Suppletion in a Three-Way Number System: Evidence from Creek

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1 Introduction

In Distributed Morphology, the notion of suppletion is central to the distinction between an abstract root and one characterized by its phonology. Under one view, roots are abstract and suppletion is defined as one root with distinct phonological realizations dependent on grammatical environment (Bobaljik 2012; Harley 2014a; a.o.). Along another line of thinking, roots are phonological constants and suppletion consists of separate lexical items with overlapping semantics (Embick & Marantz 2008; Embick 2010; Borer 2014; a.o.). The Hiaki (Uto-Aztecan) data on which Harley (2014a) based her argument for root suppletion is inconclusive because of two main gaps. The gaps, pointed out by Borer (2014), concern the need for evidence that suppletion is part of a larger number marking paradigm and that suppletive verbs are sensitive to formal instead of interpretable number. The Creek data presented in this squib plugs these two gaps and makes the overlapping semantics account less plausible. As such, the Creek data supports understanding suppletion as grammatical conditioning of a phonologically abstract root.

A subset of verbs in both Hiaki and Creek have distinct phonological realizations dependent on the number specification of their first argument. Whereas Hiaki suppletive verbs are exceptional (there is no object agreement in Hiaki), section 2 shows evidence that Creek suppletive verbs are part of a number system making regular distinctions between singular, dual, and plural. A set of 34 verbs show regular number agreement and contextual allomorphy alongside suppletion (the size of this set

itself suggesting these are not a handful of functional items). Additionally, though not addressed in Section 2, Creek root suppletion is part of a language family-wide pattern similar to the Uto-Aztecan case (Harley 2014b). Section 3 addresses an analysis of suppletion as overlapping lexical semantics. Although Hiaki suppletive verbs are sensitive to interpretable number with *pluralia tanta*, Creek verbs are sensitive to formal, uninterpretable number. Finally, similar to Hiaki, Creek *elsewhere* verb forms surface in contexts unspecified for number, such as the impersonal passive. Section 4 concludes the squib with example vocabulary entries for certain verbs.

2 Number Agreement Paradigms

In general, Creek verbs, not nouns, are marked for number. Number agreement is an obligatory grammatical operation however, as seen below. When a noun referring to a human is pluralized with the morpheme -ta:ki, the verb must also be plural.²

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(1) a. Honánwa -t homp (*-a:k) -ís.
man -NOM eat -PL -IND
'The man is eating.'
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¹This phenomenon, first documented by Haas in 1948, is present in most Muskogean languages (Fitzgerald 2016). Suppletive verbs make a two- and three-way number distinction in at least Chickasaw (Munro & Willmond 1994; Fitzgerald 2016), Choctaw (Heath 1980), Koasati (Kimball 1983), and Creek (Haas 1948; Martin 2011).

²Pronominal agreement morphemes indicate person, number, and thematic role for first and second person arguments; third person is unmarked. The transcriptions are phonemic following the Americanist tradition - c represents the palatal affricate [t∫]. The abbreviations I use in this paper are as follows: 1PA 1st person plural agentive, 1SA 1st person singular agentive, 2P 2nd person patientive, 2SA 2nd person singular agentive, ACC accusative, CAUS causative, DIM diminutive, DS different subject, DU dual, DUR durative, IND indicative, INF infinitive, INST instrumental, IMPL impersonal passive, LOC locative, MID middle voice, MP medio-passive, NOM nominative, PL plural, PFV perfective aspect, PROSP prospective, RCP reciprocal, REF referential, SG singular, SS same subject, TPL triplural.

The same requirement holds for suppletive verbs. In the following example, the choice of suppletive stem must agree in number with the number-marked noun.

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(2) a. Honánwa / (*honan -tá:ki) -t a:4 -ís.
man /man -PL -NOM go.about.sG -IND
'The man/(*men) is about.'
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b. (*Honánwa) /honan -tá:ki -t wila:k /foll -ís.

man /man -PL -NOM go.about.DU /go.about.PL -IND

'The (*man)/men are about.' (Martin, p.c. my gloss)
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The obligatory nature of this pattern supports considering it a result of the grammatical mechanism of agreement.

2.1 Multiple Exponence of Number

There are three different locations in the verbal complex that can potentially mark the number of an argument through an agreement relationship: the person agreement morphemes, a default plural marker -ak-, and on the verb stem itself through regular morphology (-ho- for plural, and -ic- for three or more³), allomorphy, or suppletion.

-Ak- is an omnivorous number marker that agrees with either a plural subject (3a) or a plural object (3b).

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(3) a. Hic -ahk -is. see -PL.PFV -IND 'They saw him.'
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In certain contexts, number is multiply exponed within the verbal complex. The sentence in (4) shows plurality marked by the 1st person plural agentive morpheme

³I follow Martin (2011) in glossing this morpheme as TPL 'triplural'.

-iy- and the suppletive plural verb form apo: 'sit'; the verb of interest is apo:-k-iy-â:ti 'we sat (lived).' The suppletive verb and person agreement morpheme both include number information, but make different meaning contributions.

(4) cokó 'ti- wŏ:ⁿl -êyc -os -i: **apo:** -k -**iy** -â:ti house RCP- near -CAUS -DIM -DUR **sit.PL** -MID -**1PA** -REF 'We lived in houses close together.' (Haas & Hill 2015: 6, my gloss)

This squib will focus on 34 verbs which track the number of subjects of intransitives and objects of transitives through the plural morphemes -ho- or -ic-, contextual allomorphy, and suppletion. These 34 verbs form a relatively large class participating in a number marking system in which the suppletive verbs are couched. While Harley (2014b) argues contra Borer (2014) that a paradigm is not necessary evidence for suppletion, this language-internal paradigm and the presence of suppletion across Muskogean languages lend credibility to this inflectional category and makes a comparison with English go-went more transparent.

2.2 Two-Way Number Distinction

Eight verbs make a two-way number distinction and include regularly inflected verbs (Table 1), verbs showing contextual allomorphy (Table 2), and suppletive verbs (Table 3). Several of these are property-concept terms that take an argument with which they agree in number. The first example below, $h\acute{e}yji$: 'hot' describes one hot item and heyhoyi: 'hot.PL' (with -ho- infixed) describes two or more hot items.

One verb (given in Table 2) has alternate realizations of the root in singular and plural environments. The singular form *kac*- alternates with *kaci:*- in the plural. This allomorphy signals plurality in place of overt number marking.

The suppletive forms in Table 3 are most like the verb patterns found in Hiaki. As

Gloss	SG Subject	PL Subject
1	héyy-i:	hey <i>ho</i> y-í:
hot	hot-DUR	hot.PL-DUR
1-1	kasápp-i:	kasap ho y-í:
cold	cold-dur	cold.PL-DUR
sick	inókk-i:	$\mathrm{inok}\mathit{ho}$ k-í:
	sick-DUR	sick.PL-DUR
to talk	oponay-íta	opona: hoy-íta
to taik	talk-INF	talk.PL-INF
to ache	teyy-íta	${\it tey} hoy$ -íta
	ache-INF	ache.PL-INF

Table 1: Singular-Plural Regular Verbs (Martin 2011: 198).

Gloss	SG	PL
	kác-k-i:	kací:-k-i:
snapped/broken	snap.SG-MID-DUR	snap.PL-MID-DUR
to anon	kac-íta	kaci:y-itá
to snap	snap.SG-INF	snap.PL-INF

Table 2: Singular-Plural Irregular Verb (Martin 2011: 198).

with Hiaki, these verbs include some cross-linguistically suppletive verbs like 'take' - isíta (SG), cawíta (PL) - and 'small' - cótki: (SG), lopócki: (PL) (Bobaljik & Harley 2012; Veselinova 2006). If the Creek data stopped here, we would not have much more evidence in favor of root suppletion over distinct lexical items. However, Creek verbs show an even more fine-grained distinction between one, two, and three or more.

2.3 Three-Way Number Distinction

Twenty-six Creek verbs mark a distinction between singular, dual, and plural. This three-way number system also shows regular morphology (Table 4), contextual allomorphy (Table 5), and suppletion (Table 6). The regularly inflected intransitives are unmarked in the singular, marked with -ho- in the dual, and with -ic- in the plural (e.g. somkitá 'lost.SG', somhokíta 'lost.DU,' and somicitá 'lost.PL'). Regularly inflected transitive forms are derived from intransitives by affixing the causative morpheme -ic (-eyc, -iceyc).⁴

The forms in Table 5 have regular number marking in the dual (e.g. alak- and ala:hok- 'arrive' SG and DU), but have alternate realizations of the stem in the plural (e.g. yeyc- 'arrive' PL). This contextual allomorphy ranges from consonant and vowel alternations to completely suppletive plural forms. Greater variation in the plural and regularity in the dual can be viewed as a result of the markedness of the dual features, which makes them a target for feature deletion (Nevins 2011). The result is syncretism between the singular and dual but contextual allomorphy for the less-marked plural.

Finally, four verbs of position and motion supplete across the three number distinctions. The forms in Table 6 show distinct phonological forms for the singular,

⁴The transitive counterparts in this table lack a plural form, a gap which Martin explains as the result of the homophony between the triplural and causative morphemes (Martin 2011: 201).

Gloss	SG	PL
4t :: l.	apeyk-itá	atih-k-itá
to get inside	get.inside.SG-INF	get.inside.PL-MID-INF
to nut incido	apeyk-itá	atih-itá
to put inside	get.inside.SG-INF	get.inside.PL-INF
	is-íta	caw-íta
to take	take.SG-INF	take.PL-INF
o 11	cót-k-i:	lopóc-k-i:
small	small.SG-MID-DUR	small.PL-MID-DUR
to make small	cot-iceyc-itá	lopoc-iceyc-itá
	small.sg-caus-inf	small.PL-CAUS-INF

Table 3: Singular-Plural Suppletive Verbs (Martin 2011: 198)

Gloss	SG	DU	PL
	hatap-k-itá	hatap-ho-k-íta	hatap-ic-íta
to go down	go.down-MID-INF	go.down-DU-MID-INF	go.down-TPL-INF
4 1 4 1 .	hatap-iceyc-itá	hatap-ho-yc-itá	
to make step down	go.down-CAUS-INF	go.down-DU-CAUS-INF	
to be lost	som-k-itá	som-ho-k-íta	som-ic-itá
	be.lost-MID-INF	be.lost-DU-MID-INF	be.lost-TPL-INF
to lose	som-iceyc-itá	som-ho-yc-itá	
	lost-CAUS-INF	lost-DU-CAUS-INF	
	tam-k-itá	tam-ho-k-íta	tam-ic-itá
to fly	fly-MID-INF	fly-DU-MID-INF	fly-TPL-INF
to make fly	tam-iceyc-itá	tam-ho-yc-itá	
	fly-CAUS-INF	fly-DU-CAUS-INF	

Table 4: Singular-Dual-Plural Regular Verbs (Martin 2011: 198).

Gloss	SG	DU	PL
to go in	(i)ci:y-itá	(i)ci:hoy-íta	isci:y-itá
	go.in.SG-INF	go.in.DU-INF	go.in.PL-INF
to go out	oss-itá	os <i>hoy</i> -íta	soss-itá
to go out	go.out.SG-INF	go.out.DU-INF	go.out.PL-INF
to turn	fey-k-itá	fey-ho-k-íta	fay-ic-itá
to turn	turn-MID-INF	turn-DU-MID-INF	turn.PL-TPL-INF
to whoop	peyh-k-itá	peyh-ho-k-itá	pa:h-ic-íta
to whoop	whoop-MID-INF	whoop-DU-MID-INF	whoop.PL-TPL-INF
to arrive	ala-k-itá	ala:-ho-k-íta	yeyc -itá
	arrive-MID-INF	arrive-DU-MID-INF	arrive.PL-INF
to lie	wak-k-itá	wak-ho-k-íta	lomh-itá
	lie-MID-INF	lie-DU-MID-INF	lie.PL-INF

Table 5: Singular-Dual-Plural Irregular Verbs (Martin 2011: 199).

dual, and plural. The second verb in the table, 'to run (off)' as well as two triplural forms in Table 5 ('to whoop' and 'to turn') also suggest that suppletion and number agreement are separate processes, a view argued for by Bobaljik & Harley (2012).

(5) tokoł -ho -yc -itá run.DU -DU- CAUS -INF 'to run (two) off'

The dual transitive form from Table 6 repeated as (5) has both a suppletive form (tokol) and overt dual agreement. The co-occurrence of these two phenomena suggests that suppletion is not the result of agreement, but involves a process of suppletion plus (often null) agreement.

2.4 Number Features and Argument Status

To account for the distribution of Creek number morphemes, I adopt Harbour's (2014) number feature system using the binary features [±atomic], [±minimal] to define singular, dual, and plural (6). The [atomic] feature, when positively valued, picks out the atomic layer of a stratum, i.e. the singular entities; when negatively valued, it picks out all but the singular entities. [+Minimal] picks out the lowest stratum in a range, and [-minimal] picks out the complement. Thus when [±minimal] acts on [±atomic] the following values define a three-way number system:

(6) a. Singular: [+atomic,+minimal]

b. Dual: [-atomic, +minimal]

c. Plural: [-atomic, -minimal]

I assume that agreement heads copy the number features present on the argument. The agreement morphemes are specified for certain number features and inserted at spell-out. -Ak- and -ho- are underspecified for [minimal] since they syncretically mark

Gloss	SG	DU	PL
(one) to run	lit-k-itá	tokoł-k-itá	pifa:t-k-itá
	run.SG-MID-INF	run.DU-MID-INF	run.PL-MID-INF
() . (lit-iceyc-itá	tokoł-ho-yc-itá	pifa:t-iceyc-itá
to run (one) off	run.SG-CAUS-INF	run.DU-DU-CAUS-INF	run.PL-CAUS-INF
()	ley-k-itá	ka:-k-itá	apo:-k-itá
(one) to sit	sit.sg-mid-inf	sit.DU-MID-INF	sit.PL-MID-INF
to set (one)	ley-c-itá	ka:y-itá	apo:y-itá
	sit.SG-CAUS-INF	sit.DU-INF	sit.PL-INF
	ał-íta	wilak-itá	foll-itá
(one) to go about	go.about.SG-INF	go.about.DU-INF	go.about.PL-INF
(one) to fall	lat-k-itá	yoł-k-itá	palat-k-itá
	fall.sg-mid-inf	fall.du-mid-inf	fall.PL-MID-INF

Table 6: Singular-Dual-Plural Suppletive Verbs (Martin 2011: 199-200)

both dual and plural in verbs making a two-way distinction. Both -ho- and -ic- only appear on the 34 verbs that make a two-/three-way distinction. In this way they are unlike -ak-, which can mark plurality on all verbs.⁵ Below, I specify that these morphemes appear only in the environment of a verbal categorizing head bearing a feature distinguishing this class of verbs, [+F] for instance.⁶ This specification locates the -ho-/-ic- probe in Voice, capturing the generalization that these morphemes track the internal argument.

(7) a. $\emptyset \leftrightarrow [+atomic]$ b. $/ak/ \leftrightarrow [-atomic]$ c. $/ho/ \leftrightarrow [-atomic] / v_{[+F]}$ d. $/ic/ \leftrightarrow [-atomic,-minimal] / v_{[+F]}$

A major prediction of the claims in Harley (2014a) is that only unaccusative verbs will show suppletion. Without access to unaccusativity diagnostics for Creek, the pattern of voice alternations points to unaccusative structure for suppletive verbs. Intransitive suppletive verbs are either marked anticausatives or require causative morphology to derive the transitive, suggesting the relevant argument is internal.

The voice morphology suggests that not all alternating Creek verbs instantiate root suppletion. The forms for *die* and *kill* (as well as *stand*), though superficially similar to suppletive forms, have different voice morphology for each stem.

 $^{^5}$ The default marker -ak- is limited to those environments when plural is not already exponed on a person agreement morpheme. This restriction need not be captured in the vocabulary entry, but can be thought of as due to the location of the agreement probe and valuation of the number feature. If both -ak- and the person morphemes are exponents of the agreement head in T or Asp, then the Subset Principle (specifying that the vocabulary item must realize a maximal subset of the node's features) will prefer the person morpheme over -ak- except when the person morpheme does not include number information. In the last case, -ak- can be additionally inserted, perhaps through a mechanism like node splitting (Campbell 2012).

⁶While I use an abstract [+F], one could imagine this feature to be [+motion/position] following the generalization in Martin (2011: 197).

(8) a. il -íta die.SG -INF '(one) to die'

b. il -i:c -itá die.SG -CAUS -INF 'to kill (one)'

(9) a. pasat -k -itá die.PL -MID -INF '(two or more) to die' b. pasat -itá die.PL -INF 'to kill (two or more)'

A reviewer points out that stems of this kind have interesting implications for the syntactic approach to voice morphology put forward in Alexiadou et al. (2015). If these stems are alternate realizations of the same root, then *VoiceP* must be present in the structure of each form and show contextual allomorphy. If instead they are separate lexical items then *VoiceP* need not be present in the unmarked form as per Alexiadou et al. (2015). A semantic account may be the correct approach for these few forms.

This section has shown that Creek has a robust system of marking number on verbs, making detailed number distinctions singular, dual, and plural. In response to Borer's objection to classifying the Hiaki verbs as suppletion, Creek provides evidence of a productive number agreement paradigm in a language with verbal suppletion. This system shows that suppletion based on number is not an anomaly, but is part of a larger class of verbs making a grammatical distinction. As such, this data is evidence in favor of analyzing idiosyncratic forms as examples of suppletion.

3 Suppletion Conditioned By Formal Number

The second set of data I wish to present demonstrates that Creek suppletive verbs are sensitive to formal number. First, although Harley (2014b) argues that suppletive verbs are predicted to agree with interpretable number in *pluralia tanta*, Creek suppletive verbs agree with uninterpretable, inherent number features on *pluralia* and

dualia tanta nouns. Second, in unspecified number contexts, the plural form of Creek suppletive verbs serves as the *elsewhere* item. This data supports an argument that the number specification of the complement conditions the phonological form of the verb and proves problematic for an analysis that claims distinct verbs carry semantic number expectations that restrict their complements.

Creek nouns that refer to items such as clothes, rope, or blankets trigger dual number agreement. Additionally, nouns referring to liquids and grain-like items trigger plural number agreement (Haas 1948; Martin 2011). Haas notes her consultant's remark about (10c), saying that it "sounds like you're saying *I put two coats down*, but that's only because it's something soft" (Haas 1948: 245, emphasis hers). She gives some examples of this phenomenon, reproduced below with interlinear glossing.

- (10) a. pú:si -n tak- léyhc -ey -s (SG) cat -ACC LOC- set.SG.PFV -1SA -IND 'I put the cat down.'
 - b. pú:si -n tak- ká:hy -ey -s (DU) cat -ACC LOC- set.DU.PFV -1SA -IND 'I put (two) cats down.'
 - c. kápa -n tak- ká:hy -ey -s (DU) coat -ACC LOC- set.DU.PFV -1SA -IND 'I put the coat down (on the floor).'
 - d. pú:si -n takk- apó:hy -ey -s (PL)
 cat -ACC LOC- set.PL.PFV -1SA -IND
 'I put the cats down.' (Haas 1948: 245)

In both (10b) and (10c) have the dual form of ka:y- 'to set', but only (10b) indicates there are two objects. The verb in (10c) agrees with the inherent number on the noun. Similarly both (11c) and (11d) have the triplural form of the verb palat- 'to throw', but (11c) alone indicates there are three or more knives.

- (11) a. islá:fka -n a- wéyk -ey -s (SG) knife -ACC LOC- throw.SG.PFV -1SA -IND 'I threw away the knife.'
 - b. islá:fka -n a- káhy -ey -s (DU) knife -ACC LOC- throw.DU.PFV -1SA -IND 'I threw away (two) knives.'
 - c. islá:fka -n a- paláht -ey -s (PL) knife -ACC LOC- throw.PL.PFV -1SA -IND 'I threw away (three or more) knives.'
 - d. wa:k -apisí: -n a- paláht -ey -s (PL) cow -milk -ACC LOC- throw.PL.PFV -1SA -IND 'I poured out the milk.' (Haas 1948: 246)

These examples provide evidence that Creek suppletive verbs are conditioned by inherent number features, resulting in a mismatch between semantic meaning (just one coat) and grammatical information (dual number agreement). This type of mismatch is unexpected if the verb itself encodes the semantics necessary for its environment. Furthermore, an overlapping semantics account cannot explain why suppletive verbs are never sensitive to agents of transitives. If Creek verbs were sensitive to semantic number, we would not expect this asymmetry.

Finally, Creek suppletive verbs behave similarly to Hiaki in impersonal passive constructions. The plural stem serves as the *elsewhere* (or default) form of suppletive verbs and appears in unspecified number environments even when the context is biased towards a singular interpretation of the argument. In (13), the singular referent is established in the previous context of the folk tale.

- (12) ci- héywa =teys is- **lomh** -ip -**hô:y** -in áhł -íck -i: -s 2P- wife =even INST- **lie.PL** -MP -IMPL -DS go.about.SG -2SA -DUR -IND 'Someone may lie with your wife.' (Haas & Hill 2015: 704, my gloss)
- (13) cofí -n akál -ała:n -ít s- ohh- **apího:y** -â:n... rabbit -NS pour -PROSP -SS INST- LOC- **go.PL.IMPL** -REF

This behavior of suppletive verbs is also unexpected if the lexical semantics of the verb restricts its environment, but is completely expected if grammatical number features (or the lack thereof) determine the phonological form of the stem.

In her article, Harley found it far-fetched to accept that English verbs such as go and went happened to overlap in semantics, but have convenient gaps in their paradigms (Harley 2014a: 237). A similar argument for Creek becomes untenable. If suppletive forms are in fact separate verbs, it would involve proliferating verbs of position and motion, assuming sets of three verbs overlap enough in semantics to express the same event but differ precisely in the number of argument they allow. Placing this load on the lexicon when there is already a robust system of three-way number agreement is redundant. In sum, the productive pattern of number agreement in verbs and the maintenance of those distinctions in suppletive forms are strong evidence in favor of viewing suppletive forms as realizations a single abstract root. Cases of pluralia tanta and dualia tanta as well as impersonal passives are further evidence that it is the root that is sensitive to the number of the complement and not the other way around, demonstrating that grammatical number (which mismatches with semantic number) conditions selection of the root.

4 Conclusion

Creek verbs provide further evidence that roots can be suppletive, having very different phonological forms dependent on their environment. A sample vocabulary entry for a three-way suppletive verb is given below for the root 'to sit/set'.⁷

⁷Although I use an orthographic representation for the root in these examples for convenience, it would be more accurate to represent them as numerical indices.

(14) a.
$$\sqrt{\text{SIT}} \leftrightarrow /\text{ley} / /DP[+atomic, +minimal]$$

b. $\sqrt{\text{SIT}} \leftrightarrow /\text{ka:} / /DP[-atomic, +minimal]$
c. $\sqrt{\text{SIT}} \leftrightarrow /\text{apo:} / Elsewhere$

Forms with a suppletive plural but regular dual form could be specified for a positive value of [minimal], as shown below for 'to arrive'.

(15) a.
$$\sqrt{\text{ARRIVE}} \leftrightarrow /\text{ala} / /DP[+minimal]$$

b. $\sqrt{\text{ARRIVE}} \leftrightarrow /\text{yeyc} / Elsewhere$

Suppletive and irregular forms limited to a two-way distinction between singular and plural only show sensitivity to the $[\pm atomic]$ feature.

(16) a.
$$\sqrt{\text{SMALL}} \leftrightarrow /\text{cot} / /DP[+atomic]$$

b. $\sqrt{\text{SMALL}} \leftrightarrow /\text{lopoc} / Elsewhere$

In the above example vocabulary entries, the items include specific number features associated with the environments conditioning the phonological form of the root. In each example the plural form is the default, or *elsewhere* item.

In conclusion, this squib presented data which proves problematic to an understanding of roots as constant phonological lexical items. Creek suppletive verbs show sensitivity to formal, grammatical number of their complements even in the absence of congruent semantic number or specified grammatical number. Creek provides the evidence that Borer found lacking in Harley's analysis of Hiaki. What the Hiaki data lacked in the absence of productive verbal number, Creek supplies in its number system. Not only is number marking overt, but it marks a three-way distinction and tracks formal number of the complement. As such, Creek provides a more complete example of root suppletion than Hiaki and contributes independently to our understanding of suppletion as it relates to the nature of roots.

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