Vokal(-harmoni)e II

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Wolof: Harmony of non-high Vowels

+ATR		–ATR	
gən-**e**	‘be better in’	x**a**m-**ɛ**	‘know in’
r**e:**r-**e**	‘be lost in’	d**ɛ**m-**ɛ**	‘go with’
d**o:**r-**e**	‘hit with ’	x**ɔ**l-**ɛ**	‘look with’

A Different View: Optimality Theory

IO-Identity (ATR) Corresponding Input and Output vowels have the same value for ATR

S-Identity (ATR) Adjacent Output vowels have the same value for ATR

A Different View: Optimality Theory

Input: rɛɛr-on

	S-Identity	IO-Identity
☞ a. rɛɛr-ɔn		*
b. rɛɛr-on	*!	

Input: rɛɛr-on

	S-Identity	IO-Identity
☞ a. rɛɛr-ɔn		*
b. rɛɛr-on	*!	
☞ c. reer-on		*

Affix vs. Root Faithfulness

Input: rɛɛr-on

	S-Identity	IO-Identity$_{Root}$	IO-Identity$_{Affix}$
☞ a. rɛɛr-ɔn			*
b. rɛɛr-on	*!		
c. reer-on		*!	

Reversed Ranking

Input: rɛɛr-on

	S-Identity	IO-Identity$_{\text{Affix}}$	IO-Identity$_{\text{Root}}$
a. rɛɛr-ɔn		*!	
b. rɛɛr-on	*!		
☞ c. reer-on			*

Fula: Right-to-Left Spreading

+ATR		**–ATR**
s**o**f-r**u**	‘chick’	c**ɔ**f-**ɔ**n
s**e**r-d**u**	‘rifle butt’	c**ɛ**r-k**ɔ**n
mb**ee**l-**u**	‘shadow’	mb**ɛɛ**l-**ɔ**n
p**ee**c-**i**	‘slits’	p**ɛɛ**c-**ɔ**n
b**ee**l-**i**	‘puddles’	mb**ɛɛ**l-**ɔ**n
d**o**g-**oo**-r**uu**	‘runner’	d**ɔ**g-**ɔ**-w**ɔ**n
l**o**t-**oo**-r**uu**	‘washer’	l**ɔ**t-**ɔ**-w**ɔ**n

The Fula Vowel System

Phonetic

i u
e o
ɛ ɔ
a

Phonological

i u
ɛ ɔ
a

3-Vowel System in Charm+Government Theory

Sounds	**Elements**
i u	I U
a	A

5-Vowel System in Charm+Government Theory

Sounds	**Elements**
i	I
u	U
e	I+A
o	U+A
a	A

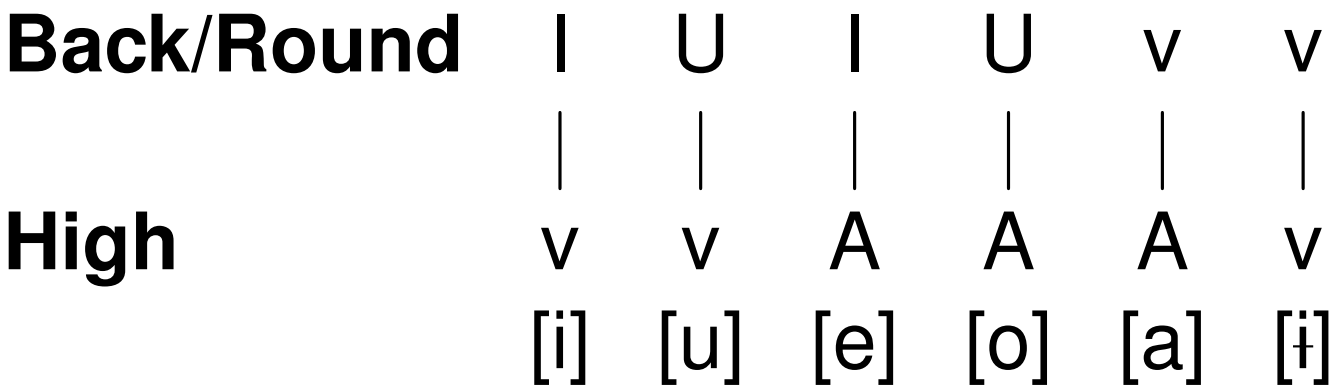
7-Vowel System in Charm+Government Theory

Sounds			**Elements**		
i	**y**	u	I	**I+U**	U
e	**ø**	o	I+A	**I+A+U**	U+A
	a			A	

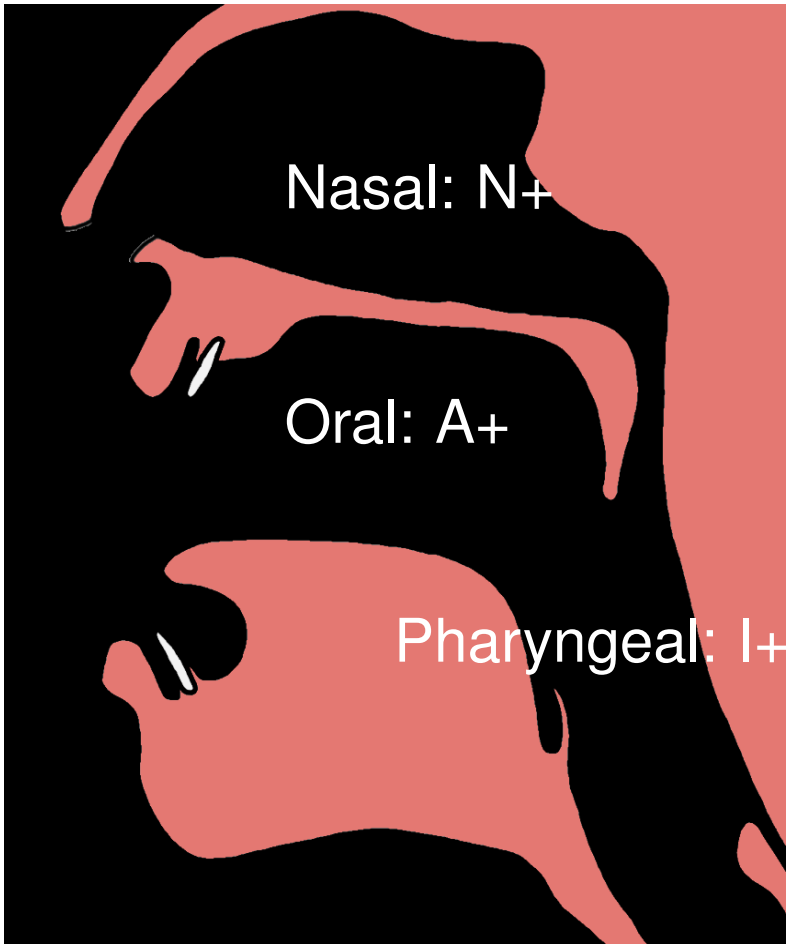
Cold and Hot Features

I	U	A	v
-round	**+round**	-round	-round
-back	+back	+back	+back
+high	+high	**-high**	+high
-low	-low	+low	

Elements and Features

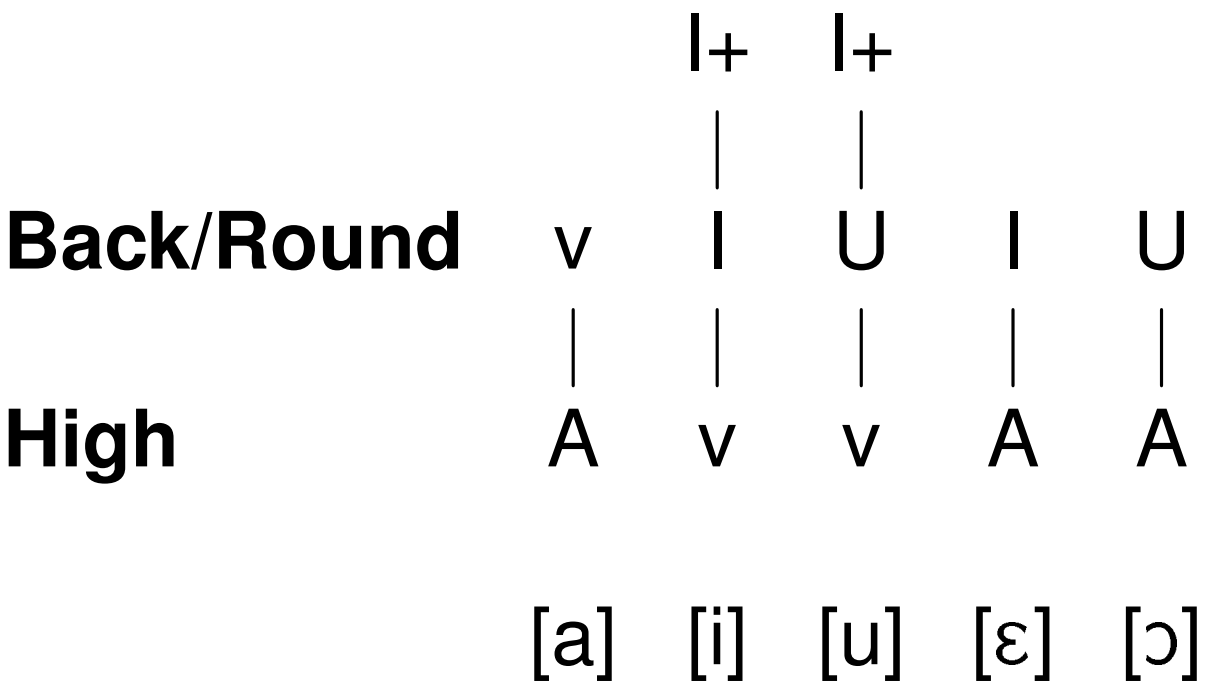


Charms

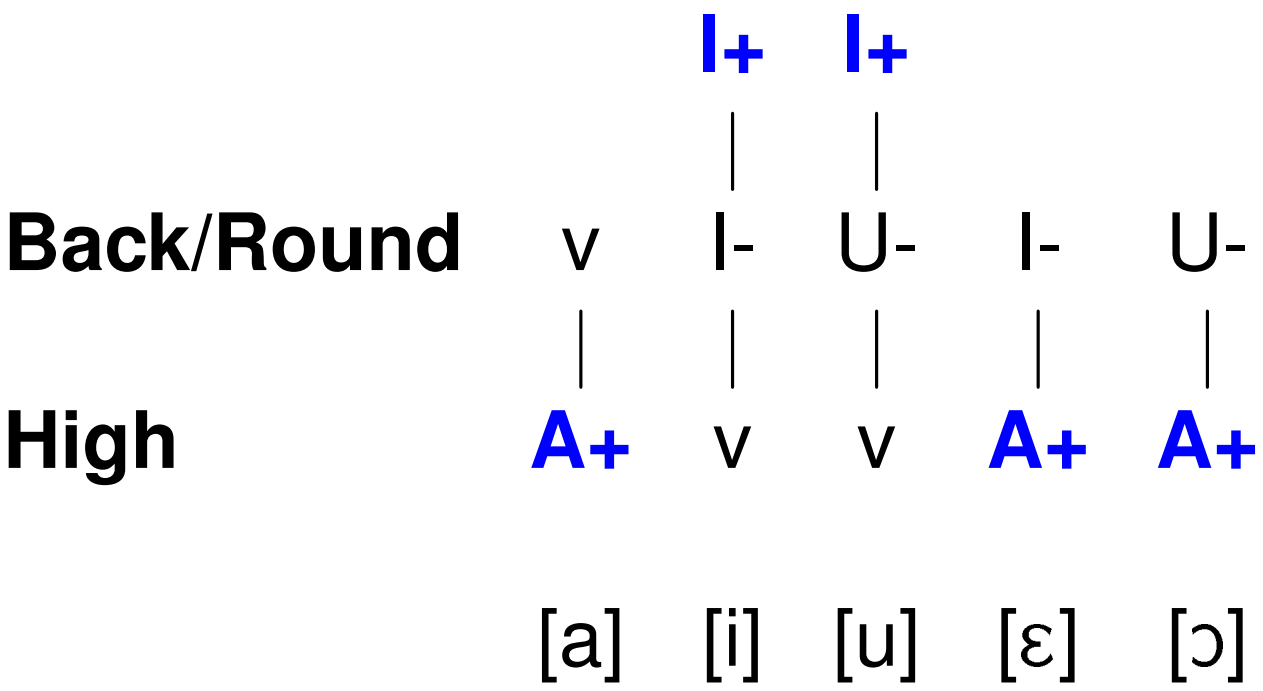


+ATR = I+

Fula Vowels



Charms in Fula Vowels



Spreading

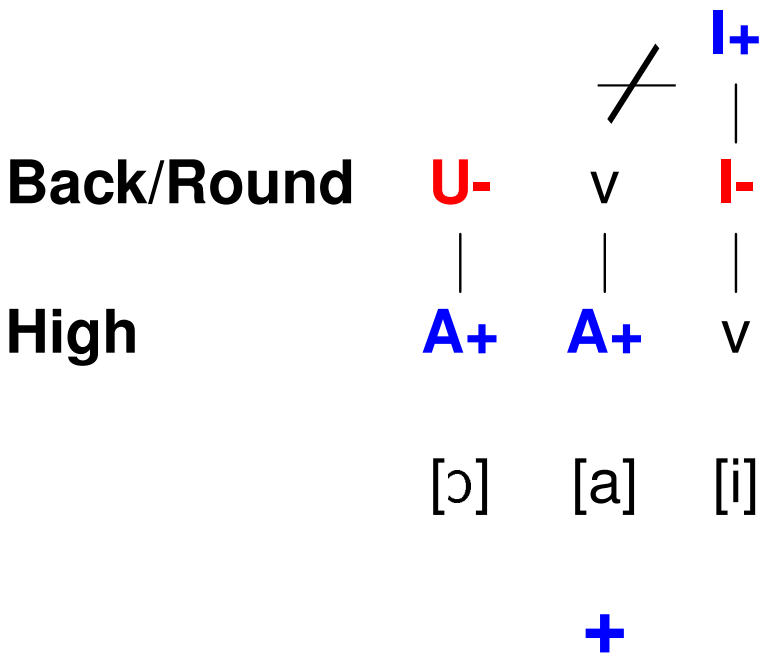
l+ obligatory spreads from right to left in Fula

Predictions

High Vowels	are always +ATR (I+)	⇐	**Inventory**
Mid Vowels	+ATR are +ATR (I+) iff leftadjacent to a high vowel or leftadjacent to a +ATR mid vowel	⇐	**Spreading**
Low Vowels	Always -ATR	⇐	**Problem**

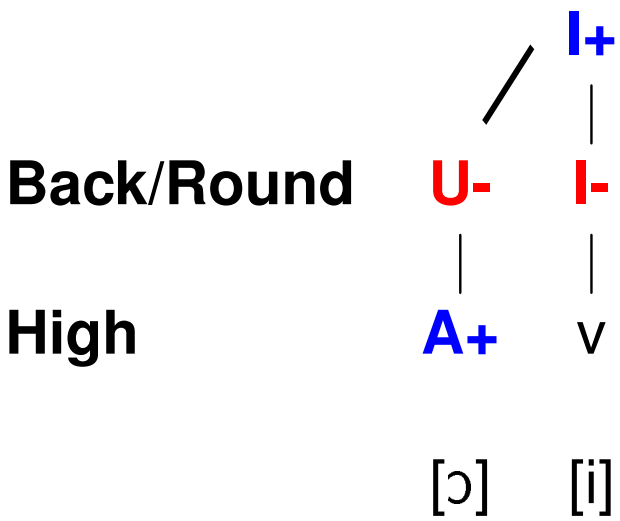
Why is [a] opaque?

A (positive) charm can only spread to a vowel which is not already charmed (positive)



Spreading with Mid Vowel

A (positive) charm can only spread to a vowel which is not already charmed (positive)

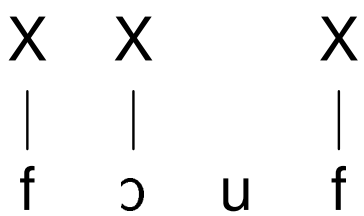


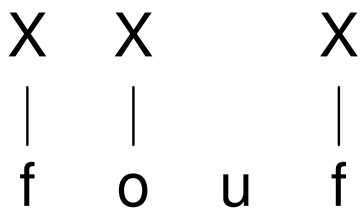
Problem: Spreading Mid Vowels

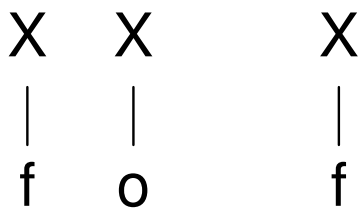
fof ‘all’

+ATR	**-ATR**	
lef-ol		‘ribbon’
lef-el	lɛf-ɔn	dim. (sg. and pl.)
cooyŋ-gel	cɔɔ-kɔn	‘spinster’ ‘(dim. sg. and pl.)’

Paradis (1992):







Basic Pattern

Input: rɛɛr-on

	S-Identity	IO-Identity$_{\text{Affix}}$	IO-Identity$_{\text{Root}}$
a. rɛɛr-ɔn		*!	
b. rɛɛr-on	*!		
☞ c. reer-on			*

Fula Vowel Inventory

		front		back
high	advanced	i		u
	retracted			
mid	advanced	e		o
	retracted	ɛ		ɔ
low	advanced			
	retracted		a	

Problem: OT doesn't allow underlying restrictions on inventories

Solution I

***[+low +ATR]:** No low +ATR vowels

Input: bɔɔt-ar-i

	*[+low +ATR]	S-Ident	IO-Ident$_{Affix}$	IO-Ident$_{Root}$
☞ a. bɔɔtari		*		
b. bootəri	*!		*	*

Input: bɔɔt-ər-i

	*[+low +ATR]	S-Ident	IO-Ident$_{Affix}$	IO-Ident$_{Root}$
☞ a. bɔɔtari		*	*	
b. bootəri	*!			*

Subproblem

***[+low +ATR]:** No low +ATR vowels

Input: bɔɔt-ar-i

	*[+low +ATR]	S-Ident	IO-Ident$_{Affix}$	IO-Ident$_{Root}$
☛ a. bɔɔtari		*!		
☞ b. bɔɔtarɪ				
c. bootəri	*!		*	*

Solution II

***[+high -ATR]:** No high -ATR vowels

Input: bɔɔt-ar-i

	*[+high -ATR]	*[+low +ATR]	S-Ident
☞ a. bɔɔtari			*
b. bɔɔtarɪ	*!		

Input: bɔɔt-ar-ɪ

	*[+high -ATR]	*[+low +ATR]	S-Ident
☞ a. bɔɔtari			*
b. bɔɔtarɪ	*!		

Fula: Multiple Spreading

d**o**g-**oo**-r**uu**	‘runner’	d**ɔ**g-**ɔ**-w**ɔ**n
l**o**t-**oo**-r**uu**	‘washer’	l**ɔ**t-**ɔ**-w**ɔ**n

Problem: Why does the rightmost suffix spread?

Spreading of rightmost Suffix

Input: dog-o-wɔn

		S-Ident	IO-Ident$_{Affix}$	IO-Ident$_{Root}$
	a. dog-o-wɔn	*!		
☞	b. dog-o-won		*	
☛	c. dɔg-ɔ-wɔn		*	*!

Solution

IO-Ident$_{\text{Right}}$: The rightmost output vowel is identical in ATR to the corresponding input vowel

Input: dog-o-wɔn

	IO-Ident$_{\text{Right}}$	S-Ident	IO-Ident$_{\text{Affix}}$	IO-Ident$_{\text{Root}}$
a. dog-o-wɔn		*!		
b. dog-o-won	*!		*	
☞ c. dɔg-ɔ-wɔn			*	*

Exceptions from Paradis (1992)

IO-Ident$_{\text{Right}}$: The rightmost output vowel is identical in ATR to the corresponding input vowel

Input: lɛf-el

	IO-Ident$_{\text{Right}}$	S-Ident	IO-Ident$_{\text{Affix}}$	IO-Ident$_{\text{Root}}$
a. lɛf-el		*!		
b. lɛf-ɛl	*!		*	
☞ c. lef-el				*