THE PROTO-MUSKOGEAN NUMERAL SYSTEM

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Introduction

From reflexes in the various daughter languages, the Proto-Muskogean numeral system seems to have been made up of five categories, cardinal numerals (eg. Koasati *ostá:kan* 'four'), adverbial numerals (K. *onostá:kan* 'four times'), ordinal numerals (K. *stonostá:ka* 'fourth'), causative cardinals (K. *osta:lin* 'to quarter') and causative adverbials (K. *onostá:lin* 'to do four times'). However clear this basic system is, the details vary from language to language, and the system itself is subject to variation. For example, in most languages there has been a partial or complete collapse of two categories into one, eg. Mikasuki *satoci:na* 'three times; third;' cf. Hitchiti *atoci:na* 'three times;' *satoci:na* 'third;' Koasati *ontoccí:nan* 'seven; seven times.' This paper will attempt to set out the correspondences between the numerals of the various languages.

It should be pointed out that in the Muskogean languages numerals are verbs, frequently requiring case marking on the nouns they govern and switch-reference marking to relate them to additional verbs in a sentence, as in the following examples.

Creek (Nathan 1977:148)

1)   lócafi:ɬka ... pá:li-hokkô:l-a:t s-im-fâ:n-a:t   instr-3io-PASS:BY-f.t.theme-
     GOPHER:TURTLE... TEN-TWO-f.t.theme-part.I   part.I

     mêy câw-t-î:y-aŋk-s
     PLACE GRASP-pl.do-f.t.theme-s.r.-1pl:subj-pastII-dec

     / lócafi:ɬka ... pá:lihokkô:la:t simfâ:na:t mêy câwtî:yaŋks /

     'We had taken more than twenty gopher turtles.'

Mikasuki (Derrick-Mescua 1980:436)

2)   ạ-ɬakf-a:ɬ-i-t šita:k-ihin ča-ča:y-a:ɬ-o-t
     1sposs-BROTHER-pl-ns-subj BE:FOUR-sw 1sposs-SISTER-pl-foc-subj

     tokl-on
     BE:TWO-sw:foc

     / ạɬakfa:ɬik šita:kihin čaca:ya:ɬot toklon /

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'My brothers are four in number and my sisters are two in number.'

Koasati (Kimball 1985:302)

3)   ocóːsi-ki-k ontóklo-V́hco-toho-n ocóːsi-ki ontóklo-n
      CHILD-pauc-subj BE:SEVEN-habit-realis-sw CHILD-pauc BE:SEVEN-sw

      cikkíːli-n
      KEEP-sw

      / ocóskik ontoklóhcotohon ocóski ontóklon cikkíːlin /

      'Her children were seven in number, she took care of seven children.'

Choctaw (Nicklas, 1974:199)

4)   alla ma-t toklo-h
      CHILD art-subj BE:TWO-phr:term

      / alla mat tokloh/

      'The children are two in number.'

In the Muskogean languages the basic derivational order is as follows: adverbial numerals are derived from cardinal numerals and ordinal numerals are derived from adverbials. Causative numerals are derived from the cardinals and causative adverbials from the adverbials.

A salient feature of Muskogean numerals is that if the root of a numeral consists of three consecutive open syllables (CV.CV.CV), the initial consonant of the penultimate syllable is geminated and the vowel of the penultimate syllable is lengthened in the Creek, Alabama, Koasati, and Choctaw languages. In Chickasaw, while the initial consonant of the penultimate syllable is geminated, rather than vowel length, a glottal stop is inserted after the penultimate syllable, while in Hitchiti and Mikasuki, in which there are no geminate consonants, only the vowel of the penultimate syllable is lengthened. Although this pattern of gemination and syllable closing is widespread, it does not seem to have been operative in the Proto-Muskogean period. Rather, the pattern would seem to have arisen after the breakup of Proto-Muskogean and spread through contact throughout the family.

One

The term for one can be found in Koasati, Alabama, Choctaw, and Chickasaw, and reconstructs as *čaxʷa ka with the element *ka written separately. That *ka was a separate element is shown by the Koasati noun caffá 'one person; the one' versus the verbal form caffáːkan 'to be one.'

Koasati$_1$	c	a	ff	á:	k	a		'one'
Koasati$_2$	c	a	ff	á				'one person'
Alabama	c	á	ff	áá	k	a		'one'
Choctaw	c	á	ff	a				'one'
Chickasaw	c	a	ff	a				'one'
Alabama	c	a^n	h		k	a-		'only one'

Five (X + 'one')

Although Creek and Hitchiti/Mikasuki have different words for 'one,' Proto-Muskogean *čax^{w}a ka is reflected in the words for 'five': Creek cahki:pin, Mikasuki cahki:p-in (root cahki:pa-), cognate to Koasati cahappá:kan. In Koasati *x^w often becomes h intervocalically; note that in Alabama f becomes h before k in cqhka:si 'only one,' cf. Koasati caffá:ka:sin. These forms for 'five' imply a pseudo-Proto-Muskogean[1] form **čax^{w}apa ka 'with one,' Proto-Muskogean *apa ka, Creek apakita 'to be with, to be mixed in.' The Creek and Hitchiti/Mikasuki forms show syncope of the second syllable, also found in the Alabama form above.

Creek	c	a	h		k	i:	p	i	'five'
Hitchiti	c	a	h		k	i	p	a	'five'
Mikasuki	c	a	h		k	i:	p	i	'five'
Koasati	c	a	h	a	pp	á:	k	a	'five'

Once/First

The Alabama, Koasati, Choctaw, and Chickasaw forms show the appearance of a prefix hi- that in Alabama, Choctaw, and Chickasaw is used to derive some adverbials from 'two' and 'three.' Comparative evidence shows that a- is the expected Muskogean prefix. It is not unlikely that Alabama, Choctaw, and Chickasaw, and to a lesser extent Koasati, have borrowed the prefix hi- from a neighboring Siouan language. The Southeastern Siouan languages have two prefixes used with numbers: he- deriving ordinals and e- deriving adverbials. The Dhegiha Siouan languages have hí- deriving adverbials and í- deriving ordinals. The reversal of prefixes for ordinals and adverbials in the Siouan languages of the Southeast is parallel to the same kind of transfer that can be observed in Muskogean languages.

Alabama	hi-totclína	'three times'	Ofo	he-tani	'third'
Chickasaw	hi-tocci?na?	'three times'	Tutelo	e-nani	'three times'
Choctaw (B)	hi-tocci:na	'third'	Quapaw	hí-dapnį	'three times'
				í-dapnį	'third'

From Choctaw ámmo:na and Chickasaw ammo?na 'first' and Mikasuki ła:min 'one' (root ła:-)[2] it is clear that the Proto-Muskogean form for 'once'

is *moθa, to which Alabama, Koasati, Choctaw, and Chickasaw have added the prefix *hi-*.

The Creek word for 'one,' *hamkin*, appears to be cognate to Koasati *himá:ka* 'first,' and Alabama *himá:ka*, Choctaw *himak*, and Chickasaw *himmaka?* 'now.' The Creek form shows a syncope similar to Creek 'five.' Alabama, Koasati, Choctaw, and Chickasaw seem to have reshaped the initial syllable after the prefix *hi-*.

Mikasuki					ł	a:	m	i -	'one'
Alabama	h	i	m	oo	łł	a -			'once'
Koasati	h	i	m	ɔ̌	ł	a			'once'
Choctaw₁	h	i	mm	o	n	a			'once'
Choctaw₂	h	í	mm	o:	n	a -			'once'
Chickasaw	h	i	m	o	nn	a			'once'
Choctaw			á	mm	o:	n	a		'first'
Chickasaw			a	mm	o?	n	a		'first'
Creek		h	a	m		k -			'one'
Alabama		h	i	m	áá	k	a		'now'
Koasati		h	i	m	á:	k	a		'first'
Choctaw		h	i	m	a	k			'now'
Chickasaw		h	i	mm	a	k	a?		'now'
Creek	i	s	h	a	m		k	a	'first'
Koasati	a	c	a	ff	á:	k	a		'one time'
Choctaw	a	c	á	ff	a				'one time'

Make one

Cognate forms for this term are found only in Koasati and Choctaw. These point to Proto-Muskogean *čaxʷa li*. Note the element *li* makes the numeral root transitive (or causative).

Koasati	c	a	ff	a:	l	i	'make one'
Choctaw (B)	c	a	ff	a:	l	i	'make one'

A number of stray forms for 'first' are found in the various languages; these are listed below.

Creek	haticíska	'first'
Hitchiti	incawatki	'first'
Mikasuki	incawątki	'first'
Koasati	alpilá:pi / ilpalá:pi	'first'
Choctaw	tikba	'first'
Choctaw (B)	ahpi	'first'

The following is a summary of the reconstructed forms for Proto-Muskogean that pertain to 'one,' 'first,' and 'once.'

Proto-Muskogean	*čax^{w}a ka	'one'
	*ačax^{w}a ka	'one time'
	*moθa	'once'
	*xama ka	'first'
	*čax^{w}a li	'make one'
Pseudo-PM	*čax^{w}apa ka	'five'

Two

There is much less variation across the languages in the form of 'two.' The main differences appear in the final vowel of the root, which appears as *a* in some languages and *o* in others. Forms with a final *a* seem to have been reshaped after the adverbial numeral *atokola* 'two times.'[3]

Creek	h	o	kk	o:	l	i
Mikasuki	t	o	k		l	a
Koasati	t	ó	k		l	o
Alabama	t	o	k		l	a
Choctaw	t	ó	k		l	o
Chickasaw	t	o	k		l	o

Seven (X + 'two')

Creek and Mikasuki have the identical form *kolapa:kin*, from a pseudo-Proto-Muskogean *tokolapa ka*. The Mikasuki appears to be a loan from Creek, as syncope seems to be more frequent in Mikasuki than aphaeresis; one would expect to see Mikasuki *toklapa:kin*.

The Alabama, Koasati, Choctaw, and Chickasaw forms for 'seven' are identical. They are composed of the locative prefix *on-* plus 'two.' It is tempting to see this construction also as a case of borrowing, but it is difficult to perceive the direction, as *on-* is a productive prefix in all four languages.

Creek				k	o	l	a	p	a:	k i	'seven'
Mikasuki				k	o	l	a	p	a:	k i	'seven' (loan from Creek?)
Koasati	o	n	t	ó	k		l	o			'seven'
Alabama	o	n	t	o	k		l	o			'seven'
Choctaw	o	n	t	ó	k		l	o			'seven'
Chickasaw	o	n	t	o	k		l	o			'seven'

Twice/Second

Here again the prefix *hi-* is manifested in Alabama, Choctaw, and Chickasaw, and it is clear that it is adverbial in nature. Alabama and Koasati have forms with Muskogean *a-* and meaning 'twice;' cognates are found in Apalachee, Choctaw, and Chickasaw with the meaning 'second.' With this word, the common Muskogean pattern of deriving ordinals from adverbials by means of the instrumental prefix is manifested. Creek and Mikasuki point to an instrumental element of the form *iših*, while Alabama, Koasati, Choctaw and Chickasaw point to *išit*. The differing form of the instrumental may well reflect dialectical variation in Proto-Muskogean[4].

In all the languages except Apalachee and Koasati, the root ends in *a* rather than *o*. It seems likely that the earliest form of the Proto-Muskogean adverbial derivational morpheme was discontinuous, *a . . . a*; since only 'two' terminates in a vowel other than *a*, it is the only word in which the final vowel is clearly replaced. The Choctaw adverbial suffix *-ha*, found in Oklahoma Choctaw (Nicklas 1972:216) and attested widely in Byington (1915), but not found in modern Mississippi Choctaw, seems to be a relic of this discontinuous morpheme. Apalachee and Koasati seem to have reshaped the adverbial form after the cardinal, clearly after losing understanding of *-a* as being part of the adverbial derivation.

Alabama	h	i	t	o	k	l	a			'twice'
Choctaw (N)	h	i	t	ó	k	l	a -	h	a	'twice'
Choctaw (B)	h	i	t	o	k	l	a			'second'
Chickasaw	h	i	t	o	k	l	aʔ			'twice'

Alabama	a	t	o	k	l	a	'twice'
Koasati	a	t	ó	k	l	o	'twice'
Apalachee	a	t	o	:	l	o	'second'
Choctaw	a	t	o	k	l	a	'second'
Chickasaw	a	t	o	k	l	a	'second'

Creek	s	a	h	o	kk	o:	l	a	'twice; second'
Mikasuki	s	a	t	o	k		l	a	'twice; second'
Alabama	ist	a	t	o	k		l	a	'second'
Koasati	st	a	t	ó	k		l	o	'second'
Choctaw	išt	a	t	o	k		l	a	'second'

There is a stray Choctaw term for 'second,' *iyakhaya*.

Make two / Do twice

The causative numeral 'make two' is attested in all the modern languages; it is derived by the addition of the causative suffix *-ci* to the root of 'two.' The causative adverbial has so far been found only in Koasati and Choctaw; it is derived by the addition of the causative suffix to the adverbial numeral.

In Koasati and some Choctaw dialects the final vowel of the root has been reshaped after the form of the cardinal numeral.

Creek		h	o	kk	o	l	ay	c -		'make two'
Mikasuki		t	o	k		l	o:	c	i	'make two'
Alabama		t	o	k		l	o	c	i	'make two'
Koasati		t	o	k		l	ó:	c	i	'make two'
Choctaw		t	o	k		l	o	c	i	'make two'
Chickasaw		t	o	k		l	o?	c	i	'make two'
Koasati	a	t	o	k		l	ó:	c	i	'do twice'
Choctaw	a	t	o	k		l	a	c	i	'have two for a long time'

Choctaw (B) atokloci; hitoklaci 'do twice'

The following are the Proto-Muskogean forms reconstructible for 'two' and related words.

Proto Muskogean   *tokolo   'two'
                   *atokola   'two times'
                   *iših atokolo / išit atokolo 'second'
                   *tokoloči 'make two'
                   *atokolači 'do twice'

Pseudo-PM   *tokolapa ka'seven' lit. 'with two'
                   *ontokolo   'seven' lit. 'on the surface of two'

Three

There is very little variation among the languages on the form of three.

Creek	t	o	cc	i:	n	i	'three'
Mikasuki	t	o	c	i:	n	a	'three'
Alabama	t	ó	tc	íí	n	a	'three'
Koasati	t	o	cc	í:	n	a	'three'
Choctaw	t	ó	cc	i:	n	a	'three'
Chickasaw	t	o	cc	i?	n	a	'three'

Eight (X + 'three')

In Creek and Mikasuki 'eight' is formed after the pattern of 'seven' with the Proto-Muskogean element *apa ka*; pointing to a pseudo-Proto-Muskogean form **točinapa ka*. Note that in Creek the initial syllable underwent aphaeresis, while in Mikasuki syncope of the second syllable took place. This differing treatment suggests that the *apa ka* pattern of Creek and Mikasuki is a common inheritance, rather than merely borrowing.

'Eight' in Alabama, Koasati, Choctaw, and Chickasaw is formed identically, again with the prefix *on- added to 'three.' Only 'seven' and 'eight' are formed with this prefix in these four languages, again the productivity of this prefix in all the languages precludes determining which language first developed this pattern.

Creek					c	i	n	a	p	a:	k i	'eight'
Mikasuki			t	o	s		n	a	p	a:	k i	'eight'

Alabama	o	n	t	ó	tc	íi	n	a		'eight'
Koasati	o	n	t	o	cc	í:	n	a		'eight'
Choctaw	o	n	t	ó	cc	i:	n	a		'eight'
Chickasaw	o	n	t	o	cc	i?	n	a		'eight'

Three times / third

This set of words is the last one in which the prefix *hi*- is found in Alabama, Choctaw, and Chickasaw. It is of interest that variants in *a*- can be found in both Alabama and Choctaw. Although the Alabama form in *a*- could possibly be a loan from Koasati, such is not the case for Choctaw. In the languages that use the prefix *hi*-, only Chickasaw uses it consistently; it may be pertinent that Chickasaw at the time of contact was the most north-westerly of the Muskogean languages, bordering on Dhegiha Siouan languages and possibly also on Southeastern Siouan languages as well. It seems likely that Chickasaw borrowed and naturalized the prefix *hi*-, and then transferred it, albeit incompletely, to Choctaw and Alabama, the languages nearest Chickasaw to the south and east.

The derivation of the adverbials and ordinals here is the clearest, and it is this pattern that is found in the higher numerals, as each language derives its own adverbials and ordinals from its individual stock of numeral words.

Alabama	h	i	t	ó	tc	íi	n	a			'three times'
Choctaw (N)	h	i	t	ó	cc	i:	n	a -	h	a	'three times'
Choctaw (B)	h	i	t	o	cc	i:	n	a			'third'
Chickasaw	h	i	t	o	cc	i?	n	a?			'three times'

Hitchiti		a	t	o	c	i:	n	a	'three times'
Koasati		a	t	o	cc	i:	n	a	'three times'
Choctaw		a	t	o	cc	i:	n	a	'three times'
Chickasaw		a	t	ó	cc	i?	n	a	'third'

Creek	s	a	t	o	cc	i:	n	a	'third'
Hitchiti	s	a	t	o	c	i:	n	a	'third'
Mikasuki	s	a	t	o	c	i:	n	a	'three times; third'
Alabama	ist	a	t	ó	tc	íi	n	a	'third'
Koasati	st	a	t	o	cc	í:	n	a	'third'
Choctaw	išt	a	t	o	cc	i:	n	a	'third'

Make three / Do three times

The causative numeral has been attested in only four languages, while once again the causative adverbial is found only in Koasati and Choctaw.

Mikasuki		t	o	c	i:	n	a:	c	i	'make three'
Alabama		t	ó	tc	íí	n	a	c	i	'make three'
Koasati		t	o	cc	i:	n	á:	c	i	'make three'
Choctaw		t	o	cc	i:	n	a	c	i	'make three'
Koasati	a	t	o	cc	i:	n	á:	c	i	'do three times'
Choctaw	a	t	o	cc	i:	n	a	c	i	'do three times'

The following are the Proto-Muskogean words reconstructible pertaining to 'three.'

Proto Muskogean	*točina	'three'
	*atočina	'three times
	*iših atočina / išit atočina	'third'
	*točinači	'make three'
	*atočinači	'do three times'
Pseudo-PM	*točinapa ka	'eight'
	*ontočina	'eight'

Four

With 'four' we arrive to the last numeral that can be reconstructed across all the Muskogean languages. Syncope has operated in all the languages with the exception of Mikasuki, in which the initial syllable has been lost by aphaeresis.

Creek	o:	s		t	i			'four'
Mikasuki		s	i	t	a:	k	i	'four'
Alabama	o	s		t	áá	k	a	'four'
Koasati	o	s		t	á:	k	a	'four'
Choctaw	ó	š		t	a			'four'
Chickasaw		š		t	a			'four'

Nine (X + 'four')

Only Creek and Mikasuki have the numeral 'nine' based on 'four.' The Mikasuki form seems to be a borrowing from Creek, one would expect, based on Mikasuki *sita:kin* 'four' that 'nine' would have been ****sitapa:kin*.

Creek	o	s		t	a	p	a	k	i	'nine'
Mikasuki	o	s		t	a	p	a	k	i	'nine'

Four times / Fourth

There are some problems with this set, in part due to lack of information; for example the Creek and Alabama adverbial numerals are not attested. In addition, the Koasati adverbial and the Alabama and Koasati ordinals are formed, not with the prefix *a-*, but rather with the prefix *on-*. One would expect, based on *ontoklo* and *ontocci:na* that *onosta:ka* would mean 'nine,' but instead it means 'four times.' In Alabama and Koasati, both *a-* and *on-* are locative prefixes with very similar meanings; and it seems that formerly in the two languages the prefix *a-* did not have an allomorph that could be used before vowels to prevent the formation of a structurally prohibited vowel cluster. Thus, Koasati and Alabama substituted the nearly synonymous form *on-* to prevent the occurrence of such a vowel cluster.[5]   Choctaw and Chickasaw, however, had a prevocalic allomorph, *ay-*, and so used it in the derivation of the adverbial and ordinal numerals.

Hitchiti	a			s	i	t	a:	k	i	'four times'
Choctaw	a	y	ó	š		t	a			'fourth'
Chickasaw	a	y	o	š		t	a			'fourth'
Koasati	o	n	o	s		t	á:	k	a	'four times'
Creek	s	a	o:	s		t	a			'fourth'
Hitchiti	s	a		s	i	t	a	k	i	'fourth'
Mikasuki	s	a		s	i	t	a	k	i	'four times; fourth'
Choctaw i	št	ay	o	š		t	a			'fourth'
Alabama i	st	on	o	s		t	áá	k	a	'fourth'
Koasati	st	on	o	s		t	á:	k	a	'fourth'

Make four / Do four times

Because of the ritual prominence of the number four among speakers of Muskogean languages, the causative numerals and causative adverbials are better attested than any other such numerals; five languages for the causative, and three for the causative adverbial. The Mikasuki causative numeral is analogically reshaped after lower causative numerals; *-ci* is simply added to the root, without transforming it, unlike the causative of Mikasuki *hatki* 'to be white' which is *hatli:ci* 'to make something white.' Alabama, too, has partially reshaped the causative numeral, but here the *ka* of the cardinal numeral is transformed to *li* in the presence of the causative suffix. Koasati, Choctaw, and Chickasaw are here the most conservative, with the simple transformation of *ka* to *li* sufficient to make the numeral causative, cf., 'make one' above.

The form of the causative adverbial numeral differs between Koasati and Choctaw and Chickasaw due to the replacement of the prefix *a-* in Koasati with *on-*.

Mikasuki			s	i	t	a:	k	i:	c	i	'make four'
Alabama		ó	s		t	áá	l	i	c	i	'make four'
Koasati		o	s		t	á:	l	i			'make four'
Choctaw		o	š		t	a	l	i			'make four'
Chickasaw		o	š		t	a	l	i			'make four'

Koasati	on	o	s		t	á:	l	i			'do four times'
Choctaw	ay	o	š		t	a:			c	i	'do four times'
Chickasaw	ayy	o	š		t	a			c	i	'do four times'

The following are the Proto-Muskogean terms reconstructible pertaining to 'four.'

Proto-Muskogean	*ošita ka	'four'
	*aošita ka	'four times'
	*iših aošita ka / išit aošita ka	'fourth'
	*ošita li	'make four'
	*aošita li	'do four times'
Pseudo-PM	*ošitapa ka	'nine'

Five

As has been shown above, the Creek, Mikasuki, and Koasati forms for 'five' are transparently related to the word for 'one.' Alabama, Choctaw, and Chickasaw share a cognate set for 'five.'

Alabama	t	a	ɬɬ	aa	p	i				'five'
Choctaw	t	á	ɬɬ	a:	p	i				'five'
Chickasaw	t	a	ɬɬ	aʔ	p	i				'five'

This set would seemingly point to a Proto-Muskogean form *taɬapi; however, comparative evidence shows that this numeral is an Proto-Muskogean compound meaning 'on the side of the body.'

Alabama	t	a	ɬɬ	a						'on the other side of'
Koasati	t	a	ɬ	a						'side; other side of'
Choctaw	t	a	nn	a	p					'on the other side of'
Chickasaw	t	a	nn	a	p					'other side'

Creek				á	p	i				'body; trunk'
Mikasuki				a:	p	i				'tree'
Koasati₁				-a	p	i				'cob' in cassapí 'corncob'
Alabama				aá	p	i	h	c	i	'body'
Koasati₂				a:	p	i	h	c	i	'body'
Choctaw				a	p	i				'stalk; body'
Chickasaw				a	p	iʔ				'trunk; body'

The only difficulty with this interpretation is that the Choctaw and Chickasaw forms point to a Proto-Muskogean *taθθa 'side; other side;' however, if the term originated in Alabama and was borrowed by Choctaw and Chickasaw, the problem would be cleared up.

It is interesting that both pseudo-Proto-Muskogean *taθθapi 'side of the body; five' and pseudo-Proto-Muskogean *čaxʷapa ka 'with one; five' point to a finger counting system in which only four fingers on the one hand were counted before moving on to the other. Assuming that the hands were held in pronation (as Koasati speakers say their elders used to finger-count), the index finger of the left hand would be counted as one, the little finger of the right hand as five, and the two thumbs as nine and ten.

Six

There are two terms for 'six' to be found in the Muskogean languages. Creek and Mikasuki share one, and Alabama, Koasati, Choctaw, and Chickasaw share the other.

Creek	i:	p	a:	k	i		'six'
Mikasuki	i:	p	a:	k	i		'six' (Creek loan?)
Alabama	h	á	nn	áá	l	i	'six'
Koasati	h	a	nn	á:	l	i	'six'
Choctaw	h	á	nn	a:	l	i	'six'
Chickasaw	h	a	nn	á	l	i	'six'

The Creek and Mikasuki forms are phonologically identical, and it is very likely that the Mikasuki is a borrowing from Creek. The element -pa:ki in the Creek i:pa:ki looks as if it should come from Proto-Muskogean *apa ka, as in the Creek quinary forms for seven, eight and nine. However, determining the origin of the initial element i:- is difficult. If it is a quinary form like the others, it should have to do with 'one' or perhaps 'hand.' The element is not at all similar to any of the reconstructible or attested forms for 'one, once, first, etc.' There are problems with 'hand' as well. 'Hand' can be reconstructed as Proto-Muskogean *ilkʷaqi.[6]

Creek	i	ŋ	k	i	
Mikasuki	i	l	b -	i	
Alabama	i	l	b	i	
Koasati₁	i	l	b	i	
Koasati₂	i	l	b	a	k -
Choctaw	i	l	bb	a	k
Chickasaw	i	l	b	a	k

The Creek reflex of *l before *kʷ is unexpected, but probably regular. The only way that the Creek form for 'six' can be derived from 'hand' is to assume the Proto-Muskogean form *ilkʷaqi compounded with *apa ka to formed **ilkʷapa ka. Assuming a syncope of the second syllable, one would get

ilkʷpa ka, which would become a pre-Creek *ilpa:ka*. Then *ilpa:ka* would become *i:pa:ka* by palatalization of *l*, a process that has converted many cases of intervocalic *l* to Creek *y*, and pre-consonantal *l* to vowel length. Finally, the late restructuring that changed the final vowel of the word to *i* produces the attested form *i:pa:ki* 'six.' This is admittedly highly speculative, and by no means can be considered proven.

The Alabama, Koasati, Choctaw, and Chickasaw forms for 'six' point to a Proto-Muskogean form *xana li*. If Proto-Muskogean is related to Natchez, as Haas (1956) has affirmed, then Natchez *lahanah* 'six' (Haas, p.c.) is likely to be cognate to the Proto-Muskogean form.

Nine

Since 'seven' and 'eight' are formed from 'two' and 'three' in all the languages, the next number for which there is comparative evidence is 'nine.' In Creek and Mikasuki 'nine' is formed from 'four,' but in Alabama, Koasati, Choctaw, and Chickasaw it is an independent word.

Alabama	c	á	kk	áá	l	i	'nine'
Koasati	c	a	kk	á:	l	i	'nine'
Choctaw	c	á	kk	a:	l	i	'nine'
Chickasaw	c	a	kk	a?	l	i	'nine'

These forms point to a Proto-Muskogean form *caka li*. However, forms for 'nine' with similar phonologies are to be found all over the eastern United States in Algonquian and Siouan languages.[7]

Proto-Muskogean	*čaka li	'nine'
Proto-Algonquian	*ša:ka:syeka	'nine' (Siebert, 1975:311)
Ojibwa	ša:nkasswi	
Menominee	sa:kɛ:w	
Fox	ša:ka	
Kickapoo	sa:ka	
Shawnee	ča:katθwi	
Proto-Siouan?	*kišąkka	'nine' (Rankin, p.c.)
Biloxi	čkane	
Ofo	kištaška	
Tutelo	ksąka	
Quapaw	šąkka	
Ioway-Oto	sǫke	

The significance of this areal resemblance is unclear. The directionality of the relationships also seems uncertain, except in the case of individual languages. For example Biloxi *čkane* is a loan from a Muskogean language such as Choctaw *cákka:li*, with the initial syllable syncoped and *l* being replaced by *n*.

It also seems that the initial consonant of Shawnee *ča:katθwi* has been reshaped from an expected **ša:katθwi* due to Muskogean influence.

Ten

Finally, with the number 'ten' is found a term which has cognates across all the Muskogean languages.

Creek	p	á:			l	i		'ten'
Mikasuki	p	o	k	o:	l	i		'ten'
Alabama	p	o	kk	óó	l	i		'ten'
Koasati	p	·o	kk	ó	l	i		'ten'
Choctaw	p	ó	kk	o:	l	i		'ten'
Chickasaw	p	o	kk	o?	l	i		'ten'

Only Creek has an irregular correspondence, with *á:* corresponding to the *o(k)ko:* of the other languages. In this case, Creek *pá:li* has been reshaped after the element which forms the decades in Creek, *pa:li:-*; this element has cognates in Alabama and Koasati.

Creek	p	a:		l	i: -	'-ty'
Alabama	p	óó		l -		'-ty'
Koasati	p	o		l -		'-ty'

The Proto-Muskogean form that can be reconstructed for 'ten,' **poko li* may have a cognate in Natchez *ʔo:ko* (Haas, p.c.).

Conclusion

As has been noted, only the numbers one through four and ten can be reconstructed with confidence for Proto-Muskogean. The two words reconstructible for 'five' imply that the Proto-Muskogean counting system was a quaternary one; without the overwhelming evidence that **čaka li* meant 'nine' and *poko li* 'ten,' it would be tempting to postulate them as originally being the quaternary 'seven' and 'eight.' After the breakup of Proto-Muskogean, the languages seem to have come under the influence of languages in which a quinary system of counting was primary, and it would seem that Eastern Muskogean, specifically Creek, innovated a quinary system based on **apa ka*, nacently available in the quaternary system. On the other hand, in the Western languages the locative prefix **on-* was used in forming the quinary numbers 'seven' and 'eight.' The following table illustrates the nature of the numerical systems reflected in the Muskogean languages.

Proto-Muskogean Numeral System

Quaternary System	Descriptive Quaternary	Eastern Quinary System	Western Quinary
one *čaxʷa ka			
two *tokolo			
three *tocina			
four *ošita ka			
five *čaxʷapa ka	*taθθapi		
six *hana li		*ilkʷapa ka	
seven		*tokolapa ka	*ontokolo
eight		*točinapa ka	*ontočina
nine *čaka li		*ošitapa ka	
ten *poko li			

NOTES

Creek is from Haas (1940) and Loughridge and Hodge (1890); Hitchiti is from Gatschet (1888); Mikasuki is from Derrick-Mescua (1980) and personal fieldnotes; Alabama is from Sylestine, Hardy, and Montler (1989); Apalachee is from Kimball (1988); Koasati is from personal fieldnotes; Choctaw is Bogue Chitto dialect of Mississippi Choctaw from personal fieldnotes; Choctaw (B) is from Byington (1915) Choctaw (N) is Oklahoma Choctaw from Nicklas (1974); and Chickasaw is from Munro and Willmond (1988).

[1]The term pseudo-Proto-Muskogean is used here for a reconstructed term that cannot be assigned with certainty to the protolanguage.

[2]The Mikasukui root *ta:-* is shown in the term for 'eleven' *poko:lin ta:-waykin*, c.f. *poko:lin tokla-waykin* 'twelve.'

[3]Haas (1969:36, 41-42) reconstructs 'two' as *hutukulu* (in the present orthography *xotokolo*). However, *xotokolo* can only be the pre-Creek form, redundantly including the Proto-Muskogean dual prefix *xo-* (Booker, 1980:58).

[4]Creek and Mikasuki have the instrumental prefix *s-*, as opposed to Alabama, which has *ist-/is-*, Koasati, which has *st-/s-*. Choctaw, which has *išit-/išt-* and Chickasaw, which has *išt-/iš-*. The fact that the prevocalic variants in Alabama, Koasati, Choctaw, and Chickasaw all have *t*, points to a proto-form with *t*. The lack of *t* in Creek and Mikasuki, where it is not phonologically expectable, must result from a different proto-form. The use of *-h* as a connective suffix in Koasati, parallel to *-t* suggests the possibility of

the doublet form *išit-/iših-.   Booker (1980:241-242) reconstructs only *išit, but gives no rules for the deletion of *t in pre-vocalic position in Creek and Hitchiti/Mikasuki.

[5]At the present, Alabama has developed the prevocalic element -y- , which is inserted between a prefix terminating in a vowel and a vowel initial word, while Koasati has developed a tolerance for vocalic clusters, for example Alabama *pa:-y-a:sihli* 'rinse;' Koasati *pa:-a:síhlin* 'wash the back.'

[6]The proto-phoneme *q indicates a correspondence that probably represents a proto-Muskogean glottal stop. In the Muskogean languages *q becomes vowel length or a glottal stop preconsonantally, disappears or becomes a glottal stop intervocallically, but can become *k* at a word boundary between two elements of a compound.

[7]Siouan forms are from Zeyrek and Rankin (1982), except for Quapaw, which are from Rankin (1986).

REFERENCES

Booker, Karen. 1980. Comparative Muskogean: Aspects of Proto-Muskogean Verb Morphology. Ph. D. dissertation. University of Kansas.

Byington, Cyrus. 1915. *A Dictionary of the Choctaw Language.* Edited by John R. Swanton and Henry S. Halbert. Bureau of American Ethnology Bulletin 46. Washington: Government Printing Office.

Derrick-Mescua, Mary T. 1980. A Phonology and Morphology of Mikasuki. Ph. D. dissertation. University of Florida.

Haas, Mary R. 1940. Creek-English vocabulary. Ms.

_____. 1956. Natchez and the Muskogean Languages. *Language* 32:61-72.

_____. 1969. *The Prehistory of Languages.* The Hague: Mouton.

Gatschet, Albert S. 1888. *Tchikilli's Kasi'hta Legend in the Creek and Hitchiti Languages.* St. Louis: R.P. Studley.

Kimball, Geoffrey. 1985. A Descriptive Grammar of Koasati. Ph. D. dissertation. Tulane   University.

_____. 1988. An Apalachee Vocabulary. *International Journal of American Linguistics* 54:387-398.

Loughridge, R. M. and David M. Hodge. 1890. *English and Muskogee Dictionary.*   Philadelphia: The Westminster Press.

Munro, Pamela and Catherine Willmond. 1988. Chickasaw: An Analytical Dictionary. Ms.

Nathan, Michele. 1977. Grammatical Description of the Florida Seminole Dialect of Creek. Ph. D. dissertation. Tulane University.

Nicklas, T. Dale. 1972. The Elements of Choctaw. Ph. D. dissertation. University of Michigan.

Rankin, Robert L. 1986. *Quapaw-English and English-Quapaw Dictionary.* Unpublished database printout based on Dorsey c. 1890 and the author's 1973-74 field work.

Siebert, Frank T. Jr. 1975. Resurrecting Virginia Algonquian from the Dead: The Reconstituted and Historical Phonology of Powhatan. In *Studies in Southeastern Indian Languages*, ed. by James M. Crawford, pp. 285-453. The University of Georgia Press: Athens.

Sylestine, Cora, Heather Hardy, and Timothy Montler. 1989. Alabama-English Dictionary. Ms.

Zeyrek, Deniz and Robert L. Rankin. 1982. A Comparison of Siouan Counting Systems and Numerals from 'One' to 'Ten.' Paper presented at the Mid-America Linguistics Conference, University of Kansas.