to as Dentalization [see Harris 1989]:

a. Dental before [θ] and [(ə)r]:

train	[t̪]rain
drain	[d̪]rain
matter	ma[t̪]er
ladder	la[d̪]er
pillar	pi[l̪]ar
anthem	a[n̪]them

b. Alveolar elsewhere:

tame	[t]ame
loud	[l]oud
dine	[d]i[n]e
kill	ki[l]

(3) Dentalization Rule: /t d n l/ → [t̪ d̪ n̪ l̪] / ___ [θ (ə)r]

(4) Features for alveolars vs. dentals:

	t d n l	t̪ d̪ n̪ l̪
[COR]	+	+
[anterior]	+	+
[distributed]	–	+

(5) Dentalization in affixed words:

a. Class 1: Normal application:

element-ary	eleme[n̪t̪]ary
sanit-ary	sani[t̪]ary
ten-th	te[n̪]th
eigh-th	eigh[t̪]th

b. Class 2: Underapplication:

lat-er	la[t]er
loud-er	lou[d]er
din-er	di[n]er
cool-er	coo[l]er
kill-er	ki[l]er
bed-room	be[d]room

(6) A solution in the Lexical Phonology framework [Kiparsky 1982]. Requires that morphological and phonological rules be assigned to one or more lexical levels. Harris (1989) proposes a solution along these lines:

	train	*load*	*load-er*
Input:	/trein/	/loːd/	/loːd/
Level 1			
Dentalization:	t̪rein	-----	------
Level 2			
Affixation:	------	-----	loːd-ər
	[t̪rein]	[loːd]	[loːd-ər]

(7) Questions on Belfast English:

a. How would one account for the fact that Dentalization applies across the suffixes in (5a) given the model in (6)?

b. How would one account for the fact that Dentalization is blocked from applying across compounds (see last example in 5b)?

1.2.2 An OT analysis of Dentalization

(8) Constraints necessary for the canonical pattern [Benua 1997]:

a. *DENT: Dentals are prohibited

b. *ALV-RHOTIC: Alveolar rhotic sequences are prohibited

c. IO-IDENT [DISTR]: Input and output segments agree with respect to the feature [dist]

Note: The ranking *DENT » *ALV accounts for the fact that dentals are more marked than alveolars. The constraint *ALV is not included in the following tableau because it is not relevant for the analysis.

(9) The following ranking of the constraints in (8) accounts for the allophonic rule of Dentalization, i.e. the canonical pattern:

	/trein/	*ALV-RHOTIC	*DENT	IO-IDENT [DISTR]
a.	[trein]	*!		
b.	→ [t̪rein]		*	*

	/aut/	*ALV-RHOTIC	*DENT	IO-IDENT [DISTR]
c.	→ [aut]			
d.	[aut̪]		*!	*

(10) An OO constraint [Benua 1997]:

OO-IDENT [DISTR]: Output correspondents agree with respect to the feature [dist]

(11) Four paradigms for the pair ‘load ~ loader’. Paradigm (d) is correct and (a)-(c) are not.

a. [loːd̪ ~ loːd̪-ər] overapplication candidate

b. [loːd ~ loːd̪-ər] normal application

c. [loːd̪ ~ loːd-ər] backwards application

d. → [loːd ~ loːd-ər] underapplication candidate

(12) If the OO constraint in (10) is ranked high then the overapplication candidate in (a) is incorrectly selected over the intended winner in (d):

	/loːd ~ loːd-ər/	OO-IDENT [DIST]	*ALV-RHOTIC	*DENT	IO-IDENT [DIST]
a.	← [loːd̪ ~ loːd̪-ər]			**	**
b.	[loːd ~ loːd̪-ər]	*!		*	*
c.	[loːd̪ ~ loːd-ər]	*!		*	*
d.	[loːd ~ loːd-ər]		*!		

(13) Possible OT approaches for underapplication like the one in (32):

a. Benua (1997) accounts for underapplication with a mechanism she calls Recursive Evaluation.

b. McCarthy's (2005) OP model: "…underapplication can only win when overapplication is blocked by a high-ranking constraint …" (p. 197)

(14) Benua (1997) argues that the English example requires recursion:

Recursion A:

	/loːd/	OO-IDENT [DIST]	*ALV-RHOTIC	*DENT	IO-IDENT [DIST]
a.	[loːd̪]			*!	*
b.	[loːd]				
c.	[loːd̪]			*!	*
d.	→ [loːd]				

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Recursion B:

	/loːd-ər/	OO-IDENT [DIST]	*ALV-RHOTIC	*DENT	IO-IDENT [DIST]
a.	[loːd̪-ər]			*	*
b.	[loːd̪-ər]	*!		*	*
c.	[loːd-ər]	*!	*		
d.	→ [loːd-ər]		*		

(15) Open questions:

a. How could the approach in (14) account for the data in (5a)?

b. How could one account for the Belfast data given McCarthy's (2005) approach as described in (13b)?

1.3 The distribution of English [æ]

1.3.1 The data and a rule-based analysis

(16) Distribution of [a] and [æ] in certain dialects of American English [see Kahn 1976, Benua 1997]:

a. [a] occurs before a word-final consonant, including [r]. No [æ] occurs in this position.

tall	[a]
car	[a]
hard	[a]

b. [æ] occurs before a word-final consonant to the exclusion of [r]:

hat	[æ]
man	[æ]
shall	[æ]

c. [æ] occurs before an onset consonant, including [r]:

manner	[æ]
carry	[æ]
marry	[æ]
Larry	[æ]

(17) Rule accounting for the distribution of [æ] and [a]: /æ/ → [a] / __ r]$_\sigma$

(18) Explain why the following example is problematic for the generalization established in (16):

Lar [æ] (truncated form of ‘Larry’)

(19) Some derivations:

	car	*Larry*	*Lar*
	/kær/	/læri/	/læri/
1. /æ/ →[a] / __ r]$_\sigma$	kar	-----	----
2. Truncation	----	----	lær
	[kar]	[læri]	[lær]

1.3.2 An OT analysis

(20) Constraints necessary for the canonical pattern [Benua 1997]:

a. IO-IDENT[BK]: Input and output segments agree in the feature [back]

b. *ær]$_σ$: Syllable-final [ær] cannot occur

(21) Tableau for *car*:

	/kær/	*ær]$_σ$	IO-IDENT[BK]
a.	c[a]r		*
b.	c[æ]r	*!	

(22) OO constraint necessary for the PU effect:

OO-IDENT[BK]: Output correspondents agree with respect to the feature [back]

(23) Four candidates (paradigms) to consider for the pair *Larry* ~ *Lar*.

a. L[a]rry ~ L[a]r overapplication

b. L[a]rry ~ L[æ]r 'backwards' application

c. L[æ]rry ~ L[a]r normal application

d. → L[æ]rry ~ L[æ]r underapplication

(24) Wrong winner is selected given the high-ranking OO constraint:

	/læri ~ lær/	OO-IDENT[BK]	*ær]$_σ$	IO-IDENT[BK]
a.	← L[a]rry ~ L[a]r			**
b.	L[a]rry ~ L[æ]r	*!		*
c.	L[æ]rry ~ L[a]r	*!		*
d.	L[æ]rry ~ L[æ]r		*!	

(25) Possible OT approaches for underapplication like the one in (32) (see Handout 4):

b. Benua (1997) accounts for underapplication with a mechanism she calls Recursive Evaluation.

b. McCarthy's (2005) OP model: "…underapplication can only win when overapplication is blocked by a high-ranking constraint …" (p. 197)

(26) Recursion A:

	/læri /	OO-IDENT[BK]	*ær]$_{\sigma}$	IO-IDENT[BK]
a.	L[a].rry			*!
b.	L[a].rry			*!
c.	L[æ].rry			
d.	→ L[æ].rry			

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Recursion B:

	/lær/	OO-IDENT[BK]	*ær]$_{\sigma}$	IO-IDENT[BK]
a.	L[a]r			*
b.	L[æ]r	*	*	
c.	L[a]r	*!		*
d.	→ L[æ]r		*	

(27) An open question: How could one account for the English data given McCarthy's (2005) approach?

1.4 [n] vs. Ø alternations in English

(28) Alternations between [n] und Ø in English [see Chomsky & Halle 1968, Borowsky 1986, 1993, Halle & Mohanan 1985]:

damn	hymn	autumn	condemn
damn-ation	hymn-al	autumn-al	condemn-ation
damn-ing	hymn-less		condemn-ing
damn-s	hymn-s		condemn-s
damn-ed			

(29) N-DELETION [Halle & Mohanan 1985, Borowsky 1993]:

n → Ø / [+nasal] __]

(30) BRACKETING ERASURE CONVENTION [Kiparsky 1982, Kaisse & Shaw 1985]:
All word-internal morphological brackets are deleted at the output of every lexical level.

(31)	*damn*	*damnation*	*damning*
Level 1:	/dæmn/	/dæmn/	/dæmn/
1. –*ation* Affixation	------	dæmn] eɪʃn̩	--------
Level 2:			
1 –*ing* Affixation	------	-----------	dæmn] ɪŋ
2 N-DELETION	dæm	-----------	dæm] ɪŋ
	[dæm]	[dæmneɪʃn̩]	[dæmɪŋ]

(32) How could one account for the English data in (27) given an OT-style analysis with OO constraints?

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