Parallel affix blocks in Choctaw

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Abstract

Choctaw, a Muskogean language, shows a complex set of restrictions on verbal prefixes which requires reference both to exponence and position class. An approach like that of Information-Based Morphology Crysmann and Bonami (2016) allows us to model the facts correctly.

1 Introduction

Choctaw is a Muskogean language, spoken in Oklahoma and Mississippi. There are several thousand speakers. Choctaw is a configurational language with consistent head-final constituent ordering. Choctaw shows a mix of head-marking and dependent-marking patterns. Verbal agreement works on an active/stative basis, while nominals show nominative/accusative case marking. Choctaw shows complex agglutinative morphology, but it is not polysynthetic and does not have (productive) noun incorporation. Data is from Broadwell (2006) and my notes, unless otherwise indicated.[1]

2 Syntactic overview

The simplest sentences in Choctaw consist of a verb plus a tense marker:

(1) Ǫba-tok.
rain-PT
'It rained.'

(2) Pi̲sa-tok.
see:NGR-PT
'She saw them.'

When there is an overt NP subject, it is marked for case:

[1] I thank Berthold Crysmann, Pam Munro, and Matthew Tyler for comments and discussion of this paper. Examples use the following abbreviations: 1 = first person, 2 = second person, I = agreement from the I set, II = agreement from the II set, III = agreement from the III set, AC = accusative, COM = comitative, CON = contrastive, INS = instrumental, LGR = lengthened grade, LOC = locative, N = negative, NEG = negation, negative, NGR = nasalized grade, NMLZ = nominalizer/nominalization, NM = nominative, P = patient-like argument of canonical transitive verb, PT = past, Q = question particle/marker, S = single argument of canonical intransitive verb, SG = singular, TNS = default tense (in Choctaw).

(3) John-at niya-h.
John-NM fat-TNS
'John is fat.'

Subject NPs are obligatorily marked with the nominative case /-at/. Object NPs are optionally marked with the accusative /-a/:

(4) Gus-at John-a písa-tok.
Gus-NM John-AC see:NGR-PT
'Gus saw John.'

(5) Gus-at písa-tok
Gus-NM see:NGR-PT
'Gus saw him/her/it/them.'

(6) John-a písa-tok.
John-AC see:NGR-PT
'He/she/it/they saw John.'

As these examples show, there is no subject or object agreement morphology for 3rd person. However, a few dozen verbs have suppletive dual and plural forms.

Word order is consistently head-final. The following example (7) shows head-final order in NP, PP, and S:

(7) [Henry im-ofi-yat] [aa-ípa-' nóta'] ittóla-h.
Henry III-dog-NM LOC-eat-NMLZ under lie:NGR-TNS
'Henry's dog is lying under the table.'

Choctaw adds objects via applicative prefixes. If a verb has multiple objects, their order is free:

(8) Charles-at báshpo' nípi' isht-bashli-h.
Charles-NM knife meat INS-cut-TNS
'Charles cut the meat with a knife.'

(9) Charles-at nípi' báshpo' isht-bashli-h.
Charles-NM meat knife INS-cut-TNS
'Charles cut the meat with a knife.'

3 Agreement

3.1 Agreement in intransitives

Intransitives fall into three classes (I, II, III), depending on their subject agreement:

(10) **I subject agreement**
(An-akoosh) baliili-li-tok.
(1SG-CON:NM) run-1:S:I-PT
'I ran.'

(11) **II subject agreement**
(An-akoosh) sa-niya-h.
(1SG-CON:NM) 1:S:II-fat-TNS
'I am fat.'

(12) **III subject agreement**
(An-akoosh) a-ponna-h.
(1SG-CON:NM) 1:S:III-skilled-TNS
'I am skilled.'

An overt subject for any of these clauses will be nominative. As expected in a pro-drop language, overt subjects only appear when contrastive. The overall agreement system is shown in the following table:

	I (nom)	**II (acc)**	**III (dat)**	**N**
1sg	-li	sa-	(s)am-/(s)a-	ak-
2sg	ish-	chi-	chim-/chi-	chik-
1pl paucal	il-/ii-	pi-	pim-/pi-	kil-/kii-
1pl multiple	il-/ii-	hapi-	hapim-/hapi-	kil-/kii-
2pl	hash-	hachi	hachim-/hachi-	hachik-
(default)	--	--	im-/i-	ik-

Table 1 The Choctaw agreement system

When two alternatives are shown, the first is before a vowel and the second is before a consonant. The 1st sg I affix –li is the only suffix in the system; all the other agreement is via prefix.

In some accounts Ulrich (1986), Davies (1986), the I, II, and III sets are called Nominative, Accusative, Dative agreement. Note, however, that overt subjects

show case morphology that works on a regular nominative/accusative basis. The use of the N agreement set is discussed in 3.3 below.

3.2 Agreement in transitives

Transitive verbs also fall into several classes, depending on the sort of agreement with subjects and objects. These are conventionally labelled with the type of agreement for the subject and object (I/II, I/III, II/II, II/III, III/II):

(13) **I/II verb (≈nominative/accusative)**
Chi-písa-li-h.
2:S:II-see:NGR-1:S:I-TNS
'I see you.'

(14) **I/III verb (≈nominative/dative)**
Chi-paya-li-h.
2:S:III-call-1:S:I-TNS
'I call you.'

(15) **II/III verb (≈accusative/dative)**
Chi-sa-yimmi-h.
2:S:III-1:S:II-believe-TNS
'I believe you.'

Choctaw verbs can have several prefixes, whose order is partly determined by position class and partly by syntactic function.

Among the agreement prefixes, there is considerable complexity. If the subject has type I agreement, then the order is I-III-II-verb, as shown in the following examples:

(16) **I agreement precedes II agreement**
Is-sa-písa-tok.
2:S:I-1:S:II-see:NGR-PT
'You saw me.'

(17) **I agreement precedes III agreement**
Ish-i-pila-tok.
2:S:I-III-throw-PT
'You threw it to him.'

(18) **III agreement precedes II agreement**
I-chi-tokcholi-tok.
III-2:S:II-tickle-PT
'He tickled you for her.'

It is difficult to get three agreement prefixes on the same verb; speakers generally rephrase the clause to avoid this outcome.

A small number of transitive verbs trigger II or III agreement for their subjects:

(19) **II subject, II object**
Chi-sa-banna-h
2:S:II-1:S:II-want-TNS
'I want you'

(20) **II subject, III object**
Chi-sa-noklhakacha-h
2:S:III-1:S:II-be:startled-TNS
'I was startled by you.'

(21) **III subject, II object**
Ofi' am-ahchiba-h
dog 1:S:III-tired-TNS
'I'm tired of the dog.'

The numbers of verbs with these agreement patterns is very small. As Broadwell (2006) shows, for most speakers, there is only one verb (bannah 'want') that shows agreement for II subject and II object. There are about ten verbs that show the II subject, III object pattern. And there are about four verbs that show the III subject and II object pattern.

The last group (III subject, II object) is restricted to 3rd person objects for most speakers. Contrast (21) with (22) below.

(22) *?Chi-am-ahchiba-h
2:S:II-1:S:III-tired-TNS
'I'm tired of you.'

The existence of a small number of transitive verbs with II or III subject agreement motivates a revised prefix template:

I/N >	III(dative) >	II(obj) >	II(subj) >	Verb

Table 2 Revised prefix template, version 1

In this template, the II prefixes for subject and object agreement are identical, but need to be ordered with respect to each other. Thus Choctaw displays what Stump (2001,2012) calls the Parallel Block problem – identical exponence in different position classes.

3.3 The status of N prefixes

The examples so far have all involved affirmative verbs. When a verb is negative, the subject agreement shifts from the usual I/II/III to the N prefix.[2]

For verbs with a I subject, the N prefix substitutes for the I.

(23) a. P<u>i</u>sa-li-h
see:NGR-1:S:I-TNS
'I see (him/her/it/them)'

b. ak-píis-o-h.
1:S:N-see:LGR-NEG-TNS
'I don't see'

For verbs with a II or III subject, the default 3rd person N precedes the II or III agreement.

(24) a. Sa-banna-h
1:S:II-want-TNS
'I want (him/her/it/them)'

b. Ik-sa-bánn-o-h.
N-1:S:II-want:LGR-NEG-TNS
'I don't want.'

N prefixes never co-occur with I prefixes, and the two occupy the same position class. Thus we can modify the previous ordering statement to

[2]Verbs in the negative also shift into the aspectual form called the l-grade, which lengthens and accents the penultimate vowel of the verb stem. Broadwell (2006:164-5)

I/N >	III(dative) >	II(obj) >	II(subj) >	Verb

Table 3 Revised prefix template, version 2

The following examples show the relative order of N, II, and III prefixes:

(25) a. Ik-i-makáach-o-h
N-III-say:LGR-NEG-TNS
N-III-say:l-neg-tns

b. Ak-chi-píis-o-h
1:S:N-2:S:II-see:LGR-NEG-TNS
'I didn't see you.'

c. Ik-chi-sa-noklhakáach-o-h
N-2:S:III-1:S:II-startled:LGR-NEG-TNS
'I'm not startled by you.'

3.4 Possessor raising

Choctaw also has rules of possessor raising which cause additional agreement markers to appear on a verb. Subject possessor raising makes the possessor of the subject an additional argument of the clause:

(26) a. John im-ofi-yat illi-h.
John III-dog-NM die-TNS
'John's dog died.'

b. John-at ofi(-yat) im-illi-h.
John-NM dog(-nom) III-die-TNS
('John's dog died (affecting him).'

Note that III agreement shows alienable possession on nouns as well as verbal agreement.

The possessor raising rule applies only to intransitive verbs. The most usual pattern is obligatory nominative for the possessor, and no overt case for the possessum. Some speakers also allow nominative on the possessum.

The rule is restricted to intransitives, but both unaccusatives and unergatives participate in the rule.

Object possessor raising makes possessors of objects into applied objects of the verb:

(27) a. A-shokha' nipi' apa-tok.
1:S:III-pig meat eat-PT
'He ate my bacon.'

b. Shokha' nipi' am-apa-tok.
pig meat 1:S:III-eat-PT
'He ate my bacon (affecting me).'

Although the III agreement that appears on the verb in possessor raising is identical in exponence to the kinds of III agreement already demonstrated, it must come before I or N agreement.

We can see this by examining examples like the following:

(28) John-at ofi-yat im-ik-íll-o-h.
John-NM dog-NM III-N-die:LGR-NEG-TNS
'John's dog didn't die.'

(29) Pallaska' a-chi-noktakali-tok-o?
bread 1:S:III-2:S:II-choke-PT-Q
'Did you choke on my bread?'

Contrast the order of III and N order seen in (28) with that in (30) below.

(30) Ik-i-makáach-o-h.
N-III-say:LGR-NEG-TNS
'He didn't say it to him.'

Thus III agreement from possessor raising occupies a different position in the prefix sequence. This leads us to revise the prefix template previously given to the following:

III(poss-raising) >	I/N >	III(dative) >	II(obj) >	II(subj) >	Verb

Table 4 Revised prefix template, version 3

3.5 Applicatives

A final complication to the description of Choctaw prefixes comes from the applicative system. Choctaw has five applicative prefixes and one applicative clitic, as shown in the list below:

- ibaa- 'comitative'
- aa- 'locative'
- imaa- 'ablative'
- on- 'superessive'
- imi- 'benefactive'
- isht= 'instrumental'.

Applicative prefixes usually follow the I/N markers but precede II and III markers:

(31) Yamma il-aa-hilha-tok
there:AC 1:S:I-LOC-dance-PT
'We danced there.'

(32) Aa-chi-písa-li-tok.
LOC-2:S:II-see:N-1:S:I-PT
'I saw you there.'

The previous claim that applicative prefixes precede II/III is too crude, however.

We need to distinguish direct and dative objects of the main verb, which follow the applicative, from objects of the applicative itself, which precede the applicative. Consider the following contrast:

(33) a. Aa-chi-písa-li-tok. Ulrich (1986:263)
LOC-2:S:II-see:NGR-1:S:I-PT
'I saw you there.'

b. Chi-aa-holaabi-tok.
2:S:II-LOC-lie-PT
'He lied about you.'

It is also possible for a verb to have both a direct and an applicative object:

(34) Chi-baa-sa-fama-h
2:S:II-COM-1:S:II-be:whipped-TNS
'I was whipped with you.'

While applicative prefixes follow the I/N prefix, the applicative clitic isht 'instrumental' precedes the I/N prefix. Consider the following example, where isht anopolih means 'talk about' and im-anopoli means 'talk to'.

(35) a. Alikchi' im-ohooyo' isht=il-anopoli-tok
doctor III-woman instr=1:P:I-talk-PT
'We talked about the doctor's wife.'

b. Alikchi' im-ohooyo' il-im-anopoli-tok
doctor III-woman 1:P:I-III-talk-PT
'We talked to the doctor's wife.'

When a verb has both III agreement resulting from PR and the clitic isht, the III agreement comes first:

(36) Alikchi-ya ohooyo' im-isht=il-anopoli-tok.
doctor-AC woman III-instr=1:P:I-talk-PT
'We talked about the doctor's wife (affecting the doctor)'

1 >	**2 >**	**3 >**	**4 >**	**5 >**	**6 >**	**7 >**	**8 >**	**Verb**
III	isht=	I/N	II	applic	III	II	II	
pr	instr	subj	app-obj		obl	obj	subj	

Table 5 Final prefix template

Note that II prefixes appear at three different places in the sequence and III prefixes appear at two different places in the sequence.

4 Two formal accounts

I will present here two fairly similar approaches to modeling these facts, in both Paradigm Function Morphology Stump (2001) and Information-based morphology Crysmann and Bonami (2016).

4.1 Paradigm-Function morphology

In Paradigm Function Morphology, we could create two agreement blocks, which we can call II-AGR and III-AGR. The rules for the two blocks will look approximately as follows:

Block II-AGR

- $\langle X_v, \sigma \rangle$: {Agr[Per:1, Num:sg]} → sa+X
- $\langle X_v, \sigma \rangle$: {Agr[Per:2, Num:sg]} → chi+X
- etc...

Block III-AGR

- <X_v, σ>: {Agr[Per:1, Num:sg]} → am+X
- <X_v, σ>: {Agr[Per:2, Num:sg]} → chim+X
- etc...

Continuing the PFM model, the system appears to need the following rules of reference.

Rules of reference

- X_v, σ: {SUBJ[acc]} → <X, σ > : II-AGR [slot 8]
- X_v, σ: {OBJ]} → <X, σ > : II-AGR [slot 7]
- X_v, σ: {APPLIED-OBJ]} → <X, σ > : II-AGR [slot 4]

These rules say that for accusative subject, direct object, and applied object, use the realization rules in the II-AGR block.

Similarly, the rules for an ordinary oblique and an external possessor use the realization rules in the III-AGR block.

- X_v, σ: {OBL} → <X, σ > : III-AGR [slot 6]
- X_v, σ: {EXT-POSS} → <X, σ > : III-AGR [slot 1]

4.2 Information-based morphology

In the Crysmann and Bonami (2016) approach, we can specify exponence and morphotactics separately. Here I use a feature AGR, with values {I, II, III, N}, which shows the agreement set used 1. Sample exponence rules for Choctaw are as follows:

$$\left[\begin{array}{ll} \text{MUD} & \left\{\left[\begin{array}{ll}\text{PER} & 1\\ \text{NUM} & \text{sg}\\ \text{AGR} & \text{III}\end{array}\right]\right\} \\ \text{MPH} & \left\{\left[\text{PH} \quad \text{am}\right]\right\} \end{array}\right] \left[\begin{array}{ll} \text{MUD} & \left\{\left[\begin{array}{ll}\text{PER} & 1\\ \text{NUM} & \text{sg}\\ \text{AGR} & \text{II}\end{array}\right]\right\} \\ \text{MPH} & \left\{\left[\text{PH} \quad \text{sa}\right]\right\} \end{array}\right]$$

Figure 1 Choctaw exponence rules

In addition to the exponence rules, we may also write morphotactic rules which specify which exponence and position class realize the various positions

in the Choctaw prefix string. Consider the following rule, which puts subject agreement of the type II class in position class 8.

$$\begin{bmatrix} \text{MUD} & \left\{ \begin{bmatrix} \textit{subj} & \\ \text{AGR} & \text{II} \end{bmatrix} \right\} \\ \text{MPH} & \left\{ \begin{bmatrix} \text{PC} & 8 \end{bmatrix} \right\} \end{bmatrix}$$

Figure 2 Choctaw morphotactic rule

We can combine both morphotactic and exponence information in full entries like the following.

$$\begin{bmatrix} \text{MUD} & \left\{ \begin{bmatrix} \textit{ext-poss} & \\ \text{PER} & 1 \\ \text{NUM} & \text{sg} \\ \text{AGR} & \text{III} \end{bmatrix} \right\} \\ \text{MPH} & \left\{ \begin{bmatrix} \text{PC} & 1 \\ \text{PH} & \text{am} \end{bmatrix} \right\} \end{bmatrix} \begin{bmatrix} \text{MUD} & \left\{ \begin{bmatrix} \textit{obl} & \\ \text{PER} & 1 \\ \text{NUM} & \text{sg} \\ \text{AGR} & \text{III} \end{bmatrix} \right\} \\ \text{MPH} & \left\{ \begin{bmatrix} \text{PC} & 6 \\ \text{PH} & \text{am} \end{bmatrix} \right\} \end{bmatrix}$$

Figure 3 Sample full entries

Based on the data so far, both theories appear to account for the data equally well. However the data presented in 5 show additional complications in the cooccurrence of prefixes in Choctaw.

5 The person case constraint

5.1 Basics of the PCC

Tyler (2017) explores in more complete detail a fact mentioned in Ulrich (1986) (and overlooked by Broadwell (2006)).

When a verb has accusative subject agreement (slot 8) and accusative (slot 7) or dative object agreement (slot 6), there are severe restrictions on the person combinations that are allowed.

Compare the following grammatical and ungrammatical sentences in Choctaw.

(37) a. Chi-sa-banna-h
2:s:II-1:s:II-want-tns
'I want you'.

b. *Pi-chi-banna-h
1:p:II-2:s:II-want-tns
'You want us.'

(38) a. I-sa-nokshoopa-h
III-1:s:II-fear-tns
'I fear him.'

b. *A-chi-nokshoopa-h
1:s:III-2:s:II-fear-tns
'You fear me'

Tyler shows that the only grammatical combination are those in which the accusative subject agreement is 1sg /sa-/. All other combinations are ungrammatical.

We might characterize the constraint approximately as follows.

Person-Case Constraint: Where α, β, γ are non-null, [$_{PC6}$ α] [$_{PC7}$ β] [$_{PC8}$ γ PER=$_c$1, NUM=$_c$sg]

When a combination of clitics in the 6, 7, 8 slots violates the PCC, the verb shows a case alternation. Approximately

Case Alternation [V <NP[AGR II], NP [AGR II | III]>] → [V <NP[AGR I], NP [AGR II | III]>]

That is, the subject case shifts from type II agreement to type I agreement, and produces an output that obeys the PCC.

Alternative grammatical version of the forms in (37) and (38) are shown in below:

(39) a. *Pi-chi-banna-h
1:P:II-2:S:II-want-TNS
'You want us.'

b. Ish-pi-banna-h
2:S:I-1:P:II-want-TNS
'You want us.'

(40) a. *A-chi-nokshoopa-h
1:S:III-2:S:II-fear-TNS
'You fear me'

b. Is-sa-nokshoopa-h.
2:S:I-1:S:III-fear-TNS
'You fear me.'

There is, however, an outstanding problem that requires more fieldwork. The case alternation rule presented earlier seems to suggest that promotion from type II agreement to type III should always be available. The facts are not completely clear, but it seems that II/III verbs do freely alternate with I/III verbs. In contrast, the available evidence suggests that II/II verbs only shift to I/II in order to avoid a PCC violation.

5.2 Apparent exceptions to the PCC

Ulrich (1986:255) notes that there apparent exceptions to the PCC. If the III prefix represents not a dative object, but agreement via possessor raising, the agreement sequences are good. Contrast the following:

(41) a. *A-chi-nokshoopa-h
1:S:III-2:S:II-fear-TNS
'You fear me'

b. A-pallaska' chi-noktakali-h
1:S:III-bread 2:S:II-choke-TNS
'You choked on my bread.'

c. Pallaska' a-chi-noktakali-h
bread 1:S:III-2:S:II-choke-TNS
'You choked on my bread.'

Note in particular, that in example (41c), the prefix sequence a-chi-V is grammatical, while the same sequence is ungrammatical in (41a). This is due to the fact that the III agreement in (41c) is agreement with an external possessor.

It is also grammatical to have the sequence III-II-Verb when the II is agreement with an object. Contrast (42a) with the ungrammatical (41b).

(42) a. I-chi-tokcholi-tok.
III-2:S:II-tickle-PT
'He tickled you for her.'

b. *I-chi-nokshoopa-h
III-2:S:II-fear-TNS
('You are afraid of her.')

However examples like (41c) and (41c) do not violate our statement of the PCC, repeated below.

Person-Case Constraint: Where α, β, γ are non-null, [$_{PC6}$ α] [$_{PC7}$ β] [$_{PC8}$ γ PER=$_c$1, NUM=$_c$sg]

That is because the PCC only regulates the interaction between slots 6, 7, and 8. However, the III agreement marker in (41c) is in slot 1 (as is specified for agreement with an external possessor). Thus the constraint does not apply to it.

Similarly, (42a) is not a violation of the PCC because II object agreement is in slot 7. There is no agreement in slot 8, and thus the constraint does not apply.

5.3 The PCC in two theories

It seems relatively straightforward to build a constraint like the PCC into the morphotactic component of the Information-Based morphology. Here we might compare constraints on clitic sequences in Romance (Monachesi (1999, 2005) via a CLITICS list.

This effect appears to follow less naturally in a system like Paradigm Function Morphology where parallel rule blocks are handled via rules of reference. The difficulty is distinguishing the multiple effects of rules of referral and their interaction. The rule of referral for subjects with II agreement requires [Per 1, Num Sg] just in case the rules of referral for objects with II and III agreement are applied and yield non-null results.

More generally, the availability of a structure like a CLITICS list facilitates the statement of constraints on a sequence of affixes.

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