

38th West Coast Conference on Formal Linguistics

# The morphophonology of A'ingae verbal stress

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# people and language



indigenous languages  
of southern Colombia  
and northern Ecuador  
(Curnow and  
Liddicoat, 1998)

# people and language

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- the Cofán people
  - indigenous to Ecuador and Colombia
  - traditionally hunter-gatherer (Cepek, 2012)
- the A'ingae language (Cofán, ISO 639-3: **con**)
  - language isolate
  - ca. 1500 speakers (Repetti-Ludlow et al., 2019)
  - **complex morphologically-conditioned stress**
    - correlated with duration and an increase in F0
  - two varieties: **Ecuadorian** and Colombian

# roadmap

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- six suffix behaviors
- analytical strategy
  - 2 binary morphophonological parameters
  - typologically unattested foot-level glottal accent
- application of the analysis
- Cophonology Theory (Anttila, 1997; Orgun, 1996; others)
- account outline

# the solution

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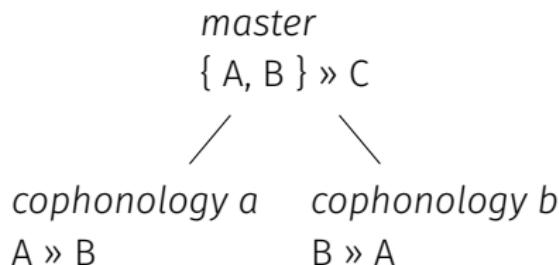
- morphological factors
  - prestressing: + vs -
  - stem faithfulness: recessive vs dominant
  - -prestressing ↵ +prestressing
  - $2 \times 2 = 4$  suffix types
- phonological factors
  - glottal accent restricted to the head foot

# the application

			a.	opat <sup>h</sup> w ...- <sup>m</sup> bi	b.	<u>á</u> fase ...- <sup>m</sup> bi	+prestress recessive
				'pick ...-NEG'		'insult ...-NEG'	
(1)	-?tʃo	'SBRD'	-prestress recessive	? o(páthw-?)tʃo- <sup>m</sup> bi		(áfa)se-tʃo- <sup>m</sup> bi	
(2)	-ja	'IRR'	+prestress recessive	opat <sup>h</sup> ú-ja- <sup>m</sup> bi		áfase-ja- <sup>m</sup> bi	
(3)	-hi	'PRCM'	-prestress recessive	opat <sup>h</sup> w-hí- <sup>m</sup> bi		áfase-hi- <sup>m</sup> bi	
(4)	-?he	'IMPV'	-prestress dominant	? o(páthw-?)he- <sup>m</sup> bi		a(fáse-?)he- <sup>m</sup> bi	
(5)	-?k <sup>h</sup> a	'DMN'	+prestress dominant	opat <sup>h</sup> ú-?k <sup>h</sup> a- <sup>m</sup> bi		afasé-?k <sup>h</sup> a- <sup>m</sup> bi	
(6)	-k <sup>h</sup> o	'RCPR'	-prestress dominant	opat <sup>h</sup> w-k <sup>h</sup> ó- <sup>m</sup> bi		afase-k <sup>h</sup> ó- <sup>m</sup> bi	

# Cophonology Theory

- interface of morphology and phonology
- morphemes modelled as sequential constructions
- cophonology  $\stackrel{\text{def}}{=}$  morpheme-specific constraint ranking
- cophonologies form a grammar lattice
- master ranking  $\stackrel{\text{def}}{=}$  overarching phonology of the language



(Caballero, 2011; Inkelas and Zoll, 2007)

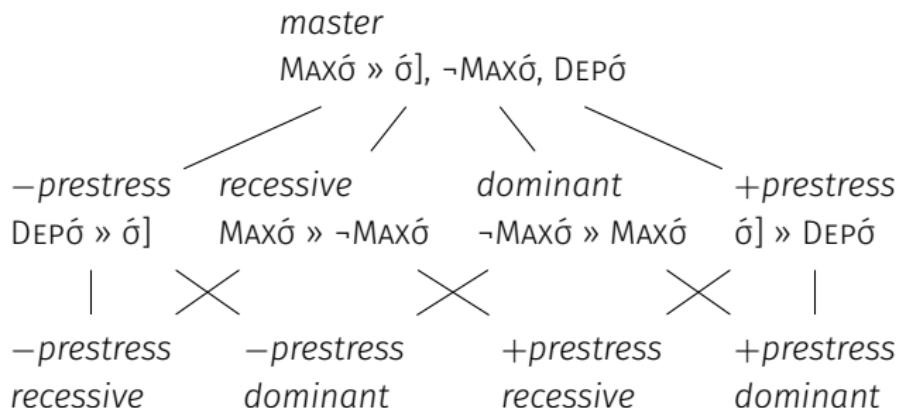
## morphological variation: stem faithfulness

- recessive  $\stackrel{\text{def}}{=}$  respects lexical stress of the stem
- dominant  $\stackrel{\text{def}}{=}$  disregards lexical stress of the stem
- MAXIMALITYSTRESS, or: MAXÓ  
Stress is not deleted. (McCarthy and Prince, 1995)
- ANTIMAXIMALITYSTRESS, or:  $\neg\text{MAXÓ}$   
Stress is deleted. (Alderete, 1999; Inkelas and Zoll, 2007)
- *recessive suffix:*  
 $\text{MAXÓ} \gg \neg\text{MAXÓ}$
- *dominant suffix:*  
 $\neg\text{MAXÓ} \gg \text{MAXÓ}$

## morphological variation: prestressing

- prestressing  $\stackrel{\text{def}}{=}$  stresses the preceding syllable (the last syllable of the stem)
- ALIGN(STEM, R, STRESS, R), or: ó]  
Stress is on the stem-final syllable. (McCarthy and Prince, 1993)
- DEPENDENCE(STRESS), or: DEPÓ  
Stress is not epenthesized. (McCarthy and Prince, 1995)
- *+prestressing*  
ó] » DEPÓ
- *-prestressing*  
DEPÓ » ó]

# grammar lattice, first iteration



# construction application, an example

(6) b. afase-k<sup>h</sup>ó-<sup>m</sup>bi

'insult-RCPR-NEG'

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*-prestressing dominant*

[áfase]k<sup>h</sup>o: ~MAXÓ » MAXÓ, DEPÓ » ó]

---

-  i. afasek<sup>h</sup>o \* \*
- ii. áfasek<sup>h</sup>o \*! \*
- iii. afasék<sup>h</sup>o \* \*!
- 

---

*+prestressing recessive*

[afasek<sup>h</sup>o]<sup>m</sup>bi: MAXÓ » ó] » ~MAXÓ, DEPÓ

---

- i. afasek<sup>h</sup>o<sup>m</sup>bi \*!
-  ii. afasek<sup>h</sup>ó<sup>m</sup>bi \*
-

# glottal accent

- stress falls on the 2<sup>nd</sup> syllable to the left of the glottal stop
- final in the head foot: (óσ?)
- glottal stop is a suprasegmental feature
  - culminative—restricted to the head foot
  - restricted to codas (but see Repetti-Ludlow et al., 2019)
  - the only coda
  - ?-initial suffixes analogous to floating tones
  - predictable distribution in roots
    - Mixtec (Macaulay and Salmons, 1995)
    - Desano (Silva, 2016)

## overarching phonology: glottal accent

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- GLOTTALFOOT, or: FT?  
Glottal accent associates to the right edge of the head foot.
- MAXIMALITY(?) or: MAX?  
Glottal accent is not deleted.
- DEPENDENCE(STRESS), or: DEPÓ  
Stress is not epenthesized.
- *master ranking:*  
FT? » MAX? » DEPÓ

## summary

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- $2 \times 2 = 4$  morpheme types
- foot-level glottal accent
- Cophonology Theory captures generalizations

# Thank you!

special thanks to

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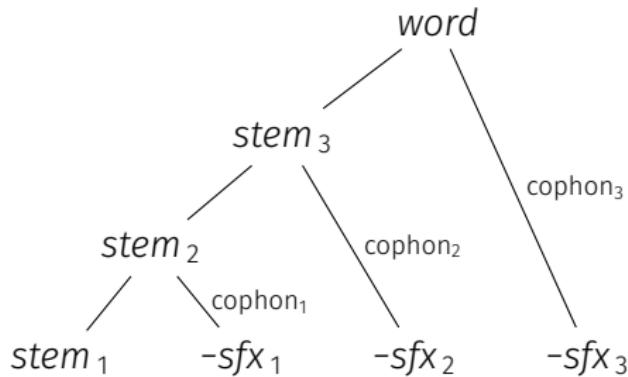
of Linguistics

my practice  
talk audience  
at Brown CLPS

my rescuers  
in the night  
of the flood

and all others  
who supported  
my work

# hierarchical structure of a complex word



(Caballero, 2011; Inkelas and Zoll, 2007)

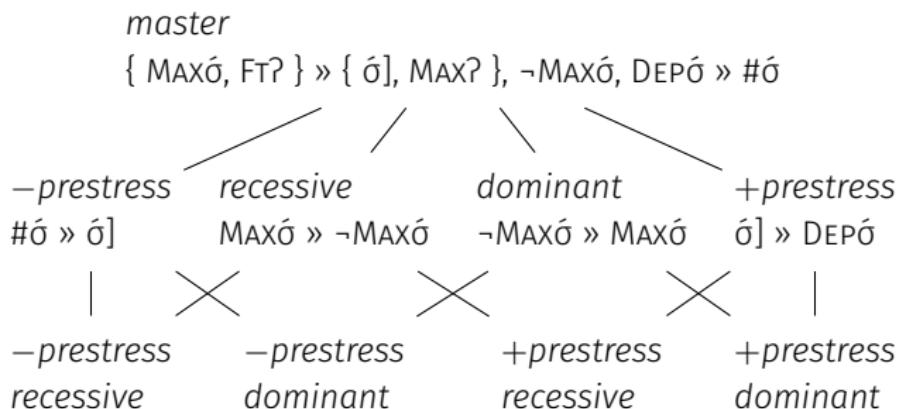
## $2 \times 2 = 4$ factorial classification

	<i>recessive</i>	<i>dominant</i>
<i>+prestress</i>	-ja 'IRR' - <sup>m</sup> bi 'NEG'	-?k <sup>h</sup> a 'DMN' -hama 'PROH'
<i>-prestress</i>	-hi 'PRCM' -ŋa 'CAUS'	-k <sup>h</sup> o 'RCPR' -je 'PASS'

# morphological template

VOICE / VALENCE	ASP	MOT	NUM	MOD	POL	TAX	INFO	STRUCTURE	ILL	PER
		-? <sup>n</sup> gi <sup>x</sup>	'			-?ja <sub>+</sub>			-tsu <sub>+</sub>	
-?he <sup>x</sup>	VEN	'		-ja <sub>+</sub>	- <sup>m</sup> bi <sub>+</sub>	VER			3	
IMPV	-? <sup>n</sup> ga <sup>x</sup>	'		IRR	NEG	HYP			-te <sub>+</sub>	-ki <sub>+</sub>
	AND	'					-?hi <sub>+</sub>	-?ta <sub>+</sub>	-?k <sup>h</sup> e <sub>+</sub>	RPT
-ja	-k <sup>h</sup> o <sup>x</sup>	-je <sup>x</sup>	-hi	'	-?fa <sub>+</sub>		EXCL	NEW	ADD	2
CAUS	RCPR	PASS	PRCM	'	PLS				-ti <sub>+</sub>	- <sup>n</sup> gi <sub>+</sub>
			-?nak <sup>h</sup> a <sup>x</sup>	'		-je <sub>+</sub>	INF			INT
			SMFC	'				-?ha <sub>+</sub>		1
			-?k <sup>h</sup> a <sub>+</sub> <sup>x</sup>					CNTR		
			DMN				DCV			-teki <sub>+</sub>
										RPT.2
<hr/>										
HYP:	-pa <sub>+</sub>	-si <sub>+</sub>	-?ma <sub>+</sub>	-?ni <sub>+</sub>	-sa?ne <sub>+</sub>					
	SS	DS	FRST	LOC	APPR					
<hr/>										
DCV:	-ha <sub>+</sub>	-k <sup>h</sup> a <sub>+</sub>	-?se <sub>+</sub>	-hama <sub>+</sub> <sup>x</sup>						
	IMP	IMP2	IMP3	PRHB						

# grammar lattice, second iteration



-ja 'IRR:' +prestressing recessive

- (2) a. opat<sup>h</sup>w-ja-<sup>m</sup>bi  
'pick-IRR-NEG'

- b. áfase-ja-<sup>m</sup>bi  
'insult-IRR-NEG'

---

[opat<sup>h</sup>w]ja: MAXÓ » ó]

---

- i. opat<sup>h</sup>wja \*!
  - ii. ópat<sup>h</sup>wja \*!
  - iii. opát<sup>h</sup>wja \*!
  - iv.  opat<sup>h</sup>úja \*!
  - v. opat<sup>h</sup>wjá \*!
- 

---

[áfase]ja: MAXÓ » ó]

---

- i. afaseja \*! \*
  - ii.  áfaseja \*!
  - iii. afáseja \*! \*
  - iv. afaséja \*!
  - v. afasejá \*! \*
- 

---

[opathwja]<sup>m</sup>bi: MAXÓ » ó]

---

- vi.  opat<sup>h</sup>úja<sup>m</sup>bi \*
  - vii. opat<sup>h</sup>wjá<sup>m</sup>bi \*!
- 

---

[áfaseja]<sup>m</sup>bi: MAXÓ » ó]

---

- vi.  áfaseja<sup>m</sup>bi \*
  - vii. afasejá<sup>m</sup>bi \*!
-

# -hi 'PRCM:' –prestressing recessive

(3) a. opat<sup>h</sup>w-hí-<sup>m</sup>bi

'pick-PRCM-NEG'

b. áfase-hi-<sup>m</sup>bi

'insult-PRCM-NEG'

---

[opat<sup>h</sup>w]hi: MAXÓ, DEPÓ

---

- i. opat<sup>h</sup>whi
  - ii. ópat<sup>h</sup>whi \*!
  - iii. opát<sup>h</sup>whi \*!
  - iv. opat<sup>h</sup>úhi \*!
  - v. opat<sup>h</sup>whí \*!
- 

---

[opat<sup>h</sup>whi]<sup>m</sup>bi: MAXÓ » ó]

---

- i. opat<sup>h</sup>whi<sup>m</sup>bi \*!
  - ii. opat<sup>h</sup>whí<sup>m</sup>bi
- 

---

[áfase]hi: MAXÓ, DEPÓ

---

- i. afasehi \*!
  - ii. áfasehi
  - iii. afásehi \*! \*
  - iv. afaséhi \*! \*
  - v. afasehí \*! \*
- 

---

[áfasehi]<sup>m</sup>bi: MAXÓ » ó]

---

- i. áfasehi<sup>m</sup>bi \*
  - ii. afasehí<sup>m</sup>bi \*!
-

-?k<sup>h</sup>a 'DMN:' +prestressing dominant

- (5) a. opat<sup>h</sup>w-?k<sup>h</sup>a-<sup>m</sup>bi  
 'pick-DMN-NEG'

- b. afasé-?k<sup>h</sup>a-<sup>m</sup>bi  
 'insult-DMN-NEG'

---

	[opat <sup>h</sup> <u>w</u> ]?	k <sup>h</sup> a:	¬MAXÓ	»	ó]
i.	opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> a		*!		
ii.	<u>ó</u> pat <sup>h</sup> <u>w</u> ?k <sup>h</sup> a		*!		
iii.	<u>o</u> pá <u>t</u> <sup>h</sup> <u>w</u> ?k <sup>h</sup> a		*!		
iv.	opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> a				
v.	opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> <u>á</u>		*!		

---



---

	[áfase]?	k <sup>h</sup> a:	¬MAXÓ	»	ó]
i.	afase?	k <sup>h</sup> a			*!
ii.	<u>á</u> fase?	k <sup>h</sup> a	*!		*
iii.	<u>a</u> jáse?	k <sup>h</sup> a			*!
iv.	afasé?	k <sup>h</sup> a			
v.	afase?	k <sup>h</sup> <u>á</u>			*!

---



---

	[opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> a] <sup>m</sup> bi:	MAXÓ	»	ó]
i.	opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> a <sup>m</sup> bi		*	
ii.	opat <sup>h</sup> <u>w</u> ?k <sup>h</sup> <u>á</u> <sup>m</sup> bi	*!		

---



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	[afasé]?k <sup>h</sup> a] <sup>m</sup> bi:	MAXÓ	»	ó]
i.	afasé]?k <sup>h</sup> a <sup>m</sup> bi		*	
ii.	afase]?k <sup>h</sup> <u>á</u> <sup>m</sup> bi	*!		

---

$-k^h o$  'RCPR:' –*prestressing dominant*

- (6) a.  $\text{opat}^h w - \underline{k^h ó}^- m bi$   
 'pick-RCPR-NEG'

- b.  $a f a s e - \underline{k^h ó}^- m bi$   
 'insult-RCPR-NEG'

[opat <sup>h</sup> w]k <sup>h</sup> o: $\neg$ MAXÓ » DEPÓ	[áfase]k <sup>h</sup> o: $\neg$ MAXÓ » DEPÓ
i. opat <sup>h</sup> wk <sup>h</sup> o	i. afasek <sup>h</sup> o
ii. <u>ó</u> pat <sup>h</sup> wk <sup>h</sup> o	ii. <u>á</u> fasek <sup>h</sup> o * !</td
iii. <u>o</u> páth <u>w</u> k <sup>h</sup> o	iii. <u>a</u> fásek <sup>h</sup> o * !</td
iv. opat <sup>h</sup> w <u>k</u> <sup>h</sup> o	iv. afasé <u>k</u> <sup>h</sup> o * !</td
v. opat <sup>h</sup> w <u>k</u> <u>ó</u>	v. afase <u>k</u> <sup>h</sup> ó * !</td
[opat <sup>h</sup> wk <sup>h</sup> o] <sup>m</sup> bi: MAXÓ » ó]	[afasek <sup>h</sup> o] <sup>m</sup> bi: MAXÓ » ó]
i. opat <sup>h</sup> w <u>k</u> <sup>h</sup> <u>o</u> <sup>m</sup> bi	i. afasek <sup>h</sup> <u>o</u> <sup>m</sup> bi * !</td
ii. opat <sup>h</sup> w <u>k</u> <u>ó</u> <sup>m</sup> bi	ii. afase <u>k</u> <sup>h</sup> <u>ó</u> <sup>m</sup> bi

-?tʃo 'SBRD:' –prestressing recessive with ?

- (1) a. opáthw-?tʃo(-<sup>m</sup>bi)

---

[opat<sup>h</sup>w] ?tʃo: MAXÓ, FT? » MAX? » DEPÓ

---

- i. opat<sup>h</sup>w?tʃo \*!
  - ii. opat<sup>h</sup>wtʃo \*!
  - ☞ iii. o(pát<sup>h</sup>w?)tʃo \*
- 

- b. áfase-tʃo(-<sup>m</sup>bi)

---

[(áfa)se] ?tʃo: MAXÓ, FT? » MAX? » DEPÓ

---

- i. (áfa)se?tʃo \*!
  - ☞ ii. (áfa)setʃo \*
  - ii. a(fáse)tʃo \*!
-

## -?he 'IMPV:' –prestressing dominant with ?

- (4) a. opát<sup>h</sup>w-?he(-<sup>m</sup>bi)

---

[opat<sup>h</sup>w]?he: ¬MAXÓ, FT? » MAX? » DEPÓ

---

- i. opat<sup>h</sup>w?he \*!
  - ii. opat<sup>h</sup>whe \*!
  - iii. o(pát<sup>h</sup>w?)he \*
- 

- b. afáse-?he(-<sup>m</sup>bi)

---

[(áfa)se]?he: ¬MAXÓ, FT? » MAX? » DEPÓ

---

- i. afase?he \*!
  - ii. afasehe \*!
  - iii. (áfasehe) \*!
  - iv. a(fáse)he \*
-

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