EXPANDING TO THE EDGES: CENTRAL NUMIC DUAL NUMBER[1]

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The Central Numic (Uto-Aztecan) dual number marking system on nouns and pronouns is of interest because even though most of the component morphemes involved in the system are reconstructible to Proto-Numic, the system itself is not. Indeed, while the reconstructible Proto-Numic system is rudimentary, the Central Numic system is robust and has expanded to the point that there are few environments where dual is not marked on equal footing with singular and plural. The Central Numic system is of further interest because it involves cycles of grammaticalization and not just a single diachronic event. This contrasts with the other two branches of Numic, Western and Southern, where the very rudimentary Proto-Numic dual number has been maintained and only minimally expanded. The tarpaper shack of Proto-Numic dual marking is now the steel-and-glass high-rise of Central Numic dual marking.

[KEYWORDS: Uto-Aztecan languages, dual number, grammaticalization, Central Numic]

1. Introduction. This paper traces the expansion of distinct dual number syntax and morphology in the Central Numic languages of Uto-Aztecan (Timbisha [par], Shoshoni [shh], and Comanche [com]). Although there is no reconstructible dual in Proto-Uto-Aztecan, Proto-Numic had a distinct form for the first person inclusive dual pronoun. While the Southern Numic and Western Numic languages have hardly more evidence of a distinct dual than this, the Central Numic languages have innovated entire dual pronominal and nominal paradigms beginning in Proto-Central Numic, as well as a range of distinctive dual verb forms. The languages used common grammaticalization resources to create these dual forms, including reduplication

of the singular root and grammaticalization of *waha* 'two' (on not just one, but two separate occasions). This innovation and expansion of distinct dual number marking in Central Numic is interesting not only in the thoroughness of its expansion throughout the nominal, pronominal, and verbal paradigms, but also in the relatively short time in which it occurred.

2. The Numic Languages of Uto-Aztecan.   The seven generally recognized Numic languages are divided into three well-defined subgroups as shown in (1).

(1) Numic
  Western Numic: Northern Paiute [pao], Mono [mnr]
  Southern Numic: Colorado River [ute], Kawaiisu [xaw]
  Central Numic: Shoshoni, Comanche, Timbisha

Of the three Central Numic languages, Timbisha was spoken in the desert valleys from Owens Lake, California, to Death Valley; Shoshoni was spoken over an area from southwestern Nevada to Utah, southern Idaho, and central Wyoming; and Comanche was spoken on the western margin of the Great Plains from the Arkansas River to the Rio Grande. Timbisha and Shoshoni are now spoken only in discontinuous pockets throughout their former ranges, and Comanche is isolated in a small area of southwestern Oklahoma. Historically, Comanche is an offshoot of the easternmost Shoshoni dialect, separating possibly as late as the early eighteenth century. The division between Timbisha and Shoshoni is much older, probably between one and two millennia ago.

3. Number in Uto-Aztecan.   Langacker (1977:80) reconstructed only an unmarked singular and a marked plural for Proto-Uto-Aztecan. He noted that only the Numic languages along with neighboring Hopi [hop] and Tübatulabal [tub] have innovated a dual number. The three systems are not reconstructible to a common ancestor, however. The Hopi nominal dual is shown in (2).[2] Dual is marked almost exclusively on animates,[3] inanimates

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[2] Transcription throughout the paper generally follows Uto-Aztecan and Americanist practice with the following to be noted: *y* = IPA *j*, ' (apostrophe) = IPA *f*, *r* = IPA . . . , long vowels are written double, and voiceless vowels and sonorants are capitalized. Abbreviations are PN (Proto-Numic), PCN (Proto-Central Numic), Tm (Timbisha), Sh (Shoshoni), Cm (Comanche), NP (Northern Paiute), Kw (Kawaiisu), CR (Colorado River); 1, first person; 2, second person; 3, third person; ABS, absolutive; COREF, coreferential; DEM, demonstrative; DIM, diminutive; DL, dual; DUR, durative; EXCL, exclusive; INCL, inclusive; INDEF, indefinite; INTR, intransitive; OBJ, object[ive]; PL, plural; POSS, possessive; PRES, present; RDP, reduplication; REFL, reflexive; REM, remote; SBJ, subject[ive]; SG, singular; SUB, subordinate clause; TR, transitive; Fa (father), Mo (mother), Br (brother), Si (sister), Ol (older), Yo (younger).

[3] The term "animate" in the languages represented here generally refers to the semantic class of those things which are alive and capable of movement. Thus, a squirrel is generally animate whereas a tree is not. Sentience, such as the Sun personified, can also impart animacy

that seem to move of their own accord (such as clouds), and sacred things. The dual is marked with a suffix -t on the singular stem. Hopi treats dual as plural otherwise (Jeanne 1978:72ff.; HDP 1998:870).[4]

(2) Hopi

maana	maana–t[5]	ma–mant
girl	girl–DL	RDP–girl.PL
'girl'	'two girls'	'girls'

(Jeanne 1978:73)

sino	sino–t	sino–m
person	person–DL	person–PL
'person'	'two persons'	'persons'

(HDP 1998:870)

There is also a syntactic expression of dual number. Dual subjects of suppletive verbs take the singular form of suppletive verbs as in (3) and (4).

(3) Hopi

mi'		maana	paki
DEM.REM.SG.SBJ		girl	enter.SG

'That girl entered.'

mima	maana–t	paki
DEM.REM.PL.SBJ	girl–DL	enter.SG

'Those (two) girls entered.'

mima	ma–mant	yungya
DEM.REM.PL.SBJ	RDP–girl.PL	enter.PL

'Those (several) girls entered.'

(Jeanne 1978:73)

(4) Hopi

Nu'	kawayo–t	tuwa
1SG.SBJ	horse–OBJ	see

'I saw a horse.'

Itam	kawayo–t	tuwa
1PL.SBJ	horse–OBJ	see

'We (two) saw a horse.'

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to normally inanimate objects in specific contexts, such as in a Coyote story. In Hopi, the term "animate," while maintaining this semantic basis, also denotes the formal morphological class which defines how plural is marked on nominals.

[4] Examples from Jeanne 1978 have been respelled to match the orthography in the Hopi Dictionary Project (HDP).

[5] HDP 1998:218 lists *mànt* as a variant form for 'two girls'.

TABLE 1
Tübatulabal Independent Pronouns and Pronominal Affixes

	Independent	Conjunctive	Object	Possessive
1DL.INCL	iŋgila	-gila	—a	
1DL.EXCL	iŋgila'aŋ	-gila'aŋ	-džiya'aŋ	-tš

Source: Voegelin 1935:135, 137
[a] The absence of object and possessive forms for dual inclusive is unexplained in Voegelin (1935). It is perhaps a gap in the data.

TABLE 2
Western Numic and Southern Numic Pronouns

	SG	DL	PL INCL	PL EXCL
Western Numic				
Northern Paiute	nɨ	ta	tammi	nɨmmi
Mono	nɨɨ	taa	taakkwa	nɨɨkkwa
Southern Numic				
Kawaiisu	ni'ɨ	tami	tawa	nɨmi
Colorado River	ni'	tammi	tami	nɨmmi

Itam   kawayo–t   tu–twa
1PL.SBJ horse–OBJ RDP–see

'We (several) saw a horse.'

(HDP 1998:870)

Tübatulabal has innovated a set of dual pronouns and pronominal affixes used only with first person (Voegelin 1935:134ff.). These are shown in table 1. The *-gi*/*dži* part of the forms marks non-singular. There is no dual morphology on nominals.[6]

Thus, there is no relationship between the Hopi dual system, which is not pronominal, and the Tübatulabal system, which is pronominal and restricted to first person.

4. Number in Western and Southern Numic. For the category of dual in the Western and Southern Numic languages, we are still looking at a restricted category of pronouns and pronominal affixes. In both of these Numic branches, a dual first person pronoun has been developed as shown in table 2, which illustrates the first person pronouns in subjective case.[7]

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[6] Tübatulabal forms from Voegelin (1935) have been respelled to reflect contemporary practice.

[7] The Southern and Western Numic grammar descriptions and examples are from Snapp et al. 1982 (Northern Paiute), Thornes 2003 (Northern Paiute), Norris 1986 (Mono), Zigmond

These forms are especially relevant for Proto-Numic since Western Numic and Southern Numic are noncontiguous branches of Numic, separated by Central Numic. Based on this evidence, dual pronouns in Proto-Numic were formed from the plural inclusive stem. The plural inclusive form is itself reconstructible to Proto-Uto-Aztecan as the first person plural pronoun *(i-) ta(-mɨ) (Langacker 1977:124). The special relationship between inclusive and dual is well-documented in the world's languages, whereas a special relationship between dual and exclusive is extremely rare (Cysouw 2013). This is clearly evident in the Western Numic forms, where the unmarked stem is dual, and plural is formed with the addition of a plural suffix. This represents the majority of information concerning pronominal dual in the non-Central Numic languages. There is no nominal dual marking in any of these languages.

Syntactically, non-first-person dual subject is marked in Southern Numic (in both Kawaiisu and Colorado River) by combining a plural pronoun or pronominal affix with the singular form of a suppletive verb, as in (5), or a verb without a plural suffix, as in (6).

(5) Colorado River
    qari–yɨ–aŋa
    sit.SG–PRES–3SG

    'he sits'

    qari–yɨ–amɨ
    sit.SG–PRES–3PL

    'they (two) sit'

    yuɣwi–yɨ–amɨ
    sit.PL–PRES–3PL

    'they sit'

                                         (Sapir 1930:160)

(6) Colorado River
    ivi–yɨ–ni
    drink–PRES–1SG

    'I drink'

    ivi–yɨ–nɨmwi
    drink–PRES–1PL.EXCL

    'We (two, exclusive) drink'

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et al. 1991 (Kawaiisu), Sapir 1930 (Colorado River), Press 1980 (Colorado River), and Givón 2011 (Colorado River). Page numbers from Sapir (1930) in this paper refer to the original 1930 pagination, which is retained in the 1992 reprinted text alongside the new page numbering.

TABLE 3
SAMPLE SUPPLETIVE VERBS IN NUMIC

		Mono	NP	Tm	Sh	CR
'sit'	SG	katti	katti	kati	kati	kadi
	DL	yikkwi	yigwi	kati, yikwi	yikwi	kadi
	PL	yikkwi	aatta'a	nuupai, yuunaa	yikwi	yuɣwi
'stand'	SG	wini	wini	wini	wini	winni
	DL	kono	wami	wiwini	tsatsakki	winni
	PL	kono	kono	toppaŋi, tattsaho	topo'i	waŋwi
'lie'	SG	habi	happi	hapi	hapi	avi
	DL	kwabi	kwappi	kwopi, kopi	kwapi	avi
	PL	kwabi	pokkwa	kopi-ttiki	kwapi	kwavi

Source: Babel et al. 2013:472

ivi–kka–yi–nimwi
drink–PL–PRES–1PL.EXCL

'We (exclusive) drink'

(Sapir 1930:160)

Northern Paiute has developed dual suppletive forms for a small number of intransitive verbs and reduplicates the first syllable of many other common verbs to mark dual. Other than pronouns, Mono has no other dual marking, indicating that the dual verb forms in Northern Paiute are probably the result of feature borrowing from neighboring Shoshoni (Babel et al. 2013:472). Table 3 illustrates three suppletive positional verbs in Numic, showing the lack of dual forms in Mono and Southern Numic (represented by Colorado River) and the presence of dual forms in Northern Paiute and Central Numic.

Thus, outside Central Numic, there is a limited set of first-person dual pronouns based on the plural inclusive pronominal stem (reconstructible to Proto-Numic), syntactic marking of dual in Southern Numic (reconstructible to Proto-Southern Numic and probably borrowed into Hopi as in 3 and 4), and some suppletive marking of dual in common verb stems in Northern Paiute (borrowed as a feature from Shoshoni).

5. Number in Timbisha. Central Numic has taken dual to several levels of complexity beyond what is found in the other Numic branches. Central Numic's system, although not reconstructible to Proto-Numic, illustrates what can happen when a grammaticalization process runs amok and expands a feature well beyond its original restricted occurrence. Dual marking in Central Numic has expanded beyond first person in pronouns to include pronouns in all persons, nouns, adjectives, verbs, demonstratives, and the number two, which takes the set of dual adjectival suffixes.

The Timbisha system is typical of Central Numic systems, so it will be described first in more detail, beginning with nominal affixation and then proceeding to pronominal, demonstrative, and other affixation, and concluding with number suppletion in verbs.[8]

Number affixation on nouns is generally optional in Central Numic. In (7), the two sentences mean the same thing. The second sentence has a noun marked for plural with reduplication; the first does not. The number of the subject in both sentences is indicated by the plural suppletive form of the verb, which is required.

(7) Timbisha

taŋummi   naŋkaha   nii naaŋkan   niŋwinni
taŋummi–i   naŋka–han   nii naaŋkan   niŋwinni
man–OBJ   hear–SUB   I   make.noise   talk.PL.SBJ

'I hear the men (who are) making noise talking.'[9]

(Dayley 1989a:216)

tattaŋummi   naŋkaha   nii   naaŋkan   niŋwinni
tat–taŋummi–i   naŋka–han   nii   naaŋkan   niŋwinni
RDP–man–OBJ   hear–SUB   I   make.noise   talk.PL.SBJ

'I hear the men (who are) making noise talking.'

(Dayley 1989a:222)

Number marking on nominals is done with reduplication, suffixation, or both depending on the noun. There is much dialectal and idiolectal variation in the forms in both Timbisha and Shoshoni. Examples are shown in table 4.

The number suffixes on nominals are shown in (8) and illustrated in (9).

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[8] The Timbisha grammar descriptions are from Dayley 1989a and McLaughlin 2006. Some data are from Wick R. Miller's fieldnotes. Throughout Central Numic, both progressive and regressive vowel assimilation in unstressed syllables are common. It will not generally be remarked upon except where necessary for clarity.

[9] The gloss is Dayley's. An anonymous reviewer notes, however, that the verb 'hear' is marked as subordinate and suggests the alternate translation, 'The men whom I hear are making noise talking'. The two translations each have their strengths. Dayley's translation emphasizes the objective marking on *taŋummi* 'man' and the main clause long vowel of *nii* 'I'; the alternate translation emphasizes the subordinate marking on *naaŋka* 'hear'. A similar sentence (Dayley 1989b:128) adds a main clause subject demonstrative referring to the object of the subordinate clause and uses the subordinate clause short vowel of *ni* 'I'.

(i) Timbisha

ni wa'ippia   naŋkaha   suti   naaŋka   hupiatiki
ni wa'ippi–a   naŋka–han sutin   naaŋka   hupiatiki
I   woman–OBJ   hear–SUB   DEM.SG.SBJ   make.noise   sing

'I hear the woman making noise singing.'

This sentence is more literally, 'The woman I hear, she is making noise singing.'

TABLE 4
TIMBISHA NOMINAL NUMBER MARKING

	SG	DL	PL
Suffixes only			
grandfather (FaFa)	kɨnu	kɨnu-aŋku	kɨnu-ammɨ
grandmother (FaMo)	huttsi	huttsi-aŋku	huttsi-ammɨ
antelope	wantsi	wantsi-aŋku	wantsi-ammɨ
young woman	naittsi	naittsi-ahu	naittsi-ammɨ
Reduplication only			
duck	pɨyɨn	pɨp-pɨyɨn	pɨyɨn
gun	etɨ	e'-etɨ	etɨ
house	kahni	kak-kahni	kahni
Suffixes and Reduplication			
man	taŋwammɨ[a]	tat-taŋwa-ŋku	tat-taŋwa-mmɨ
bear	pahapittsih	pap-pahapittsih	pahapittsi-ammɨ
pet	puŋku	pup-puŋku	pup-puŋku-mmɨ
mother	pia	pip-pia-hu	pip-pia-mmɨ

[a] The final -*mmɨ* is an unproductive nominal suffix found on a small number of noun stems, such as *taŋwammɨ* 'man' and *piammɨ* 'infant'. It is dropped in the dual and plural but retained in the singular.

(8) Timbisha[10]

	DL	PL
SBJ	-ahu ~ -aŋku ~ -ŋku ~ -muŋku	-ammɨ ~ -mmɨ
OBJ	-ahi ~ -hi ~ -muhi ~ -aŋkwi	-ammi ~ -mmi
POSS	-ahin ~ -hin ~ -muhin ~ -aŋkwin	-ammin ~ -mmin

(9) Timbisha

		SG	DL	PL
'great-grandparent'	SBJ	tso'o	tso'o–aŋku	tso'o–ammɨ
	OBJ	tso'o–a	tso'o–ahi	tso'o–ammi
	POSS	tso'o–an	tso'o–ahin	tso'o–ammin

Since a first-person dual pronoun is reconstructible to Proto-Numic, we should expect to find a reflection of this in Central Numic and Timbisha. Unlike in Western and Southern Numic, however, where the dual forms are not completely integrated into the full pronominal paradigm, dual pronouns in Central Numic are fully integrated and form a complete paradigm with the other pronouns. The pronominal system in Timbisha consists of pronominal roots combined with the same number suffixes for dual and plural that are found on nominals, although with less variation. Table 5 illustrates the pronouns in Timbisha. Demonstrative stems are generally used for third person in Central Numic, but third-person

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[10] Variants without *a* are generally used after stems that end in *a* or *ɨ*, unless the final vowel is part of an absolutive suffix. Variants without *a* and with *mu* are in free variation.

TABLE 5
TIMBISHA PRONOUNS

	SG	DL	PL
Subjective			
1 EXCL	nɨ	nɨ-ŋku ~ nu-ŋku[a]	nɨ-mmi
1 INCL		ta-ŋku	ta-mmɨ
2	ɨ	mu-ŋku	mɨ-mmɨ
3 COREF	pɨ	pɨ-hɨ ~ pu-ŋku	pɨ-mmɨ
Objective			
1 EXCL	nia	nɨ-hɨ ~ nu-hi	nɨ-mmi
1 INCL		ta-hi	ta-mmɨ
2	ɨn	mu-hi	mɨ-mmɨ
3 COREF	pɨ-nna	pu-hi	pɨ-mmi
Possessive			
1 EXCL	nian	nɨ-hin ~ nu-hin	nɨ-mmin
1 INCL		ta-hin	ta-mmɨn
2	ɨn	mu-hin	mɨ-mmɨn
3 COREF	pɨ-nnan	pu-hin	pɨ-mmin

[a] The rounded vowels in the pronominal roots of *nuŋku, muŋku,* and *puŋku* are due to regressive rounding assimilation, a common process in Central Numic, based on the dual subjective suffix. This rounding assimilation is especially common when a monosyllabic morpheme containing either *a* or *ɨ* precedes a syllable with a rounded vowel. The rounded vowels of the pronominal stems have then been extended into the other cases through analogy. Dayley (1989a:414) calls this vowel harmony, but it more closely resembles assimilation since it is not stem-based as vowel harmony tends to be in languages such as Hungarian. Examples of this assimilation are *nakoitsoi ~ nokoitsoi* 'bathe, swim' < *na-* REFL + *koitsoi* 'wash'; *patokoa ~ potokoa* 'water snake' < *pa-* 'water' + *tokoa* 'snake'; *tɨmo'i ~ tumo'i* 'write, draw (INTR)' < *tɨ-* INDEF OBJ + *mo'i* 'write, draw (TR)'; *kɨso'e ~ kuso'e* 'bite (PL OBJ)' < *kɨ''-* INTR + *-so'e* 'pinch (PL OBJ)'.

coreferential pronouns can also be used (except as the subject of the main verb). The demonstrative stems will be illustrated later.

Note in table 5 that the dual is not an expansion of the Proto-Numic dual, which was the first-person-plural inclusive stem. Instead, it is, like the plural, marked by variants of the nominal suffixes, being affixed to the first-person inclusive and exclusive stems as well as the second- and third-person coreferential stems. It is also declined for case. Note also that the objective suffix is not derived from the subjective suffix in first and second persons. The expected objective suffix *-i* is not affixed to the subjective form, but to a different morpheme altogether. The possessive in Timbisha is universally formed by affixing *-n* to the objective form so any comments that apply to the objective forms apply to the possessive as well. Only the third-person coreferential forms show an uncommon subjective suffix variant that served as the archaic basis for the objective and possessive suffixes.

Demonstratives, which serve both as third-person pronouns and demonstrative adjectives, are also marked for dual number. This is illustrated with a proximal

demonstrative stem in (10). The forms consist of the demonstrative stem *si-*, the *-tɨn* demonstrative suffix, and the same dual suffixes found on the pronouns.

(10) Timbisha

		SG	DL
'this, this one'	SBJ	si–tin	si–ti–ŋku ~ si–tu–ŋku ~ si–ti–hu
	OBJ	si–kka	si–ti–hi ~ si–tu–hi
	POSS	si–kkan	si–ti–hin ~ si–tu–hi

	PL
	si–ti–mmɨ
	si–ti–mmi
	si–ti–mmin

This set of suffixes is similar to the suffixes used on other nominal modifiers as shown in (11) and illustrated in (12).

(11) Timbisha

	SG	DL	PL
SBJ	-tin	-ti-hɨ	-ti-mmɨ
OBJ	-ti-nna ~ -ti	-ti-hi	-ti-mmi
POSS	-ti-nnan	-ti-hin	-ti-mmin

(12) Timbisha
Wahahtɨhɨ [11]   pakka   yuhupi
waha–htɨhɨ   pakka   yuhu–pi
two–SBJ.DL   cow   fat–ABS

'Two cows are fat.'

(McLaughlin 2006:28)

At the sentence level, Timbisha marks number on imperatives with number enclitics related to the pronominal and demonstrative subjective suffixes as in (13–16). This usage is unique to Timbisha.

(13) Timbisha
Ma   yaakki!
3OBJ   bring.SG.OBJ

'Bring it!'

Ma   yaakki–uŋku!
3OBJ   bring.SG.OBJ–DL.SBJ

'Bring it, you two!'

Ma   yaakki–ummɨ!
3OBJ   bring.SG.OBJ–PL.SBJ

'Bring it, you all!'

(Dayley 1989a:79)

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[11] The initial consonant of the case and number suffixes on numbers and color adjectives in Eastern Timbisha is usually preaspirated.

(14) Timbisha
      Ma   himikki!
      3OBJ   bring.PL.OBJ

      'Bring them!'

      Ma   himikki–uŋku!
      3OBJ   bring.PL.OBJ–DL.SBJ

      'Bring them, you two!'

      Ma   himikki–ummɨ!
      3OBJ   bring.PL.OBJ–PL.SBJ

      'Bring them, you all!'

                                             (Dayley 1989a:79)

(15) Timbisha
      Yɨtsɨ!
      arise.SG.SBJ

      'Get up!'

      Yotsi–eŋku!
      arise.PL.SBJ–DL.SBJ

      'Get up, you two!'

      Yotsi–emmɨ!
      arise.PL.SBJ–PL.SBJ

      'Get up, you all!'

                                           (Miller 1965–1968)

(16) Timbisha
      Tɨ–puni!
      INDEF.OBJ–see

      'Wake up!'

      Tɨ–puni–aŋku!
      INDEF.OBJ–see–DL.SBJ

      'Wake up, you two!'

      Tɨ–puni–ammɨ!
      INDEF.OBJ–see–PL.SBJ

      'Wake up, you all!'

                                           (Miller 1965–1968)

In Timbisha, two suffixes account for dual marking. The first is the common form used for subjective dual, -(*a*)*ŋku*. The uncommon dual objective form -(*V*)*ŋkwi* is the subjective -(*V*)*ŋku* plus the objective suffix -*i*. The second is the uncommon form for subjective dual, -(*a*)*hɨ*/-(*a*)*hu*. The common dual objective form -(*a*)*hi* is the subjective -(*a*)*hɨ* plus the objective suffix -*i*.

TABLE 6
Central Numic Suppletive Verbs

		SG	DL	PL
Dual = Singular, Plural distinct				
'arise, fly'	Tm	yɨtsɨ	yɨtsɨ	yoti
'carry, take'	Tm	yaa	yaa	hima
'die'	Tm	tiyai	tiyai	tsɨɨwa ~ ko'i
'kill'	Tm	pakka	pakka	wasɨ
Dual = either Singular or Plural, other number distinct				
'cry'	Tm	yakai	yakai ~ namo'i	namo'i
'enter'	Tm	ika	ika ~ weeki	weeki
'put'	Tm	tɨki	tɨki ~ taha	taha
'sleep'	Tm	ippɨi	ippɨi ~ okko'i	okko'i
'wander'	Tm	nuwi	nuwi ~ niŋka	niŋka ~ yiŋka
Dual = Reduplicated Singular, Plural distinct				
'emerge'	Tm	to'e	toto'e	kɨa
	Sh	to'i	toto'i	kɨa
'enter'	Sh	yua ~ ya'i	yuyua ~ yaya'i	waiku
'fall'	Sh	pahe ~ pahi	papahi	sawɨ'i
'run'	Tm	nukkwi	nunukkwi	nutaa
	Sh	nukki	nunukki	nutaa
Dual = Reduplicated Plural, Singular distinct				
'arise, fly'	Sh	yɨtsɨ	yoyoti	yoti
'wander'	Sh	nɨmi	yɨyɨnka	yɨnka
Dual = Reduplicated Singular/Plural				
'come'	Tm	kimma	kikimma	kimma
	Sh	kimma	kikimma	kimma
'go'	Tm	mi'a	mimi'a	mi'a
	Sh	mi'a	mimi'a	mi'a
'return'	Tm	ko'e ~ kohi	koko'e	ko'e
	Sh	ko'i	koko'i	ko'i

In addition to nominal, pronominal, and nominal modifier marking, dual has also made some inroads into the number suppletion found on many common verbs in Timbisha and Shoshoni (but not Comanche). Table 6 provides a representative list. Note that some verbs use the singular form for dual, some have a distinct form for dual that contrasts with a common singular-plural form, and a small number have three-way suppletion. There is wide variation among speakers and between dialects in some forms.[12] Number suppletion in

[12] Since the complexity of forms for dual verb suppletion falls outside the main scope of this paper, the only forms shown here are from Dayley (1989b) (Tm); Crum, Crum, and Dayley (2001) (Sh) (principally Owyhee, near the center of the Shoshoni range); and Canonge (1958) (Cm). All the selected singular forms and most of the plural and dual forms are cognate. This is a comprehensive list, but not a complete one.

TABLE 6—*continued*

Dual = Historic Plural, Singular and Plural distinct			
'sit'	Tm	katɨ	yɨkwi	nuupai ~ yuunaa ~ yiŋka

Timbisha and Shoshoni Forms with no Dual[a]			
'carry, take'	Sh	yaa	hima	hima
'cry'	Sh	yakai	nawoi	nawoi
'die'	Sh	tiyai	koi	koi
'fall'	Tm	pahe	pokoa	pokoa
'kill'	Sh	pekka	wasɨ	wasɨ
'put'	Sh	tɨki	tahna	tahna
'sit'	Sh	katɨ	yɨkwi	yɨkwi
'sleep'	Sh	ippɨi	ɨkkoi	ɨkkoi

Comanche Forms			
'arise, fly'	Cm	yɨtsɨ	yori	yori
'carry, take'	Cm	yaa	hima	hima
'come'	Cm	kima	kima	kima
'cry'	Cm	yake	nahwooi	nahwooi
'die'	Cm	tiyaai	kooi	kooi
'emerge'	Cm	to'i	kɨa	kɨa
'enter'	Cm	ika	wekwi	wekwi
'fall'	Cm	pahi	yuma	yuma
'go'	Cm	mi'a	mi'a	mi'a
'kill'	Cm	pehka	wasɨ	wasɨ
'put'	Cm	tɨki	tahni'i	tahni'i
'return'	Cm	ko'i	koyama	koyama
'run'	Cm	nuhki	nuraa	nuraa
'sit'	Cm	karɨ	yɨkwi	yɨkwi
'sleep'	Cm	ihpii	ihkooi	ihkooi
'wander'	Cm	nɨmi	yɨka	yɨka

[a] In these forms the other language (Tm and Sh) does have separate dual marking.

Central Numic verbs is ergative—that is, suppletive forms for transitive verbs mark the number of the object whereas suppletive forms for intransitive mark the number of the subject. The fact that number suppletion in verbs is not found in Comanche indicates that this is a relatively recent development in Shoshoni and Timbisha and is spreading from west to east. The easternmost Shoshoni dialect in Wyoming has fewer dual suppletive forms than the western dialects in Nevada.[13] This supports the known historical development of Shoshoni dialects wherein Comanche (with no dual suppletive forms) split

[13] Based on the number of suppletive forms found in the various descriptions and dictionaries of Shoshoni (McLaughlin 2015). Note even here in this limited data set that there are more forms with no separate dual for Shoshoni than there are for Timbisha. From west to east the principal dictionaries and descriptions are Crapo (1976) (southwest Nevada), Crum and Dayley (1993) (northern Nevada), Miller (1972, 1996) (Nevada-Utah border), Gould and Loether (2002) (Idaho), and Shaul (2012) (Wyoming). McLaughlin (2012) is generalized and not based on a specific dialect.

from the easternmost Shoshoni dialect in late precontact times, possibly as late as the beginning of the eighteenth century (McLaughlin 2000).

At this point it should be clear that dual marking in Central Numic has expanded to include many more realms than those hinted at in either Western Numic or Southern Numic, and that it has achieved a nearly equal status with singular and plural, especially within the paradigms of nominal, pronominal, and nominal modifier affixation.

6. Number in Shoshoni.   Shoshoni adds more complexity to the issue since the subjective dual suffix is not related to the Timbisha form and the possessive dual suffix is more commonly based on the archaic subjective suffix and not the inflected objective suffix. In addition, the nominal number suffixes are complex and will be discussed after the other paradigms. As in Timbisha, there are also some uncommon variants within the paradigms.

The Shoshoni pronouns are shown in table 7. Three things should be noted about this set when comparing the dual forms to the Timbisha set in table 5. First, the common objective dual form endings are identical; second, the subjective and possessive dual form endings are different; and third, the vowel assimilation in the pronominal roots of the Timbisha dual is absent in Shoshoni. This pattern holds true for Shoshoni suffixes on demonstratives, animate interrogative/indefinite pronouns, and adjectives, all based on the subjective singular suffix -tɨn, as shown in (17–19). Non-singular adjectives are also often reduplicated.

(17) Shoshoni

		SG	DL	PL
'this, this one'	SBJ	si–tin	si–tɨ–wih ~ si–tɨ–hwɨ	si–tɨɨn
	OBJ	si–kka	si–tɨ–hi ~ si–tɨ–hi	si–tɨi
	POSS	si–kkan	si–tɨ–hɨn	si–tɨɨn

(18) Shoshoni [14]

		SG	DL	PL
'who/any'	SBJ	haka–tin	haka–tɨ–wɨh ~ haka–tɨ–hwɨ	haka–tɨɨn
(animate)	OBJ	ha–kka	haka–tɨ–hi		haka–tɨi
	POSS	ha–kkan	haka–tɨ–hɨn		haka–tɨɨn

[14] This system of interrogative/indefinite pronouns has been borrowed into Eastern Timbisha (McLaughlin 2006). The non-singular number and case suffixes, however, are not from Shoshoni, but are based on the Timbisha number suffixes -tɨ-ŋkɨ (dual) and -tɨ-mmɨ (plural) with the objective suffix -i and the possessive suffix -n added to the objective form in analogy with the case and number suffix system of the demonstratives. This leads to the uncommon Timbisha objective dual -ŋkwi (possessive -ŋkwin).

(ii) Timbisha

		SG	DL	PL
'what/any'	SBJ	haka-tin	haka-tɨ-ŋkɨ	haka-tɨ-mmɨ
	OBJ	ha-kka	haka-tɨ-ŋkwi	haka-tɨ-mmi
	POSS	ha-kkan	haka-tɨ-ŋkwin	haka-tɨ-mmin

TABLE 7
SHOSHONI PRONOUNS

	SG	DU	PL
Subjective			
1 EXCL	nɨ	nɨ-wɨh ~ nɨ-hwɨ[a]	nɨ-mmɨn
1 INCL		ta-wɨh ~ ta-hwɨ	ta-mmɨn
2	ɨn	mɨ-wɨh ~ mɨ-hwɨ	mɨ-mmɨn
3 COREF	pɨn ~ pɨn-nɨn	pɨ-wɨh ~ pɨ-hwɨ	pɨ-mmɨn
Objective			
1 EXCL	nɨi	nɨ-hi ~ nɨ-hii	nɨ-mmi
1 INCL		ta-hi ~ ta-hai	ta-mmi ~ tai
2	ɨn ~ ɨ-mmi	mɨ-hi ~ mɨ-hii	mɨ-mmi ~ mii
3 COREF	pɨi ~ pɨ-nni	pɨ-hi ~ pɨ-hii	pɨ-mmi
Possessive			
1 EXCL	nɨ ~ nɨ-an	nɨ-hɨn ~ nɨ-hin	nɨ-mmɨn
1 INCL		ta-han ~ ta-hain	ta-mmɨn
2	ɨn ~ ɨ-mmɨn	mɨ-hɨn ~ mɨ-hin	mɨ-mmɨn
3 COREF	pɨn ~ pɨ-nnan	pɨ-hɨn ~ pɨ-hin	pɨ-mmɨn

[a] In Northern Shoshoni and Eastern Shoshoni (Gould and Loether 2002; Tid-zump 1970; Shaul 2012; Dayley 1970), the dual subjective forms end in -*hwɨ*. This is the result of a metathesis (also found in Comanche) of /RVhV/ to [hRV], where V is an unstressed vowel and R is *r* (Comanche only) or a glide. This occurs in other forms, for example, *puhi* 'leaf' + *wihi* 'metal' > *puihwi* (Eastern Shoshoni) / *puhihwi* (Comanche) 'money'. Crapo's description of Duckwater Shoshoni (1970) lists the dual subjective suffixes as -*wɨh*, but his dictionary of Big Smokey Valley Shoshoni (1976) lists them as -*hwɨh*. Some of this variation is the result of different transcription practices, some is the result of dialect variation, and some is the result of the complex history of vowel devoicing and linguistic acculturation in Shoshoni. None of the variation affects the arguments for the history of dual marking presented here, however.

(19) Shoshoni [15]

		SG	DL	PL
'little'	SBJ	tɨi–tɨn	(tɨ)tɨi–tɨ–wɨh ~ (tɨ)tɨi–tɨ–hwɨ	(tɨ)tɨi–tɨin
	OBJ	tɨi–ti	(tɨ)tɨi–tɨ–hi	(tɨ)tɨi–tii

In addition to having a different set of subjective dual pronominal affixes, Shoshoni has a different set of nominal suffixes, as shown in (20), which are also used on the inanimate interrogative/indefinite pronouns in (21). The Shoshoni dual set includes a non-singular suffix -*nɨ* in front of the dual number suffixes.

[15] Examples of adjectives modifying possessive nominals are very rare, and no generalizations about their affixes can be made at this time. Adjective forms based on -*tɨn* sometimes vary between the regular -*tɨn* set and a -*ntɨn* set with an initial *n*. This variation is unpredictable and can be individual or dialectal. The -*ntɨn* set is not mentioned here further as it is unrelated to the expansion of dual marking in Central Numic.

(20) Shoshoni

	DL	PL
SBJ	-nɨ-wɨh	-nɨɨn
OBJ	-ni-hi	-nii
POSS	-nɨ-hɨn	-nɨɨn

(21) Shoshoni

		SG	DL	PL
'what/any'	SBJ	hiin ~ hinni	hiin–nɨ–wɨh	hiin–nɨɨn
(inanimate)	OBJ	hi–nna	hiin–ni–hi	hiin–nii
	POSS	hi–nnan ~ hi–nnin	hiin–nɨ–hɨn	hiin–nɨɨn

The basic Shoshoni dual affixes therefore are *-wɨh* (~ *-hwɨ*) for subjective, *-hi* for objective, and *-hɨn* for possessive. Used on nominals and inanimate interrogative/indefinite pronouns, the basic suffixes are preceded by *-nɨ*.[16] Used on demonstratives, animate interrogative/indefinite pronouns, and adjectives, the basic suffixes are preceded by *-tɨ*. The Shoshoni suffixes are compared with the Timbisha suffixes in (22).

(22)

	SBJ	OBJ	POSS
Timbisha	-ŋku ~ -hɨ	-hi	-hin
Shoshoni	-wɨh (~ -hwɨ)	-hi	-hɨn (~ -hin)

At the sentence level, unlike Timbisha, Shoshoni occasionally exhibits the use of the basic dual suffix on a verb to mark dual number. This is an uncommon usage and sometimes marks the subject of a transitive verb, as in (23), and sometimes the number of the object, as in (24).

(23) Shoshoni

So–tɨwɨh	nanakkwɨhɨ–nnɨwɨh	tɨpitsi	tsaam	pɨ–hɨn
DEM–DL.SBJ	married.couple–DL.SBJ	very	good	COREF–DL.POSS

tu–tua–ttsi–nii	manapui–htɨ–wɨh
RDP–child–DIM–PL.OBJ	look.after–PRES–DL(SBJ)

'That couple takes very good care of their children.'

(Crum and Dayley 1993:166)

(24) Shoshoni

Sa–tɨ	wihyu	u–tihi	mianki–nu–wɨh
DEM–SG.SBJ	then	DEM–DL.OBJ	chase–PAST–DL.OBJ

'She was chasing those two.'

(Miller 1972:40)

This usage is rare in the extant documentation and probably indicates an incipient grammaticalization of an enclitic coreferential pronoun that repeats the number of the verb subject, as in (25).

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[16] The *-ni* in the objective is the result of vowel assimilation with the following *-hi*.

TABLE 8
COMANCHE PRONOUNS

	SG	DU	PL
Subjective			
1 EXCL	nɨ' ~ nɨɨ	nɨ-kwɨh	nɨ-nnɨ
1 INCL		ta-hɨh ~ ta-kwɨh	ta-nnɨ
2	ɨnnɨ	mɨ-hɨh ~ mɨ-kwɨh	mɨ-nnɨ ~ mɨ-mmɨ
3 COREF	pɨnnɨ	pɨ-hɨh ~ pɨ-kwɨh	pɨ-mmɨ
Objective			
1 EXCL	nɨ ~ nɨe ~ nɨe-ti	nɨ-hi	nɨ-mmi
1 INCL		ta-hi	tai ~ ta-mmi
2	ɨ ~ ɨ-mmɨ ~ ɨ-mmi	mɨ-hi	mii ~ mɨ-mmi
3 COREF	pɨ ~ pɨ-mmi	pɨ-hi	pɨi ~ pɨ-mmi
Possessive			
1 EXCL	nɨ	nɨ-hi=	nɨ-mmi=
1 INCL		ta-hi= ~ ta-ha= ~ taa=	taa= ~ ta-mmi= ~ tai=
2	ɨ=	mɨ-hi=	mii= ~ mɨ-mmi=
3 COREF	pɨ= ~ pɨ-mmi=	pɨ-hi=	pɨi= ~ pɨ-mmi=

(25) Shoshoni
Su–tɨwɨh   tɨasɨ wɨɨtan tu–tua–nɨwɨh   tɨ–tɨai–tɨwɨh
DEM–DL.SBJ also   bear   RDP–child–DL.SBJ RDP–little–DL.SBJ

nɨkakkin–na=pɨwɨh.
dance.DUR–PRES=COREF.DL.SBJ

'Those two little bear cubs were also dancing.'

(Miller 1972:78)

7. Number in Comanche.   Since Comanche has separated from Sho-
shoni relatively recently, it would be expected that the Comanche system
of dual marking might mirror the Shoshoni system fairly closely, if not be
nearly identical to it. This, however, is not the case. The Comanche pro-
nouns are shown in table 8.[17]

Although the objective forms of the dual are identical to the Shoshoni and
Timbisha forms, and the possessive forms of the dual are generally identical

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[17] The Comanche grammar descriptions and unmarked examples are from Charney (1993)
and Robinson and Armagost (1990). The = symbol at the end of morphemes in Comanche is a
morphophonemic marker that is cognate with morpheme-final *n* in Shoshoni. It has no phonetic
value itself, but it blocks the lenition of a following *p* or *t*. The *H* represents preaspiration of a
stop. *HC* in Comanche, where *C* is a voiceless stop or affricate, is cognate with *CC* in Shoshoni.
Although *H* is phonetically identical with *h* after a stressed vowel, it is phonologically distinct
and does not regularly trigger the devoicing of a preceding unstressed vowel.

to the Shoshoni forms, the subjective forms differ from both Shoshoni and Timbisha. Of the two subjective forms, the one with *h* rather than *kw* is more common in the older data from the nineteenth and early twentieth centuries, whereas the forms with *kw* have completely supplanted those with *h* in contemporary Comanche. This variation between *h* and *kw* in Comanche subjective forms is repeated in all other dual marking in Comanche, including the demonstratives in (26) and the nominal suffixes in (27).

(26) Comanche

		SG	DL	PL
'this, this one'[18]	SBJ	si–ti꞊	si–ti–hih ~ si–ti–kwih	si–tii꞊
	OBJ	si–Hka	si–ti–hi ~ si–ti–hi	si–tii
	POSS	si–Hka꞊	si–ti–hi꞊	si–tii꞊

(27) Comanche

	DL	PL
SBJ	-ni-hih ~ -ni-kwih [19]	-nii
OBJ	-ni-hi ~ ni-kwiha	-nii
POSS	-ni-hi꞊ ~ nikwi꞊ ~ ni-kwiha꞊	-nii

Whereas the objective dual form with *h* matches the form found in Shoshoni, and has the objective suffix *-i*, the objective dual form with *kw* is unique to Comanche and has the objective suffix *-a*, which is the usual objective suffix for nouns that end in *h*, as in *haitsih* 'friend', *haitsiha* 'friend (OBJ)'. The possessive forms in Comanche also show both the older and regular Shoshoni forms with *h* and the Comanche innovative forms with *kw*.

8. Reconstructing Central Numic.   In (28) the various common suffix forms from the three languages are presented for comparison.

(28)

		Timbisha	Shoshoni	Comanche
pronoun, etc.	SBJ	-ŋku ~ -hu/i	-wih	-hih ~ -kwih
	OBJ	-hi	-hi	-hi
	POSS	-hin	-hin	-hi꞊
noun	SBJ	-aŋku ~ -hu	-ni-wih	-ni-hih ~ ni-kwih
	OBJ	-ahi	-ni-hi	-ni-hi ~ ni-kwiha
	POSS	-ahin	-ni-hin	-nihi꞊ ~ ni-kwi꞊ ~ ni-kwiha꞊

It is clear that all three languages have different forms for dual subject, but the remainder of the paradigm is fairly consistent across the three languages when the older Comanche forms with *-h* are considered rather than the newer

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[18] The demonstrative stems with back vowels [(s)u-, (s)o-, and *ma-*] also undergo the metathesis of /RVhV/ > /hRV/ described above, so the dual objective of *ma-* is *mahri* and the dual possessive *mahri꞊*.

[19] Charney (1993) notes that the *-kw* forms are preferred for humans.

innovations with -*kw*. When deciding what to reconstruct for Proto-Central Numic, it seems clear that the oblique system is reconstructible and was based on a subjective form that started with -*h*. Since both Timbisha and Comanche have a variant subjective form that begins with -*h*, then a Proto-Central Numic subjective dual *-*hɨ* can be reconstructed.

The Proto-Central Numic object form, which is still found in all three daughter languages, was therefore *-*hi*, which is the result of adding the objective suffix *-*i* to the subjective form *-*hɨ* with regular vowel coalescence of *ɨ* and *i*. The possessive forms in Shoshoni and Comanche also represent the reflex of Proto-Central Numic *-*hɨ* with the possessive suffix -*n* affixed. This is exceptional, however, since the Numic languages otherwise uniformly use objective forms as the base for marking possessive relationships. [20]

Since the Central Numic dual system cannot be derived from the rudimentary Proto-Numic system described above, we must search for a possible source for Proto-Central Numic *-*hɨ*. When searching for a source for a dual affix, the most logical place to begin is the numeral *two* (Heine and Kuteva 2002:302–3). In Proto-Central Numic, the numeral *two* was *waha, and this seems to be the source for the earliest grammaticalization for dual along a route of development illustrated in (29).

(29) Proto-Central Numic
  *waha 'two' > *-*waha* as dual suffix
      > *-*ha*, by loss of intervocalic *w and unstressed *a* [21]
      > *-*hɨ*, by vowel assimilation with *nɨ- first person
        and *mɨ- second person pronominal roots
      > *-*hi*, by affixing objective suffix *-*i* and coalescing
        final vowels

Whereas all the daughters retained the objective and possessive forms of the suffix, only older Comanche retained the original subjective suffix *-*hɨ* as the most common form. In Timbisha, the archaic suffix has also been retained as an uncommon option in some subjective paradigms, such as coreferential pronoun *pɨhɨ* ~ *puŋku*, nominal suffix -*ahu*, demonstrative *sitɨŋku* ~ *situŋku* ~ *sitɨhu*, and adjectival -*tɨhɨ*.

9. Development in Timbisha. In the single development in Timbisha, shown in (30), a grammaticalization of some presently unidentified element yielded the subjective dual -*ŋku* that has generally replaced the Proto-Central Numic *-*hɨ*.

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[20] The development of possessive marking in the Numic languages is complex and beyond the scope of this paper.

[21] The loss of intervocalic *w in Central Numic is independently motivated as in Proto-Central Numic *awa 'horn' > Timbisha *awa*, Shoshoni *aa*, Comanche *aa*.

TABLE 9
NUMIC INTERVOCALIC LENITION OF *m

	'lungs'	'carry'	'wander'	'horn'
PN	*somo	*yami		
PCN	*somo	*yaa	*nɨmɨ	*amaʺ
Mono	sono		nɨwi	awa
Northern Paiute	soŋo	yawi	nɨmɨ	aa
Kawaiisu	soo	yaa		aaʺ
Colorado River	soo	yaa/yaŋwi		aaʺ
Timbisha	somo/soŋwo	yaa	nuwi	amaʺ/awaʺ
Shoshoni	sonno/sonko	yaa	nɨmɨ	aan
Comanche	soomo	yaa	nɨmɨ	aa=

(30) Timbisha
      *-hɨ, dual subjective replaced by -ŋku

By analogy, the objective -ŋkwi and possessive -ŋkwin have developed
from subjective -ŋku in some paradigms.[22]

10. Developments in Shoshoni and Comanche.   The first item we'll
account for in Shoshoni and Comanche is the -nɨ found as part of the
nominal number suffixes in both languages. Since this suffix is found on
both dual and plural suffixes, several candidates for grammaticalization can
be investigated. In Timbisha, some human nouns can be pluralized by the
affixation of the noun nɨmɨ 'person' following the stem (Dayley 1989a:218).
This is shown in (31).

(31) Timbisha

	SG	PL
'older sister'	patsi	patsi–nɨmɨ
'cousin'	pɨa	pɨa–nɨmɨ

(Dayley 1989a:218)

When we compare this with the Shoshoni number suffixes, the similarities
to the first syllable of the forms affixed to Timbisha nominals become readily

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[22] The basic underlying morpheme structure in Central Numic is CV(N/ʺ/H)CV(N/ʺ/H), where
C is any consonant or no consonant, V is any vowel, short or long, monophthong or diphthong,
N is any nasal consonant, H is any glottal, and ʺ geminates any following consonant except H.
Thus the choice of final segment for innovative dual suffix in Timbisha is between -ŋku, which
follows the morpheme structure constraints, and *-ŋkw, which does not. Whenever a morpheme
ends in ku or hu in Timbisha, the addition of the objective suffix -i yields [kwi] and [hwi],
respectively, as in puŋku 'pet' + -i OBJ > puŋkwi.

apparent. The loss of intervocalic *m* is a common feature not only in Central Numic and Numic, but throughout Uto-Aztecan. Examples from Numic are shown in table 9.

A generalized schematic of the sequence of changes from *m* to Ø is shown in (32).

(32) m > ŋw > w̃ > w > Ø[23]

We can thus track the reduction of *nɨmɨ* in Pre-Shoshoni to the *-nɨ* that precedes the number suffixes in Shoshoni and Comanche in (33).

(33) Shoshoni-Comanche
      nɨmɨ 'person/people' > *-nɨmɨ* 'non-SG' > *-nɨw̃ɨ* > *-nɨɨ* > *-nɨ*

Thus, the Shoshoni and Comanche *-nɨ* syllable that precedes the non-singular number suffixes is a grammaticalized form of *nɨmɨ* 'person'. Its grammaticalization and merger with the non-singular number suffixes occurred after the split between Timbisha and Shoshoni.

In Shoshoni, a second grammatalization of **waha* 'two' replaced the earlier **-hɨ* subjective form as shown in (34). This time, however, rather than losing the first syllable to reduction, the final syllable was lost with the same vowel harmony as before. Although all contemporary dialects of Shoshoni show this change, it was only beginning to affect Comanche when it broke off in the early eighteenth century.

(34) Shoshoni
      -hɨ, DL.SBJ replaced by second grammaticalization of *waha*, 'two' >
      -waha > *-wah* > *-wɨh* (> *-hwɨ*)

Finally, in Comanche, as shown in (35), there is an irregular, but not uncommon, process whereby a *w* at a morpheme boundary can become strengthened to *gw*. Before a voiceless vowel (as at the end of *-wɨh*), this *gw* is devoiced to [kw]. Thus, we end with the modern Comanche form *-kwɨh* for dual subjective, which has completely replaced the older Proto-Central Numic form for dual subjective as shown in (36).

(35) Comanche
      tsi- 'with a sharp point' + *-wai* 'poke' > [tsigwai] 'poke with a stick'
      su- 'with the mind' + *-wai* 'poke' > [sugwai] 'want'
      nɨ 'my' + *wosa* 'bag' > [nɨgwosa] 'purse'
      pasa 'sand' + *wiyo* 'frog' > [pasagwiyo] or [pasawiyo] 'frog sp.'

(36) Comanche
      -wɨh > [-gwɨ] > [-kwɨ] > *-kwɨh*, dual subjective

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[23] This sequence is not absolute and there is some variation. Langacker (1977:23) breaks it into two sequences, **m > w̃ > w* and **m > w̃ > ŋw > ŋ (> n)*.

11. Summary. The listing in (37) illustrates the overall process by which the various dual affixes were grammaticalized in Central Numic, including four separate grammaticalization events, twice with 'two', once with 'person', and once with a presently unknown element. Central Numic is thus a good example of how a rudimentary indication of dual number can be expanded to fill most, if not all, appropriate slots in a nonverbal paradigm.

(37) Central Numic

Proto-Central Numic	*waha* 'two'	>	*-hɨ* DL SBJ, *-hi* DL OBJ
Timbisha	?	>	*-ŋku*, replacing *-*hɨ* DL SBJ
Shoshoni-Comanche	*nɨmɨ* 'person'	>	*-nɨ-hɨ* DL SBJ, *-nɨ-hi* DL OBJ
Shoshoni	*waha* 'two'	>	*-wɨh*, replacing *-hɨ* DL SBJ
Comanche	*-wɨh*	>	*-kwɨh*, recently replacing *-hɨh* DL SBJ

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