A Stratal OT Account of Alabama Agent Agreement

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SSILA 2026
January 10, 2026

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Overview of the Alabama Language

- Spoken by Alabama-Coushatta Tribe of Texas, located near Livingston, Texas
- Around 100 speakers
- WOLF lab at Harvard began working with the tribe in 2023 with a total of 21 native speakers (age range: mid 40s—late 80s)

Overview of the Alabama Language

- Muskogean, SOV Language
- Highly Inflectional with Active-Stative Agreement: Series I for agent, Series II for patient, and Series III for applicative/goal arguments.
- Nominative-Accusative marking for nominals; *-k* marks nominative, *-n* marks oblique.

Agent Agreement

- Alabama agent markers appear as prefixes, infixes, or suffixes depending on use case.
- Only 1SG.AGT varies for tense & polarity — also only agent marker to always be suffix in positive contexts[1]
- 1SG (non-negative), 3SG, and 3PL fixed with regard to position on the verbal stem. 2SG, 2PL, 1PL move depending on verb.

(1)

	SG	PL
1	-li; -aa (FUT); a-/-a-/-aa- (NEG)	il-/-li-/-l-/-hili
2	is-/-chi-/-s-/-chi	has-/-hachi-/-has-/-hachi
3	Ø	(ho-)

[1] a feature shared in some other Muskogean languages like Choctaw (Broadwell 2006)

Example Paradigm: *hosso* ‘to write’

(2)

	SG	pl
1	*hosso-li-ti* ‘I wrote.’	*ho sso-ti* ‘We wrote.’
2	*ho<chi>sso-ti* ‘You wrote.’	*ho<hachi>sso-ti* ‘Y’all wrote.’
3	*hosso-ti* ‘She/he wrote.’	*(ho)-hosso-ti* ‘They wrote.’

Alabama Verb Frame

Montler and Hardy (1990) propose agent morphemes are monosegmental (except: -ha- in 2PL is additional morpheme), and placed in accordance with Alabama Verb Frame.

(3) **Alabama Verb Frame:**
Derived verbs must end in a two-syllable, three-mora foot.
(AKA-end in HL)
(Montler & Hardy, 1990)

(4) Dfn. **Type I agreement placement:** Montler & Hardy, 1990
First person plural is /l/; second person is /tʃ/. Affix the agreement marker so that it will add at least one mora to the stem.

☞ /i/'s in derived forms are epenthetic, not inherent to morphemes!
☞ -s- and -ch- forms are allomorphs of the same morpheme; /tʃ/ to [s] before consonants is a regular phonological process (Montler & Hardy, 1990)

Placement Rules (Montler & Hardy, 1990)

- For a monosegmental morpheme -μ-, insert wherever will add a mora (either add a coda to an open syllable, or add a full open syllable if all nonfinal syllables are closed.)

Syll. Structure	μ Placement	Ex.	Meaning	Surface
i.CV	iμCV	*ipa*	'to eat'	iμ-pa
CVV.CV	CVVμCV	*choopa*	'to buy'	choo-μ-pa
CVC.CV	CVμiCCV	*hokcho*	'to pass gas'	ho-μi-kcho
CV.CV	CVCμi	*aɬi*	'to put in'	aɬ-μi
CVC.li	CVCμi	*bit.li*	'to dance'	bit-μi
CVV.li	CVVμi	*soo.li*	'to hold'	soo-μi

Placement rules for -ch- '2SG.AGT'

Syll. Structure	*-ch-* Placement	Ex.	Meaning	Surface
i.CV	i*s*CV	*ipa*	'to eat'	i*s*-pa
CVV.CV	CVV*s*CV	*choopa*	'to buy'	choo-*s*-pa
CVC.CV	CV*ch*iCCV	*hokcho*	'to pass gas'	ho-*ch*i-kcho
CV.CV	CVC*ch*i	*aɬi*	'to put in'	aɬ-*ch*i
CVC.li	CVC*ch*i	*bit.li*	'to dance'	bit-*ch*i
CVV.li	CVV*ch*i	*soo.li*	'to hold'	soo-*ch*i

Agent Agreement

Montler & Hardy's rules suggest the basic agent morphemes are instead:

(5)

	SG	PL
1	-/li/; -/aː/ (FUT); /a/ (NEG[2])	/l/
2	/tʃ/	/ha-/ + /tʃ/
3	Ø	(/ho/-)

[2]Montler & Hardy propose a separate set of rules for negative morpheme placement!

Montler & Hardy Drawbacks

Not all positions which abide by Montler & Hardy's Type I Agreement Placement rule are possible. Some positions seem to be better than others.

(6) *hof-il-na-ti
smell-1PL.AGT-smell-PST1
Intended: 'We smelled it'

(7) ho-li-fna-ti
smell-1.PL.AGT-smell-PS1
'We smelled it'

Montler & Hardy Drawbacks: Roots

Agent markers only move following the syllable structure of the verb root (alternatively: final morpheme of verb stem); CVCV derived forms of iCV verbs place the agreement marker as if the verb were iCV.

(8) a. maat-ibi-ti
DIR-kill-PST
'She/he hunted'

b. maat-is-bi-ti
DIR-2SG.AGT-kill-PST
'You hunted'

c. *maat-ib-chi-ti
DIR-kill-2SG.AGT-PST
Intended: 'You hunted.'
☞ *Unexpected given Montler & Hardy's proposal!*

Comparisons to other Muskogean languages

- A further (weaker) evidence for a different approach comes from comparative Muskogean data;
- In Choctaw (and other Muskogean languages), agent markers also contain the vowel /i/, even when the epenthetic vowel is not /i/

(9) apa=li-tok
eat=1.SG-PTT
'I ate' (Broadwell, 2006)

(10) ish-pa-tok
2.SG-eat-PT
'You ate' (Broadwell 2006)

- Supposing /i/ *is* the epenthetic vowel in Alabama (Montler & Hardy 1990), we suggest this is not the same vowel in the agent morphemes. Instead, we posit the agent morphemes to be monosyllabic /-Ci/ suffixes.

Proposal

- Making use of Stratal OT (Kiparsky 2015), an extension of Optimality Theory (Prince & Smolensky 1993, 2004) we suggest the verbal derivation is split into three parts (strata):
  1. Pre-lexical stage/stratum: stress is assigned to underived V head
  2. Agent agreement, negation, and voice morphology attached. A set of constraints cause infixation or prefixation to avoid final overt feet/heavy final syllable.
  3. All other affixes attached, with faithfulness constraints preventing infixation.
- We refer to feet as a basic unit of phonological form—either heavy (CVC or CVV) or light (CV or V) syllables. We assume a definition of trochees as ($\acute{L}L$) or (H)[3] sequences and iambs as ($L\acute{L}$), ($L\acute{H}$), or (H) sequences.

[3](HL) creating processes are marked cross-linguistically and not considered in this presentation(Mellander 2003, Prince Smolensky 2004

Prelexical phonology

- Stress inherently assigned to trochees; we propose a constraint ranking preferring Trochees and final footed syllables.

(11) **Alabama Root-Level OT Hierarchy**
WeightToStress, FtForm-Trochee >> Align-R >> Parse >> FtBin

tʃoːpa 'buy'		WeightToStress	FootForm	Parse	FtBin
a.	('tʃoː)pa			*!	
b. ☞	('tʃoː)('pa)				*
c.	('tʃoː.pa)		*!		
d.	tʃoːpa	*!		**	
e.	tʃoː('pa)	*!		*	

Prelexical Phonology: CVCV derivation

hotʃifa 'to name'		WeightToStress	FtForm-T	Align-R	Parse
a.	(ho)(tʃifa)			∗!∗	
b. ☞	ho(tʃifa)				∗
c.	(hotʃi)(fa)			∗!	
d.	(hotʃi)fa			∗!	∗
e.	ho(tʃifa)		∗!		∗

Stem-level phonology (I)

- 2.agt, 1pl.agt, neg, and med.pass attach in Stem-level I.
- We propose two new constraints: Max-V^{strong} and CV-Contiguity(Foot), the latter in part developed from Heinz (2004)'s MAX-Contiguity.

(12) DEF. Max^{strong}: don't delete stressed/strong-position vowels

(13) DEF. Contiguity($\alpha\beta$, $\mathbb{D}$): if α immediately precedes β in the input string within domain $\mathbb{D}$, α and β are not intervened by a Domain $\mathbb{D}$ boundary

- Goal: Explain why final vowels in CVVCV, CVCCV verbs are not deleted (and infixation is preferred), but final vowels are deleted and suffixation preferred for CVCV verbs.

Stem-level phonology (I) - Example Derivation

We propose the following constraint hierarchy

(14) **Alabama Stem-level OT Hierarchy**
MAX-V$^{\text{STRONG}}$, FTFORM-IAMBIC >> NONFINALITY >> DEP$_\mu$ >> PARSE >> MAX-V, CV-CONTIGUITY >> DEP, EDGEMOST

('tʃoː)('pa)tʃi 'you buy'		Max-V^{strong}	Nonfinality	Parse	CV-Contiguity
a.	('tʃoː)('patʃi)		*!		
b. ☞	('tʃoːs)pa			*	
c.	('tʃoːp)tʃi	*!		*	
d.	('tʃoːp)tʃa			*	*!

Stem-level phonology (I) - CVCV Example Derivation

(15) **2.sg Agent Agreement CVCV+**

ho('tʃifa)tʃi		Max-V^{strong}	Nonfinality	Parse	CV-Contiguity	Edgemost
a. ☞	(hotʃif)tʃi			*		
b.	(hotʃis)fa			*		*!*
c.	(hotʃif)tʃa			*	*!	

Productive and Optimizable

- Kalin, 2022, suggests that infixation in Alabama is not optimizable. We have an OT account that provides evidence on the contrary.
- "the Alabama middle voice exponents are best understood as distributed and placed based on arbitrary (non-optimizing) conditions [...] Once exponent choice and pivot/placement is determined, conformation to the AVF (Alabama Vowel Frame) and to the -adding condition is regulated by vowel epenthesis and vowel deletion, i.e., by phonological processes, not morphological ones." (Kalin, 2022)

Additional: Placement rules for -ki 'Negative'[4]

Syll. Structure	-*k*- Placement	Ex.	Meaning	Surface
i.CV	i*k*C-o	*ipa*	'to eat'	i*k*-p-o
CVV.CV	CVV*kii*C-o*	*choopa*	'to buy'	choo-*kii*-p-o
CVC.CV	CV*ki*CC-o	*hokcho*	'to pass gas'	ho-*ki*-kch-o
CV.CV	CVC*k*-o	*aɬi*	'to put in'	aɬ-*k*-o
CVC.li	CVC*k*-o	*bit.li*	'to dance'	bit-*k*-o
CVV.li	CVV*k*-o	*soo.li*	'to hold'	soo-*k*-o

[4]Negative derived verbs always include a final suffix -o, which deletes any previous vowel, resulting in the final -i of -ki rarely being overtly expressed.

Stem-Level Phonology (I) - Negation

(16) **2.sg Agent Agreement CVCV+**

ho('tʃifa)ki		Max-V^{strong}	Nonfinality	Parse	CV-Contiguity	Edgemost
a. ☞	(hotʃif)ki			*		
b.	(hotʃik)fa			*		*!*
c.	(hotʃif)ka			*	*!	
d.	ho('tʃifa)ki			**!		
e.	(ho'tʃi)faki			**!		
f.	(ho'tʃi)(fa'ki)		*!			
g.	hotʃi(fa'ki)		*!	**		

Aliilamoolo!

Thank you!

naasminta hachimiksõ?

What questions do you have?

Acknowledgments

Thank you also to all the members of the WOLF lab for contributing to data collection and analysis critical to this work.

Thank you finally to all the Alabama speakers who worked with us tirelessly repeating words and phrases, and who showed us how to fiercely defend a culture, language, and people with love and courage.

Open Question: CVVCV in Negation

- Only CVVCV differ: instead of infixation with syncope, vowel is lengthened.
- Unclear motivation: however, compare agent agreement, where /tʃj/ and /lj/ clusters are disallowed. /sj/ exists in lexical entries, but /lj/ does not.

(17)

a. *aa<s>ya-ti
go<2SG.AGT>go-PST
'Y'all went around'

b. aa<chii>ya-ti
go<2SG.AGT>go-PST
'Y'all went around'

c. is-yaatala
INST-place.down
'Headress'

d. *aa<l>ya-ti
go<1PL.AGT>go-PST
'Y'all went around'

e. aa<lii>ya-ti
go<1PL.AGT>go-PST
'Y'all went around'

Open Question: CVVCV in Negation

- Given this, propose certain phonological clusters banned at this stage of derivation;
- Some constraint *$\textsc{kc}$ might need to be adopted.

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