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19 Grammatical simplicity: Number in Kiowa

Abstract: The Kiowa number system is deceptively simple. It has three numbers (singular, dual, and plural) and each noun morphologically makes at most a two-way distinction. Strikingly, though, nouns do not encode singular, dual, or plural. Instead, their basic forms cover a subset of these numbers, and a single morpheme, the ‘inverse’, is used for the rest. Inverse marking covers singular, nondual, or plural, depending on semantic properties of the noun. Further semantic properties of the noun are reflected in number agreement on the verb. Agreement distinguishes singular, dual, and plural. However, depending on the noun, singular or dual can be used in the plural, or vice versa, reflecting qualities such as animacy, collectivity, or internal complexity. Inverse-marked nouns generally require ‘inverse agreement’, but this too can be overridden on semantic grounds, especially for animates, some of which take special ‘empathic agreement’. The most reliable marker of cardinality turns out to be verbal number, but it is encoded for only a small number of suppletive roots. In addition to describing this system in detail, we distinguish verbal number from distributivity and lay out some unusual morphological, semantic, and discourse-level properties of number in Kiowa.

1 Overview

The fascination of Kiowa¹ for the theory of linguistic number lies in the fact that it embeds a common number system (singular, dual, plural) in an uncommon design of noun class system (one intimately tied to the semantics of number) and chooses the verb, not the noun or its modifiers, as its main morphological locus. The complexity is compounded by its simplicity, in that the class system is configured with a bare minimum of class-specific morphemes. So, the story of Kiowa number is one of multipurpose morphemes in a complex interplay with noun class distributed over nouns and verbs.

¹ Kiowa is a Kiowa-Tanoan language spoken in Oklahoma. It has no official orthography, and here we employ a working orthography, derived from Redbird et al. (1962), that employs standard IPA values for consonants but with *y* for palatal glides and inline *h* for aspiration. For instance, velar stops are *g*, *k*, *k'*, *kh*. Vowels are marked for high tone (*á*) and falling tone (*â*), with low tone unmarked (*a*). Phonemic nasality is marked with an underscore (*ǎ*). Long vowels are written as doubled or as glides (*aa*, *ey*, *ii*, *ow*, *uu*) and diacritics are added only to the first element of such digraphs (long high nasal *a* is written *ǎa*). IPA vowel qualities are used, except that the low back rounded vowel (“open o”) is written as short *au* and long *aw*.

Common nouns fall into eight classes. Nominal marking distinguishes four of these classes and does so with remarkable economy. One suffix, the so-called “inverse,” marks singular (₁), plural (₃₊), or both, depending on the noun (Wonderly, Gibson, and Kirk 1954). For instance, the inverse marker *-dáu* marks the plural of ‘insect’ but the singular of ‘tree’:²

- (1) *pól* ‘insect(_{s₂})’
pów-dáu ‘insect₃₊’

áa-dau ‘tree’
áa ‘trees₂₊’

The inverse never marks the dual (₂) in Kiowa. Non-inverse-marked forms are termed “basic.”

The bulk of the number/class system is borne by verb inflection. Agreement prefixes distinguish singular, dual, and plural, which nouns themselves do not mark. However, this simple picture is blurred by complicating factors. First, inverse-marked nouns trigger “inverse agreement” that overrides semantic agreement irrespective of number of referents. Second, some noun classes trigger singular agreement for plural denotees, and others singular no matter the number. Third, morphological restrictions based on argument structure affect which numbers cooccur in the verbal agreement. Semantic number and morphological number are, therefore, sometimes obscured or mismatched.

Noun classification is semantic. Classes include motile objects (especially animates), collective inanimates, pluralia tantum, and nongranular mass nouns. The class-defining semantic criteria connect nonarbitrarily to the classes’ morphological signatures. For instance, collectives trigger singular agreement in the plural, and pluralia tantum, plural agreement even when nonplural; and in some of its uses, inverse marking is reminiscent of a singulative. Doublets, though rare, give extra insight into the organisational principles.

Even though noun class and number are so exuberant in Kiowa, Harbour (2008) shows that number marking is associated with determiners and similar functional projections in the syntax. Marking occurs with demonstratives, ‘only’, and in possessives, as well as in verbs and with relative clauses. Bare nominals can bear number marking (2), but only as part of a full DP: noun roots are number neutral when compounded or incorporated (3).

² The example shows two regular morphophonological changes: the suffix *-dáu* triggers deletion of root-final *l* with compensatory lengthening of the root vowel (*pól* becomes *pów*), and acquires low tone after the lexical item *áa*.

- (2) *táa-de*
 eye-BAS
 ‘eye(s₂)’

táa-gau
 eye-INV
 ‘eyes₃₊’
- (3) *táa(*de/*gau)-khqwgya*
 eye(BAS/INV)-skin
 ‘eyelid(s₂₊)’

*Né- táa(*de)- k’awde.*
 :1SD:3DU-eye(BAS)-be bad
 ‘I have poor eyesight.’

With the exception of verb agreement and verbal number, these categories distinguish only inverse and “basic” (noninverse) and they do so with a high degree of syncretism: demonstratives, ‘only’, and relative clauses all use the same marking, as do some possessives. Nouns use the same marking but only if none of the rich array of phonologically sensitive allomorphs is called for. ‘Only’ is further interesting as a rare locus of optional number marking. Kiowa number marking is otherwise obligatory.

Verbal number exists but is not prominent in Kiowa. Suppletion of certain verbs reflects participant number (as defined in Corbett 2000), while their adverbials reflect event number. Spatial distributives indirectly reflect event number by entailing significant plurality.

2 Pronominal, nominal, and verbal number

2.1 Generalities

At first glance, pronominal number in Kiowa stands apart from nominal and verbal number in that nouns and verbs have intricate number morphology whereas number on personal pronouns is wholly absent. However, this is a misreading of the system. Pronominal and nominal number are in fact alike and verbal number as a distinct semantic category is peripheral. This situation arises because number in Kiowa is inextricably linked with class and both these nominal properties are primarily expressed via agreement on the verb. The verb, by contrast, does not show number independently of its arguments (verbal number is highly limited, as per the previous paragraph). Verbs reveal that personal pronouns, though uninflected for number, are almost as well-endowed for number as common nouns.

The following subsections address pronominal (sections 2.2), nominal (section 2.3), and verbal (section 2.4) number. The system that emerges is striking in several respects. First, Kiowa nouns do not mark number in the strict sense. Rather, nouns show a two-way contrast, basic versus inverse, which amalgamates number with noun class. Second, number and class are dislocated. Though they belong semantically to the noun, they are expressed primarily on the verb. Agreement reveals three semantic numbers (singular, dual, and plural) and eight noun classes, much of which is undetectable on nouns. Third, the noun classes are only fully encoded via the number system, recycling number categories to differentiate between animates and inanimates, group and nongroup plurals, and pluralia tantum, granular and nongranular mass nouns. Fourth, the resulting system runs against the animacy hierarchy (Corbett 2000) in being simpler for first person than for third, with second person shifting allegiance depending on how one counts distinctions.

We refer (atheoretically) to argument indexing on the verb as agreement. We notate intransitive agreement as *z-*, transitive as *x:z-*, ditransitive as *x:y:z-*, and intransitive with an experiencer as *:y:z-*, where *x* is the agent, *y*, the experiencer or oblique, and *z*, the internal argument (transitive object or unaccusative subject).

Relative to the themes of this volume, we note that Kiowa lacks number words (e.g., no word meaning PL), classifiers, nominal case (though agreement registers argument roles), and marking of definiteness (other than in demonstratives and the like).

2.2 Pronominal number

There are only two personal pronouns in Kiowa: *náw* for all first persons, irrespective of number and clusivity, and *ám* for all second persons. This simplicity contrasts with the complexity of verbal agreement, which encodes three argument types (agent, indirect object, direct object) while distinguishing four morphological numbers (singular, dual, plural, inverse) and up to four persons (inclusive, exclusive, second, third; as well as a special animate plural (81)). We lay out these contrasts and show they also apply to the reflexive pronoun *áwgau* ‘self’. We then compare first and second person pronouns with demonstratives, which Kiowa employs in place of third person pronouns, and which bear number based on the nouns they replace. We end with a brief argument that the pronouns can be conjoined and do not enter in comitative constructions.

Second person (4) illustrates the difference in number sensitivity between pronouns and agreement. Pronominal *ám* is invariant, while agreement encodes singular (*em-*), dual (*ma-*), and plural (*ba-*):

- (4) *Ám em- dáw.*
 2 2SG-be
 ‘You₁ are.’

Ám ma- dáw.
 2 2DU-be
 ‘You₂ are.’

Ám ba- dáw.
 2 2PL-be
 ‘You₃₊ are.’

First person *náw* is also invariant but its agreement makes only a twofold number distinction, singular and nonsingular (see table 3 for relationship to the animacy hierarchy). This is shown for exclusive (*a-* versus *e-*) and inclusive (*ba-*) in (5) and for general first person (*é-* versus *dáu-*) in (6):³

(5) *Náw a- dáw.*
 1 1SG-be
 ‘I am.’

Náw e- dáw.
 1 1EX.NSG-be
 ‘We.EX₂₊ are.’

Náw ba- dáw.
 1 1IN.NSG-be
 ‘We.IN₂₊ are.’

(6) *Náw é- góp.*
 1 2/3.SG:1SG-hit.PFV
 ‘You₁/he/she hit me.’

Náw dáu- góp.
 1 2/3:1NSG-hit.PFV
 ‘You/he/she/they hit us₂₊.’

First person dual and plural are distinguished only by a small class of suppletive verbs (table 4). For these verbs, a single root form (here, *áagya*) is shared by singular (7) and dual (top examples of (8)–(9)), another (here, *k’úl*) by the plural (bottom sentences), irrespective of clusivity.

(7) *Náw a- áagya.*
 1 1SG-seated.SG/DU
 ‘I am sitting.’

³ Clusives are restricted to agents and intransitive subjects. Indirect and direct objects have only general first person.

- (8) *Náw e- ágya.*
 1 1EX.NSG-seated.SG/DU
 ‘We.EX₂ are sitting.’

Náw e- k’úl.
 1 1EX.NSG-seated.PL
 ‘We.EX₃₊ are sitting.’

- (9) *Náw ba- ágya.*
 1 1IN.NSG-seated.SG/DU
 ‘We.IN₂ are sitting.’

Náw ba- k’úl.
 1 1IN.NSG-seated.PL
 ‘We.IN₃₊ are sitting.’

Derivatives of first and second pronouns formed with the bound stem *-hîi* ‘genuine, original’ also lack inverse marking: *náwhîi* and *ámhîi* invariantly cover all numbers. This holds even though *-hîi* itself does take inverse marking with other nouns, as in *áa-hyoy* ‘cottonwood’, *áa-hîi* ‘cottonwoods₂₊’.

Likewise, the all-person reflexive/emphatic *áwgau* refers to any number. It also refers to any person.

- (10) *Áwgau a- kháwaun né gyat- hémbását.*
 self 1SG-poor but 1SG:3PL-provide for.PFV
 ‘I am poor but have provided for myself.’
 (Harrington 1946: 238)

- (11) *Áwgau ba- bówow-gau ówpêy ba- thów-t’éykyá- dey- yau.*
 self 2PL-inept- and.SAME LOC 2PL-leg- strained-stand-DISTR
 ‘You are inept, standing along there with strained legs.’
 (P. McKenzie n. d.-b)

- (12) *Áwgau tsâw dáu- tét.*
 self thus 3SG:1NSG-tell.PFV
 ‘He himself told us.’
 (Toyebó 1957c)

Kiowa lacks third person pronouns, deploying demonstratives instead. These distinguish number via inverse marking, unlike *náw*, *ám*, and *áwgau*. The inverse is present when it would be present on the head noun, whether or not the noun is overt. In (13a), basic *éyde* reflects the basic head noun *k’âw*, while in (13b) the demonstrative bears the inverse.

- (13) a. *Ēy- de (k'âw) Ø- gúłkháun-daw.*
 PROX-BAS knife 3SG-burn.NV- be
 'This (knife) is burnt.'
- b. *Ēy- gau (k'âw-gau) e- gúłkháun-daw.*
 PROX-INV knife-INV 3INV-burn.NV- be
 'These (knives) are burnt.'

Third person categories are discussed in sections 2.3 and 4.

Given the absence of number on personal pronouns, form alone does not determine whether *náw* in a conjunction such as *Mary gau náw* is singular ('Mary and I') or plural ('Mary and us'), a feature of the questionnaire underlying this volume. Weighing against the latter, comitative analysis, the connective *gau* is identical to that used for both (14) nominal and (15) some clausal conjunction (as part of the switch reference system; Watkins 1984: 236–241; A. McKenzie 2011, 2012):

- (14) *Pêysaadau gau pholáayop hegáu héy gya-dáw.*
 quail.INV and rabbit.INV then PRIV 3PL-be
 'Quails and rabbits are no more.'
- (15) *Tségun Ø- áadêy gau em- bét- tawyii.*
 dog 3SG-sit.IPFV.EVID and.SAME 3SG:RX-bark-act.IPFV.EVID
 'The dog was sitting and barking.'
 (Toyeyo 1957b)

Nonetheless, it is common for conjunctions to split with only one element of the conjunction agreeing. In (16), only Big Tree agrees with the verb, or in (17), the only object agreement is with *hólda* (which is always plural).

- (16) *Pháaow Káuy- gú á- dáw-gau gyá- pén- mau Bétsép Ø-*
 three Kiowa-INV 3AN.PL-be- INV 3AN.PL:3PL-butcher-IPFV Big Tree 3SG-
dáw-gau K'ówdebohon gau Séygauy.
 be- and Gotebo and Saingko
 'Three Kiowas present were butchering: there was Big Tree, and Gotebo and Saingko.'
 (McKenzie n. d.-f)
- (17) *Hólda yá- áw- aw gau k'aunbôhōw-dau gau*
 Shirt 2SG:1SG:3PL-temporarily-give.IMP and hat- INV and
tháydeholda gau tokîniî.
 coat and boots
 'Lend me your shirt and hat and coat and boots.'
 (Spotted Horse 1957)

Conjunctions are further discussed in (93)–(95).

Some *wh*-pronouns are sensitive to number, reflecting the number of the answer the speaker anticipates. For (19), a plural answer is expected, whereas (18) need not carry any such expectation.

(18) *Hâundé a- bôw?*
 who.BAS 2SG:3SG-see.PFV
 ‘Who did you see?’

(19) *Hâungáu be- bôw?*
 who.INV 2SG:3AN.PL-see.PFV
 ‘Who did you see?’
 (Laurel J. Watkins, p.c.)

The inverse-marked plural *wh*-word does not require an exhaustive answer.

We now turn to the number system for common nouns, which underlies the demonstratives discussed above.

2.3 Nominal number

This section introduces inverse marking and its relationship to noun classes. A selection of doublets illustrates the semantic basis of the four classes of inverse marking. Allomorphs of inverse marking admit little free variation and do not vary by noun class. Indeed, verb agreement is a truer indicator of noun class: not only is it more accurate for the four inverse-based classes, but it reveals four more, centred on noncanonical uses of singular and plural agreement. In this context, we discuss group plurals, pluralia tantum, mass nouns, and abstract nouns, which include nominalisations and complement clauses. We end by showing that plural is the default number in Kiowa and that, in light of nominal patterns, pronominal number (section 2.2) runs against crosslinguistic tendencies surrounding animacy and number.

Kiowa nouns are not marked directly for semantic number. Instead, they have, at most, two forms, “basic” and “inverse”. Basic nouns are usually unmarked, and inverse nouns are almost always marked. The number these forms denote varies according to the noun’s class, as shown in table 1. Basic nouns trigger semantically transparent agreement (barring semantically grounded exceptions discussed later), while inverse nouns trigger inverse agreement. We refer to the classes via acronyms reflecting the agreement pattern they trigger on the verb (following Harbour 2008). An SDL noun triggers singular agreement (s) in the singular, dual agreement (D) in the dual, and inverse (i) in the plural. An IDP noun triggers inverse in the singular, dual in the dual, and plural in the plural, and so forth. For all classes, any non-inverse form is basic.

Tab. 1: Four classes of inverse marking.

	SDI 'horse(s)'	IDI 'orange(s)'	IDP 'baked good(s)'	SDP 'mattress(es)'
singular	<i>tsêy</i>	<i>thówt'ólq̄w-gau</i>	<i>éy-gáu</i>	<i>pálts'e</i>
dual	<i>tsêy</i>	<i>thówt'ólq̄w</i>	<i>éy</i>	<i>pálts'e</i>
plural	<i>tsêy-gau</i>	<i>thówt'ólq̄w-gau</i>	<i>éy</i>	<i>pálts'e</i>

Of the classes in table 1, SDI and IDP are the most populous. The central property of SDI nouns is motility, and the class subsumes nearly all animates, other mobile objects (sun, moon, cars, wheels), mobile body parts and major internal organs (leg, knee, heart, liver), and various implements, particularly for cutting (awl, knife, spoon). Many inanimates, by contrast, are IDP nouns, including many plants (sage, sunflowers, weeds) and their parts (sticks, leaves, beans), as well as relatively immobile body parts (bones, noses, udders) and implements (bed sheets, smoking pipes, arrowheads). SDP nouns are apparently less numerous than IDP. The predominant members of the class appear to be clothing (shoes, boots, rings), but some natural objects (bark, stones) are included, as is meat when portioned. IDI nouns are rare, being restricted to midsized fruit (apples, oranges, plums, tomatoes) and hair and eyebrows (the rest of the face and body have 'fur').

Doublets, though neither abundant nor highly systematic, shed light on the organising principles. For instance, animal tails and similar parts, involving the stem *thón* 'tail', are classified according to whether they are internally motile (SDI *tsêythón* 'horsetail', *pówthón* 'beaver tail') or rigid (IDP *kúutothon* 'bird tail', *phüithón* 'porcupine quills'). In a similar vein, *t'áulthaun* is IDP when it means 'beans' but SDI, like other major organs, when it means 'kidney'. The term *kháuy* can be applied to cloth, rags and hide. Generally, compounds built on this stem are SDP (*tábekhauy* 'blindfold', *máunkháuy* 'gloves', *ts'ówk'íkhauy* 'slingshot'). However, when applied to hides, such terms are SDI, like animals (*t'ápkhauy* 'deer hide', *t'aupkháuy* 'buckskin').

Number suffixes vary substantially in form (table 2). Most basic nouns have no marker. Some have the suffix *-de*, which also appears with demonstratives and relativizers. A handful have *-da* or *-gya*. These are all lexically idiosyncratic. For inverse markers, lexical idiosyncrasy is limited and the main determinant is phonology. Class is not a determining factor. Pairs in table 2 demonstrate this clearly. A full list of inverse forms can be found in Watkins (1984:80) or Harbour (2008:55).

Only rarely is there free variation between suffixes. An interesting case is *tháa* 'wife', for which the inverse can be suffixal *tháa-gau* 'wives' (wife-INV) or root-modifying *thêy* (wife-INV). A productive suffix showing variation is *-hîi* 'genuine, original' (section 2.2), which regularly alternates between two inverse forms, as in SDI *tsêyhyoy/tsêyhyop* 'dogs₃₊' from *tsêyhîi* 'dog(s₂)'. There is also dialectal variation. The great Kiowa linguist Parker McKenzie could tell where a speaker was from by their inverse form of *éy* 'bread': *éybáu*, *éybáut*, *éygáu*, or *éygáut* (Watkins and Harbour 2010).

Tab. 2: Selection of basic and inverse suffixes.

Noun	Class	Basic	Inverse
'insect'	SDI	<i>pól</i>	<i>pów-dáu</i>
'hair'	IDI	<i>ául</i>	<i>áw-dáu</i>
'friend'	SDI	<i>kóm</i>	<i>ków-bau</i>
'student'	SDI	<i>mauthêm</i>	<i>mauthêy-bau</i>
'eye'	SDI	<i>táa-de</i>	<i>táa-gau</i>
'loincloth'	IDP	<i>tâuy-de</i>	<i>tâuy-gop</i>
'flower'	IDS	<i>áakhij-gya</i>	<i>áakhij-gaut</i>
'child'	SDI	<i>iip'áw-gya</i>	<i>iip'áw-gaut</i>
'arrow'	IDS	<i>zéyba</i>	<i>zéybaut</i>
'chief'	SDI	<i>k'yátây</i>	<i>k'yátây</i>
'deer'	SDI	<i>t'áp</i>	<i>t'áp</i>
'mattress'	SDP	<i>pálts'e</i>	–
'life'	SSS	<i>k'yákôm-da</i>	–

For all of its complexity, inverse marking provides an insufficient basis for defining noun classes. A simple reason is that some nouns trigger inverse agreement without taking an inverse suffix. For instance, compare (20) SDP *pálts'e* 'mattress' and (22) SDI *k'áw* 'knife' with (21) SDI *t'áp* 'deer'.

- (20) *pálts'e* Ø- *dáu*
 mattress 3SG-be
 'It's a mattress'

pálts'e *e-* *dáu*
 mattress 3DU-be
 'It's two mattresses'

pálts'e *gya-dáu*
 mattress 3PL-be
 'It's some mattresses'

- (21) *t'áp* Ø- *dáu*
 deer 3SG-be
 'It's a deer'

t'áp *e-* *dáu*
 deer 3DU-be
 'It's two deer'

t'áp *e-* *dáu*
 deer 3INV-be
 'It's some deer'⁴

4 The form with the plural (*t'áp gya-dáu*) is grammatical, but gives an existential reading 'there are deer; deer are available'.

(22) *k'âw* Ø- *dâw*

knife 3SG-be

'It's a knife'

k'âw *e*- *dâw*

knife 3DU-be

'It's two knives'

k'âw-gau *e*- *dâw*

knife-INV 3INV-be

'It's some knives'

In terms of absence of suffixation, *t'ap* aligns with *pálts'e*. However, in terms of agreement, it aligns with *k'âw*: for the plural, both trigger inverse agreement (*e*-), rather than plural (*gya*-). Four factors urge us to consider *t'ap* as an SDI noun with a null inverse. First, regarding 'deer' as SDI brings it into the same class as other animates. Second, zero inverse is phonologically well defined: it occurs mostly after *p/t*. Third, overt inverse reemerges if *t'ap* is not word final. The compound *t'áp-khōwgya* [deer-black] 'black deer_{1/2}' ends in *-gya* for singular and dual, but switches to *t'áp-khōwgaut* 'black deer₃₊', with an overt inverse, for plural referents (cf, *iip'áw-gya* 'baby, babies₂', *iip'áwgaut* 'babies₃₊', table 2). Fourth, and most substantively, agreement is a much truer reflection of noun class than noun marking is.

The inverse suffix defines only four classes (table 1). However, common nouns fall into eight. For inanimates, nouns that generally form collections (of various sorts) take singular rather plural agreement for plural reference. This splits nouns that take inverse in the singular into two classes, IDP and IDS, and nouns that take no inverse into SDP and SDS. The IDS class is reasonably well populated, including mountains and large trees, whereas SDS is rather small, comprising clouds, paths, some bodies of water, and other things without predictable shapes as well as things that work for joint effect (fingers, lamps; cf, IDS 'guns' in (24)). Doublets again give a sense of the difference: *áa* means 'stick' if IDP but 'tree' if IDS; *tów* means 'tipi' if PPP but 'house' if SDS. (See Watkins 1984:86–87) for differences in compounds built on *áa* 'tree, stick', and (72)–(73) for 'finger, arm'.

Though Kiowa has no singulars with intrinsically plural reference, like English 'police', singular agreement is an occasional option for animates, giving a group-like reading, as is explicit in the translation of (24).

(23) *T'áukháuy-gú* *bá-* *paw-kaun-taw.*mules- INV 2PL:3SG-lead-bring-MOD

'You will bring the mules.'

(P. McKenzie n. d.-a)

- (24) *Sóley- gau Ø- p'éyde-hel gigáu háwgya Ø- dów-*
 soldier-INV 3SG-appear-EVID and then.SAME guns 3SG:3SG-hold-
dêy gigáu Ø- kaum-hâape-hel.
 IPFV.EVID and then.SAME 3SG:3SG-aim- raise- EVID
 'A group of soldiers appeared and they had guns and aimed them.'
 (P. McKenzie n. d.-a)

Despite their singular agreement, SDI 'mules' and 'soldiers' retain the inverse marking necessary to their semantic plurality (in contrast to IDI nouns, (39)).

Words for collections, like 'flock' or 'shoal', are (to our knowledge) unattested, except for *kautâw* 'livestock, (horse/cattle) herd'. Etymologically, the word is related to SDI *kâul* '(beef) cow, buffalo'. Irregularly for a noun in *-l*, *kâul* takes a zero inverse. *Kautâw* is almost the expected inverse (cf, *âul* 'hairs₂', *âwdâu* 'hair(s₃₊)'; *tâl* 'skunk(s₂)', *tâttau* 'skunks₃₊'). So, it is likely an archaic inverse (with short root syllable, voiceless *t*, and long falling-tone suffix) that has survived by dint of lexically unique semantic drift to a collective reading.

Pluralia tantum, abstract, and mass nouns also differ in ways that are only apparent from agreement. Pluralia tantum nouns like *hólâa* 'shirt' and *aat'auhâui* 'war bonnet' and abstract nouns like *khâwgya* 'name' and *tôwgyá* 'word, speech, language' trigger plural agreement, irrespective of the number referred. Kiowa pluralia tantum nouns can be counted directly as units, as other languages also allow (Comrie 2001; Doron and Müller 2014; Lima 2014).

- (25) *Páagau / yîi / háote hólâa gyat- háwgya.*
 one two several shirt 1SG:3PL-get.PFV
 'I bought one/two/several shirts.'

Nongranular mass nouns, like *thówaulkhauy* 'whisky' and *t'elséppenhaa* 'honey', display the opposite behaviour, triggering singular agreement even if made into portions (26). One might regard these nouns as *singularia tantum*.

- (26) *Yîi thówaulkhauy gya- thóm / *nen- thóm.*
 Two whisky 1SG:3SG-drink.PFV 1SG:3DU-drink.PFV
 'I drank two whiskies.'
 (Harbour 2008:29)

(Granular mass nouns agree like pluralia tantum nouns, but they permit inverse marking for grain readings. For instance, *péygya* 'sand' is ambiguous between a PPP mass noun with no inverse, and an IDP count noun 'grain of sand' with inverse *péygaüt*. Harrington (1928, *passim*) offers many examples.)

Nominalisation is not a prominent process in Kiowa grammar. Deverbal nominals such as *îlgya* 'act of admonishing' (from *îl* 'admonish') and *k'îithêmgya* 'act of

gathering wood' (from *k'íithêm* 'gather wood') exist, but one does not encounter, for instance, 'the teacher's admonishing of the students'.⁵ Ending in *-gya*, these nouns are abstract PPP nouns.

- (27) *K'ombáâlgya háun an gya- áum-g- âw.*
 Imitating NEG HAB :3AN.PL:3PL-do- DETR-NEG
 'Imitation is hard to pull off.' (Harrington 1946:241)

A few predicates allow a personified nominal in *-k'íi* 'male'. Alongside *k'ómgyá* 'old age', for example, there is *k'ómk'íi* with the same meaning. Kiowa generally resists inanimate agents, but personified nominals escape this restriction:

- (28) *K'óm-k'íi hegáu yá- dâate- dow.*
 old- MALE then 3SG:1SG:3PL-overtake-AUX
 'Old age is about to overtake me.'
 (P. McKenzie 1990)

Complement clauses also look like nominalisations. They bear basic number marking (*-de*) and, like the abstract nouns above, govern plural agreement (*án-* in (29), encoding also the third singular knowledge holder as the applicative):

- (29) *Háun-an êlk'yoy gyát- sém- háwnâw- de án- khquâwn-*
 NEG- HAB old man.INV :1NSG:3PL-secret-exhaust.NEG-BAS :3SG:3PL-pitiable-
haygya-daw-do.
 known-be- because
 'Because she knows that sadly us old men don't give up our desires.'
 (P. McKenzie 1963a)

These closely resemble relative clauses, with the difference that relatives take basic/inverse marking from their head nouns. (30) is dual and hence basic marked (*-de*), (31) animate plural and hence inverse marked (*-gau*).

⁵ Story titles and picture descriptions use subordinate clauses. Low tone on 'story' and 'picture' in (i)–(ii) shows that these form a prosodic unit with the preceding verb and basic number marker.

- (i) *Áadaual-kya Hobêy Ø- kówba- de- heytegya.*
 barrel- in Jack Wolf 3SG-disappear-BAS-story
 'The story of Jack Wolf disappearing into a barrel.'
 (P. McKenzie n. d.-b)
- (ii) *áugau Dawk'yaíi Ø- iip'awgya-tsán- de- kut.*
 REL Christ 3SG-baby- arrive-BAS-picture
 'Pictures of Christ's birth.'
 (P. McKenzie n. d.-h)

- (30) [*Pháw- guu e- dów]-de e- tséy- hel.*
 buffalo-horn 3SG:3DU-hold-BAS 3SG:3DU-put on.NPL-EVID
 ‘He put on the buffalo headpiece that he keeps around.’
 (P. McKenzie 1963b)
- (31) [*Maayóp áugau ét- pii- awmau]- gau máw e- déygyay.*
 woman.INV REL 3INV:3PL-food-make.IPFV-INV like 3INV-pour.DETR.PFV
 ‘The women who were cooking poured out.’
 (P. McKenzie n. d.-d)

The plural agreement triggered by complement clauses and abstract nouns alike points to plural as the default number in Kiowa. Consistent with this, plural agreement is used for dummy objects of unergatives (the subjects of which are external arguments syntactically), objectless experiencers, weather predicates, and some existential predicates:

- (32) *Gyat- áy.*
 1SG:3PL-run off.PFV
 ‘I ran off.’
- Án- t’áudep.*
 :3SG:3PL-kind
 ‘He/she is kind.’
- (33) *Gya-sál.*
 3PL-hot
 ‘It’s hot.’
- Áwǵáwpii-gau gya-káun- hel.*
 buffalo- INV 3PL-numerous-EVID
 ‘There were a lot of buffalo.’

Predication of absence with privative *héy* also uses plural agreement, overriding the singular agreement otherwise expected for ‘calf’ in (34a) (and the inverse expected for ‘quails and rabbits’ in (14)):

- (34) a. *Ts’álii hegáu Ø dáwmêy.*
 calf then 3SG-be.EVID
 ‘The calf was there.’
- b. *Ts’álii hegáu héy gya-dáwmêy.*
 calf then PRIV 3PL-be.EVID
 ‘The calf was gone.’
 (P. McKenzie n. d.-e)

In (35), situational plural agreement occurs with a suppletive predicate which appears in its singular form:

- (35) *Háun gya-kyóy- gâw-t'aw negáu Káu-y- tǝ- gya héy gya-dáw-*
 NEG 3PL-long.SG-NEG-MOD and then.DIFF Kiowa-say-BAS PRIV 3PL-be-
t'áw.
 MOD
 'It won't be long before the Kiowa language is gone.'
 (P. McKenzie 1993)

Suppletion and agreement mismatches are discussed in section 2.4.

Plural agreement is also generally used for unspecified null objects in Kiowa (36). However, this is overridden if a verb prototypically takes an object class that does not take plural agreement. For instance, 'drink' takes singular object agreement because liquids are sss (37).

- (36) *Gya- bǝw- hêl nau ówgau hegáu éythâl Ø- k'íiáa-dǝwmey*
 3S:3P-look at.PFV-EVID and.DIFF far off then corn 3SG-grow- be.EVID
 'He looked around and for a very long distance, the corn had grown.'
 (Wolfe 1957)

- (37) *Gya- thónmau gyat- gúttau- de- tso*
 1SG:3SG-drink.IPFV 1SG:3PL-write.IPFV-BAS-as
 'I was drinking as I was writing.'

The existence of an animate class related to number marking recalls the animacy hierarchy. Corbett (2000:90) observes that number distinctions monotonically decrease as one descends the hierarchy. Crosslinguistically, first person tends to have at least as many number distinctions as second, which in turn has at least as many as third person, and so on for subsets of third person down the hierarchy. Kiowa does not conform to the hierarchy either in terms of full nouns or pronouns, or agreement.

First and second person pronouns in Kiowa have one form for all numbers (*náw* and *ám*, respectively). However, third person nouns and demonstratives can have two distinctive forms, basic and inverse, in violation of the crosslinguistic tendency. The difference is visible in the 'noun/pronoun' row of Table 3.

Tab. 3: Distinctive number forms and the animacy hierarchy.

	first	>	second	>	third	>	kin	>	human	>	animate	>	inanimate
Noun/pronoun			1						2				1
Agreement prefix	2								3				1

Agreement, the morphological locus of noun class, reduces this exceptionality, but does not eliminate it. First person makes only a two-way distinction in number agreement (5)–(8). Second person (4), by contrast, makes the same three-way distinction as other animates, singular/dual/plural (21). So, a two-way contrast tops the hierarchy ('2' in the table) over a three-way one in the central segment ('3'). (Only with suppletion is there a three-way contrast for first person; (7)–(8).)⁶

In sum, Kiowa achieves a remarkable amount of nominal classification (four classes) via a single noun class suffix, the inverse. However, verb agreement is the central hub of number and class, revealing eight classes and various nuanced readings (as for groups of animates). Though some of the classes are minor (IDI, SDS), others are very large (SDI, IDP) and are fed by grammatical processes like nominalisation (PPP).

2.4 Verbal number

Verbal number in the sense of number morphology, beyond agreement, on the verb is relatively limited as a semantic category in Kiowa. Corbett (2000) divides verbal number marking into event number and participant number. Event number counts the actual occurrences that have the predicate's property, while participant number reflects the count of nominal arguments. Kiowa verbs express both: a limited set of suppletive predicates express participant number, and spatial distributives indirectly indicate event plurality.

Table 4 shows that suppletive predicates in Kiowa come in two classes. Four adjective-like predicates sensitive to (non)singularity, and seven verbs (plus their

Tab. 4: Suppletive predicates in Kiowa.

Root	(Derivative)	SG	(SG/DU)	DU	(DU/PL)	PL
big		<i>êl</i>			<i>bîn</i>	
small		<i>syáun</i>			<i>syân</i>	
long		<i>kyóy</i>			<i>kjíníi</i>	
short		<i>tséy</i>			<i>tsáadów</i>	
be sitting			<i>áagya</i>			<i>k'úl</i>
be lying			<i>k'áw</i>			<i>k'úl</i>
wander			<i>thów</i>			<i>zém</i>
set/put	(be sat/set.INAN)		<i>tséy</i>	(<i>tsél</i>)		<i>sáw</i> (<i>sául</i>)
lay	(land, fall against)		<i>ts'ów</i>	(<i>ts'ógyá</i>)		<i>k'úu</i> (<i>k'úygyá</i>)
drop	(be dropped, fall)		<i>ól</i>	(<i>ótkyá</i>)		<i>p'él</i> (<i>p'étkyá</i>)
sever, trim	(be cut, come apart)		<i>t'ál</i>	(<i>t'átkyá</i>)		<i>tháa</i> (<i>thátkyá</i>)

⁶ We leave aside animate plural agreement (section 4), as it is not a different numerosity and because it would count as a minor (hence exceptional) number in Corbett's terms.

intransitive derivatives), sensitive to non(plurality). The choice of predicate tracks the participant number of the internal argument, irrespective of complications in agreement related to noun class. Hence, *álawgau*, the inverse of IDI ‘apple’, occurs with a singular suppletive when referring to one apple (38a) but with a nonsingular when referring to a plurality (38b).

- (38) a. *Álaw- gau dáut- syáun.*
 apple-INV :1NSG:3INV-small.SG
 ‘Our apple is small.’
- b. *Álaw- gau dáut- syân.*
 apple-INV :1NSG:3INV-small.NSG
 ‘Our apples₃₊ are small.’

The same noun permits singular agreement (like an IDS noun) when it refers to different kinds of apples. Notwithstanding the semantically plural noun triggering singular agreement, suppletion reflects the plurality of apples (39). These readings indicate three or more kinds of apple (Watkins 1984:88).

- (39) *Álaw dáu- syân.*
 apple :1NSG:3SG-small.NSG
 ‘Our [kinds of] apples are small.’

Another instance of singular agreement with plural ‘trees’ and a plural-sensitive predicate can be found later in (51). For more detail on the suppletive system, including some unexpected patterns, see Harbour (2008: ch. 4).

Adverbials derived from singular-sensitive verbs are sensitive to verbal number rather than participant number. In (40), the singular-based adverbs qualify the event of giving as a whole, whereas the nonsingular-based ones (41) qualify each giving event in a plurality.

- (40) *Ét- te / syáun- dé gya- áw- mau.*
 big.SG-ADV small.SG-ADV 3SG:3PL-give-IPFV
 ‘She is giving away a lot / a little.’
- (41) *Bîn- de / syân- de gya- áw- mau.*
 big.NSG-ADV small.NSG-ADV 3SG:3PL-give-IPFV
 ‘She is giving away a lot/little at a time.’

In (42), the singular qualifies duration, the nonsingular, each step of the stitching.

- (42) *Tséy- dé / tsáadów- té an em- sôu-gu.*
 short.SG-ADV short.NSG-ADV HAB 3SG:RX-sew-IPFV
 ‘She sews for a short time / in small stitches.’

However, whatever the basis of the difference is, the roots, when used as predicates, only supplete for participant number (which might reflect the individual-level nature of the singular-sensitive predicates: one cannot, for instance, be short on multiple occasions in a single situation).

The second potential source of verbal number is distributives, which indicate that an event occurs multiple times, spatially distributed around an area.⁷

- (43) *Bímkháuy-gya hêygya gyat- sáw- gô- m.*
 bag- in toy 3SG:3PL-put in.PL.OBJ-DISTR-PFV
 ‘She went around putting toys in the bags.’
 (A. McKenzie 2020)

Unlike argument agreement, which is prefixal, distributives belong to the suffix chain of the verb, coming after markers of transitivity (44) and before aspect (44)–(45).

- (44) *Háundé yá- áum-dé- go- m.*
 something :1SG:3PL-do- DETR-DISTR-PFV
 ‘I am able to get things done.’
 (Redbird et al. 1962: §52)

- (45) *Hágyây- zol- ku táa-gau bét- hot- gûu- yîi.*
 which.INDEF-vomit-to eye-INV :3INV:3INV-travel-DISTR-IPFV.EVID
 ‘Their eyes roved over the vomit piles.’
 (Harrington 1946:241)

A. McKenzie (2020) demonstrates that distributives denote a sum of atomic sub-events of the predicate’s event argument, strewn about that argument’s location. While the sum condition in theory allows duals, the strewing about entails a significant plurality or mass and asserts some kind of spacing.

Distributives’ plurality is independent of participant number, as they may occur with singular arguments, as (46) shows for an intransitive and (47) for both subject and object of a transitive verb:

⁷ Distributives are distinct from habituals, a point raised by the volume questionnaire. For statives, habituals often bear no marking, as in (85). For active predicates, the habitual particle *an* is used, as in (27), (29), and (81). Distributive habituals can deploy both devices at once.

- (i) *Béthaw kâwgaw- al k’ôwbau tsâw an á- hot- gûu- yîi.*
 MIR other.INV-also elder.INV thus HAB 3AN.PL-travel-DISTR-IPFV.EVID
 ‘We didn’t realize that other old people ran around like that.’
 (Harbour, Watkins, and Adger 2012: 124)

Distributives are also distinct from restitutive/repetitive ‘again’, which relies on free or incorporating particles, as in *âuy-tsan* ‘come back/again’ or *poy/pegáu tsân* ‘come again’.

- (46) *Áwkaú Ø- thón-dáw-de- em a- tsán- go- m.*
 well 3SG-dug- be- BAS-LOC 1SG-arrive-DISTR-PFV
 ‘I got around to places where wells had been dug.’
 (Watkins 1984:234)

- (47) *Thén Ø- gówbe-guu- yi.*
 heart 3SG:3SG-miss- DISTR-IPFV.EVID
 ‘He kept missing the heart [which was jumping about on the ground].’
 (Harrington 1946:242)

The examples above therefore cover spatial distribution, whether of multiple achievements, looks, arrivals, or strikes. Event types can also necessitate a temporal distribution, as one participant cannot, for instance, visit multiple places at once.

Statives form their distributive with *-yáu*. They also are compatible with a single entity participating in multiple events (48).

- (48) *Háundé tháyimél ba- déy- yáu gau ba- kúu-yáu.*
 what lonesomely 2PL-stand-DISTR and 2PL-sit- DISTR
 ‘How lonesomely you are standing about and sitting about.’
 (Watkins 1993:140)

This distributive also gives sortal readings, strewing events over a construed list rather than across space. In (49), the stative distributive indicates that each of the denotees of the implicit ‘we’ (only marked in agreement) has an age, which the modifier *hát* specifies as distinct from the others.

- (49) *Hát ba- dáw-yáu.*
 different 1IN.PL-be- DISTR
 ‘We are different [ages].’

In (50), both distributives indicate that we have a set of animals, anaphoric in the context, and the speaker learns what each one does.

- (50) *Háundé gyá- paul-go- m gau háyá*
 something 3AN.PL:3PL-eat- DISTR-PFV and.SAME somehow
á- kíyáu- de an yá- háaya- do.
 3AN.PL-live.DISTR-BAS HAB :1SG:3PL-know.DETR.IPFV-because
 ‘Because I find out what they [woodland animals] eat and how they live.’
 (P. McKenzie 1987)

Distributive marking is not necessary for a distributive reading, as the following rendition of the Book of Genesis illustrates via an interesting pair. In (51a), *dáw* ‘be’

bears a distributive, which *sául* ‘be set’ lacks, even though the trees are distributed about the garden. However, the reading of the distributive is sortal. Meanwhile, in (51b), it is *sául* that bears the distributive, with the spatial reading, while *dáw*, which could be distributive-marked, does not.

- (51) a. *Áa Ø- sául t’áagya hát Ø- éytów-dáw-yáu dé- ey,*
 tree 3SG-be set.PL pleasant different 3SG-fruit- be- DISTR BAS-LOC
- b. *áa Ø- sáw- yáu Ø- éytó-dáw-de.*
 tree 3SG-be set.PL-DISTR 3SG-fruit-be- BAS
 ‘Where there were trees of various pleasant fruits, fruiting trees all over.’
 (Global Recording Networks n. d.: 1:391:48)

When distributives are used, the implicit number of locations and subevents is generally high, reflecting the notion of strewing, but the numerosity is approximative. This usage is distinct from nominal number, which is more precise about cardinality.

3 Agreement and the syntax of number

We begin our discussion of the syntax of number by recapitulating the key differences between agreement and suppletion touched on above and by highlighting morphological parallels between nominal and verbal marking, some of which may already have struck some readers. We then focus on agreement within the DP. Some DPs will host multiple inverse markers due to agreement, but many nominal modifiers, such as adjectives, numerals, and quantifiers are free of marking. Attributive uses of suppletive predicates which maintain number sensitivity are the sole number markers in the low DP. We advance the semantic generalisation that modifiers that take inverse marking concern particular individuals, a view that we support via morphological properties of incorporated nouns. Finally, we present a puzzling pattern of plural person agreement connected to indefinites.

Agreement and suppletion both track number but differ in two major respects. First, suppletion tracks actual cardinality.⁸ Agreement proper often deviates from cardinality because it represents an amalgam of number and class. Deviations include the inverse, which can refer to singular, plural, or even, for first person exclusive, dual. Another deviation involves plural agreement for complex (nonatomic)

⁸ Exceptions occur but are rare. For example, when PPP nouns occur with plural-sensitive predicates, they only occur with the plural verb. When they occur with singular-sensitive stems, the verb reflects the participant number (Harbour 2008:141).

singular nouns (such as pluralia tantum nouns) and singular agreement for simplex plurals treated as atomic (such as collectives).

Second, suppletion is restricted to the innermost argument of the predicate (object or unaccusative subject), whereas agreement tracks the agent, applicative, and object, sometimes all at once. The three prefixes below illustrate this via an increase in morphemes that mirrors the increase in arguments, from intransitive *ma-* via transitive *mén-* to ditransitive *ménêy-* (which lowers the tone of the verb):

(52) *Ma- khî!*

2DU-exit.IMP

‘Come₂ out!’

Mén- khî!

2DU:3DU-exit.IMP

‘Take₂ them₂ out!’

Ménêy- khî!

2DU:1/3.SG:3DU-exit.IMP

‘Take₂ them₂ out for me/him!’

The agreement system – one of the world’s most intricate, compressing so much meaning into so little sound – cannot be treated adequately in this chapter. In relation to the themes of this volume, we note that person and number can fuse (e.g., :2DU: *m* is unrelated to :2SG: *g*), and that third persons and their numbers are visible to agreement (if they were not, the noun class system would vanish).

Amongst the numerous allomorphs of number/class agreement, one finds some reminiscent of nominal marking (Watkins 1984: 107–108). Many abstract nouns, like *kháwgya* ‘name’, *tówgyá* ‘speech, word, language’ and *k’ombáâlgya* ‘imitation’, involve the basic suffix *-gya*. These are PPP nouns and their suffix often resembles the plural agreement they govern, as in intransitive (53) (cf, 3AN.PL:3PL *gyá*, 3AN.PL:1/3.SG:3PL *gyâ*, 1SG:3PL *gyat*, (2/3.SG):1SG:3PL *yá*):

(53) *Káuy- tō- gya gya-t’áagya.*

Kiowa-say-BAS 3PL-pleasant

‘Kiowa is pleasant.’

The rhymes of noun suffixes often coincide with agreement. For instance, nouns with basic forms ending in *-de* tend to be inherently paired, as are SDI *t’áwdé* ‘ear’ and *gúúdé* ‘horn’, PPP *kháwdé* ‘trousers’, and SDP *p’áwhîide* ‘half dollar’. The *e* vowel of *-de* occurs in many dual agreement prefixes, as in *mén-* 2DU:3DU and *ménêy-* 2DU:1/3.SG:3DU (52). Other similarities between rhymes of noun suffixes and agreement are evident in possessive agreement, both for inverse (54) and basic (55).

- (54) *Péygaút dáút- dáw.*
 sand.INV :1NSG:3INV-be
 ‘The sand grain is ours.’

Pêy- gau áu- dáw.
 turkey-INV :3SG:3INV-be
 ‘The turkeys are his/hers.’

- (55) *Khú-dá á- dáw.*
 day-BAS :3SG:3SG-be
 ‘The day is his/hers.’

Táa-de né- dáw.
 eye-BAS :1SG:3DU-be
 ‘The eyes are mine.’

The correspondences are historic rather than synchronic: as many examples in this chapter show, agreement and noun suffix often diverge in phonological form. Moreover, the corresponding segments above have taken on broader functions in both nouns and verbs: there are paired PPP nouns in *de*, like *kháwdé* ‘trousers’, and non-inverse prefixes with *au*, like *gau* 3:2SG. There are, furthermore, exponents of number confined to a single domain, which we would not expect if the actual forms of the noun and agreement were directly linked. For instance, the nasalization that frequently occurs with dual agreement, as in (52) and (55), is not a feature of number on nouns. These correspondences suggest that various suffixes on nouns are vestiges of singular, dual, and plural morphemes. Synchronically, nouns only contrast inverse versus basic forms and express semantic number only through an amalgam of noun and class.

Complex DPs can host multiple occurrences of inverse or basic marking, as when demonstratives modify nouns (13a)–(13b). Other complex DPs that contain multiple number marking include nouns with the quantifier ‘only’ (56) and possessed nouns with anaphoric third person possessors (57). In both of these, multiple inverse markers can even be adjacent.⁹ For anaphoric third person possession, a prefix marks possessor person and a suffix, BAS/INV. The noun can additionally bear inverse marking and both instances of inverse marking can reflect possessum number (as in ‘his/her children’).

- (56) *táttau- gau-ki*
 skunk.INV-INV-only
 ‘only skunks’

⁹ Inverse agreement is optional for ‘only’, permitting *táttau-de-ki* [skunk.INV-BAS-only] as an alternative to (56). This is the only case of optional nominal inverse in the language.

- (57) *á- ii- te*
 3POSS-child-BAS
 ‘her/his child(ren₂)’
- á- yyoy- gau*
 3POSS-child.INV-INV
 ‘her/his/their children₃₊’

These multiple occurrences notwithstanding, there are comparatively few loci of number marking within DP. Adjectival predicates have none. Instead, they form a complex word with the noun and the complex as a whole is marked. For instance, ‘white horse(s₂)’ can be either head-final *t’áy-tsêy* or head-initial *tsêy-t’ay*. The inverse suffixes to each of these, its form conditioned by its neighbour: *t’áytsêygau*, *tsêyt’aymau* ‘white horses₃₊’. A rare three-way number distinction is available in SDI and IDI nouns modified by a suppletive adjective of size (cf, table 4). The inverse, again, appears on singular and plural forms, conditioned phonologically by the adjective, but, additionally, the adjective itself suppletes for nonsingular. This combination of factors leads to distinct singular, dual, and plural forms.

- (58) *ául- kyóy- máu*
 hair-long.SG-INV
 ‘a long hair’
- ául- kīinī*
 hair-long.NSG
 ‘long hairs₂’
- ául- kīinóp*
 hair-long.NSG-INV
 ‘long hairs₃₊’

Despite the complexity of morphological number, numerals and fractions in Kiowa are very simple. They neither take number marking nor do they affect marking on nouns and verbs. For instance, singular nouns of any class use invariant *páagau* ‘one’ and maintain whatever agreement noun class demands, whether singular, plural, or inverse (59).¹⁰

- (59) *Páagau* {*pól* Ø- *dáw*} / {*kút* *gya-* *dáw*} / {*tóp* *e-* *dáw*}.
 one bug 3SG-be book 3INV-be peg.INV 3INV-be
 ‘It is one bug / book / peg.’

¹⁰ *Páagau* ‘one’ and *páa* ‘some’ are likely historically related, derived via a suffix related to *-kaw* ‘just, only, and no more’, used with other numbers and quantifiers (*yíikaw* ‘just two’, *háotekáw* ‘just a few’; hence, the use of *páagau* to mean ‘lone’, as in *Kúyppaagauy* ‘Lone Wolf’).

- (64) (*Yáukáuy*) *yíi* (*yáukáuy*) *nen-* *bów* (*yáukáuy*).
 young woman two young woman 1SG:3DU-see.PFV young woman
 ‘I saw two (young women).’

Quantifiers too lack inverse marking. Like ‘half’, ‘some’ occurs with the verb agreement form dictated by its head noun, inverse in (65) but plural in (66). This holds even if the head noun (in parentheses) is omitted.

- (65) *Kâul* (*áadauattau*) *có* *dé-* *kâul-* *taw*.
 some.IRR barrel.INV thus 1SG:3INV-turn over-MOD
 ‘I could turn one (barrel) over.’ (P. McKenzie n. d.-b)

- (66) *Kâul* (*hâwsauaa*) *gyat-* *ám-* *táw*.
 some.IRR fence posts 1SG:3PL-make-MOD
 ‘I am going to make some (fence posts).’
 (Goins 1957)

This is also true of *téy* ‘all’, as inverse (67), plural (68), and singular nouns (69) illustrate.

- (67) *Téy* (*k’áweytaw-baut*) *náu-* *áw*.
 all frybread- INV 2SG:1SG:3INV-give.IMP
 ‘Give me all (the piece of frybread).’
 (Ahote 1965)

- (68) *Téy gyá-* *thaa-* *hel* ... *á-* *kíi-* *aa-* *hel-* *gau*.
 all 3AN.PL:3PL-cut.PL.OBJ-EVID 3AN.PL-meat-come-EVID-INV
 ‘They who came for meat cut all [the meat] away.’
 (Toyebo 1957a)

- (69) *Téy an* (*áulhâw-gya*) *á-* *hauttau*.
 all HAB money- BAS 3AN.PL:3SG-take.IPFV
 ‘They take it all (the money).’
 (Redbird 1957)

Wh-elements display mixed behaviour. Some, like *háote* ‘how many’, are invariant, whether their head noun is inverse marked (70), basic (71), or absent (parentheses).

- (70) *Háote* (*sâadau*) *gáu-* *dáw?*
 how many child.INV :2SG:3INV-be
 ‘How many (children) do you have?’
 (Watkins 1984:214); *gáu* for *gáut*)

- (71) *Háote (áa) gyá- t'au- thátkyá?*
 how many tree :2SG:3SG-chop-sever.PL.DETR.PFV
 'How many (trees) have you gotten chopped up?' ('tree' is IDS)

Others must be basic or inverse in accord with their head noun, like 'which' with singulars of SDS *máun* 'finger' and IDP *máun* 'hand' (72)–(73) (also (18)–(19)).

- (72) *Hâagyây máun gyá- kówlí- dâw?*
 which.BAS finger :2SG:3SG-numb-be
 'Which of your fingers is numb?'

- (73) *Hâabâw máwdáu é- thêw?*
 which.INV arm.INV 3SG:3INV-break.PFV
 'Which arm did he break?'

The modifiers that take inverse marking are, apparently, those with a definite individual built in. Thus, demonstratives, possessives, and the *wh*-elements *hâagyây/hâagâw* 'which.BAS/INV' and *hâundé/hâungáu* 'what, who.BAS/INV' do (cf. obligatory marking on relative clauses (30)–(31)). Numerals, fractions, quantifiers like 'all' and 'some', and *wh*-elements like 'how many' do not. The fit is not perfect, however: 'only' is optionally marked, (*ts'al* 'too' never is; *hâundé/hâungáu* 'what, who' distinguish inverse/basic but *hâatêl* 'who' does not (it is restricted to singular/dual; Watkins, p.c.)).

A link between inverse marking and definite individuals suggests that the inverse belongs, in theoretical terms, to the higher reaches of the DP. The absence of inverse and basic marking on incorporated nouns supports this view. Although Kiowa generally lacks direct object incorporation, incorporation for other purposes is highly productive. The incorporated noun is number-neutral (Watkins 1984; Adger, Harbour, and Watkins 2009; A. McKenzie 2017, 2019, 2021). Representative examples, alongside (3), are (74), where bare SDI 'horse' can have any number reference, (75), where SDI 'neck' has plural reference but is bare *k'ól*, not inverse-marked *k'ôwtau*, and (76), where *kyákôm-da* 'life-BAS' occurs without its basic marker:

- (74) *a- tsêy(*gau)-to- baa*
 1S-horse(INV)-look for-go.PFV
 'I am going to look for a horse/horses.'

- (75) *Béthaw ét- k'ól/*k'ôwtau- thaa- hel.*
 apparently 3INV:3INV-neck/neck.INV-sever.PL.OBJ-EVID
 'Apparently they had cut through their throats.'
 (P. McKenzie n. d.-c)

- (76) *P'áw- tháw- be á- k'yákôm(*da)-t'aw.*
 water-beyond-along 3PL-life(BAS)- stay
 'Across the ocean there are people living.'
 (Crowell 1960)

Incorporated nouns are typically taken to be smaller than full DPs. By associating number marking with the higher functional domain, we correctly derive its absence under incorporation.

We conclude this section with a fascinating construction. When the indefinite *háagyây* 'which(ever)' occurs without a head noun, agreement on the verb corresponds to the group over which it ranges.¹² In (77), the meaning 'whichever of us' emerges from *háagyây* 'which(ever)' plus first inclusive nonsingular agreement (*ba-*). Strikingly, the nonsingular agreement extends into the second clause (*bét-*), which ought to be singular as it describes what the winner will do. Descriptively, it is as though 'whichever' (or the noun phrase it belongs to) escapes its conjunct to scope over the whole sentence.

- (77) *Háagyây ba- t'aum-tsán- t'aw gigáu bét- hân.*
 which.BAS 1IN.NSG-first- arrive-MOD and then.SAME 1IN.NSG:3INV-eat up.PFV
 'Whichever of us comes first will eat them up.'
 (Harrington 1946:239)

Plausibly, (77) involves "unagreement," first or second person agreement paired with a common noun that lacks any indication of person (Hurtado 1985). Another example is (29) where the meaning 'us old men' arises from *êlk'yoy* 'old men' with 1NSG agreement. A semi-technical gloss of (77) would be 'us-whichever [i.e., some one of us] will come first and then us-that [i.e., that one of us] will eat them up', which involves an indefinite in one clause, null resumption in the next, and unagreement in both. The details of this approach lie beyond the scope of this chapter (see Harbour 2022). We are aware of analogous constructions only in Georgian (Léa Nash, p.c.) and, more transparently, in Huallaga (Huánuco) Quechua (Weber 1989:308).

4 Semantics and discourse

At the level of discourse semantics, Kiowa number is rather uncomplicated. As already discussed (72)–(73), inverse marking, or its absence, on interrogatives can indicate what answer a speaker anticipates. Other discourse-semantic properties not illustrated so far include: that nouns with plural reference can refer to singulars

¹² Interrogatives with initial falling tone (e.g., *háagyây* 'which', *háundé* 'what, who') have matching indefinites with initial high (*háagyây* 'which(ever)', *háundé* 'something, someone').

under some circumstances; that number has implications for politeness (for third persons, with dual sometimes emerging as the culturally apt option); and that forms capable of plural reference are used in generic statements (consistent with plural being the default number; section 2.3). Although number is involved both in agreement and switch reference, it is not a driving force of their pragmatics but is secondary to other discourse constraints. In these regards, Kiowa is not especially unfamiliar. Discourse structure does license one surprising phenomenon in the domain of number though, namely, “associative conjunctions,” which are encoded via a single name plus nonsingular agreement. In our examples, these require familiarity of the conjuncts and greater discourse prominence for the named person. We address these subjects in the order just given.

Nouns with plural reference permit nonplural reference under some circumstances. For instance, (78), with inverse *thaalyóp* ‘boys₃₊’, is false if even one boy arrived.

- (78) *Háun kâul thaalyóp e- tsáanâw.*
 NEG some boy.INV 3INV-arrive.NEG
 ‘No boys arrived.’

Similarly, the instruction in (79) about collecting honey has inverse subject agreement, referring to previously mentioned (semantically plural) bees. Yet, this advice presumably applies even if a noninverse number of bees (one or two) land on your face:

- (79) *T’ów-ba dét- thaw- gún- taw- al poy háyá*
 face- against 3INV:2SG:RX-sit.NV-jump-MOD-also PROH somehow
em- thow- kówbîi- taw.
 2SG-chase-thrash about-MOD
 ‘Even if they land on your face, don’t thrash about.’
 (P. McKenzie 1987)

Plurality is not used for politeness, nor is dual used for intimacy. However, there is a special form of agreement used for animates subject to empathy, generally other Kiowas but not members of other groups – though non-Kiowa (81), or even nonhuman (50), referents are possible if the setting is right. This animate plural agreement (AN.PL) overrides inverse agreement; compare (80a) with (80b) or the two verbs in (81).

- (80) a. *Káuy- gú á- hóuqa- hel*
 Kiowa-INV 3AN.PL-travel.PFV-EVID
 ‘The Kiowas were travelling along’

b. *Kyây- gu e- hóuqa- hel*
 Comanche-INV 3INV-travel.PFV-EVID
 ‘The Comanches were travelling along’

- (81) *Kii táa- hey an gyá- pauttau máun kâul e- áun.*
 meat cook-PRIV HAB 3AN.PL:3PL-eat.IPFV maybe some 3INV-think
 ‘Some [of the white people] maybe thought they [Kiowas] eat meat raw.
 (P. McKenzie n. d.-f)

An interesting complication is that animate plural agreement does not exist for semantically plural internal arguments (objects, themes) in the presence of an applicative. These cooccur, for instance, in possessives, with the applicative agreement encoding the possessor of the internal argument, as the contrast between one-argument, nonpossessive (82a) and two-argument, possessive (82b) illustrates:

- (82) a. *Yïikya hegáu sâadau e- dâw.*
 four then child.INV 3INV-be
 ‘There were four children then.’
 b. *Yïikya hegáu sâadau dâut- dâw.*
 four then child.INV 1NSG:3INV-be
 ‘We had four children then.’
 (P. McKenzie 1986)

The possessum of (82b) is semantically an animate plural and it is expressed by inverse number. Inverse number for referents that would normally command empathic AN.PL agreement can be felt to be culturally inapt. Speakers have recourse to two strategies, depending on the person of the applicative.

First, dual may be used instead of inverse. In (83), inverse *maayóp* ‘women’ cooccurs with such dual agreement, even though no Kiowa noun is inverse-marked when semantically dual:

- (83) *Maayóp nén- háygyá-daw.*
 woman.INV :2SG:3DU-known-be
 ‘You know women.’
 (Watkins 1984: 146)

A direct comparison of the acceptability between inverse and dual in this context is provided by (84):

- (84) *Káuy- gú né- tsán / (*)náu- tsán.*
 Kiowa-INV :1SG:3DU-arrive.PFV :1SG:3INV-arrive.PFV
 ‘The Kiowas came to me.’
 (Harbour 2008:72)

For third person applicatives, a second strategy is available: reflexive agreement, with the animate plural marked as an agent, even if the verb is intransitive.

- (85) *Tsólhautkau Dawk’ii ém- áwdéy-dáwmêy.*
 thus.INV God 3AN.PL:RX-dear- be.EVID
 ‘Such people are dear to God.’
 (Toyebo 1957a)

Generic statements often take animate agreement for human generic subjects. For instance, (86) can be used to silence a child making a fuss at not getting something:

- (86) *Háun an á- héymâw!*
 NEG HAB 3AN.PL-die.NEG
 ‘They don’t die [of such things].’

The literal reading ‘They don’t die’ is more readily rendered in English by an impersonal or second person ‘One doesn’t or you don’t die [of such things]’. A similar example of Kiowa using animate plural where English would use ‘you’ or ‘one’ is the following statement about travel preparation:

- (87) *Kólbél gya- máwkhól- daw háyá*
 securely :3AN.PL:3PL-prepare.NV-be somewhere
á- hów- banma- tsey.
 3AN.PL-travel-go.IPFV-when.SAME
 ‘One is to be [lit. they are] well prepared when [lit. they are] going to travel somewhere.’
 (P. McKenzie n. d.-g)

Plural is the default in other kinds of generic sentences, in keeping with plural as the default number more broadly (32)–(35). For instance, a generic statement about coyotes (SDI) and their noses (IDP) requires ‘coyote’ in the inverse and ‘nose’ in the (basic) plural, as (88b) illustrates. In contrast, the episodic statement in (88a) about Coyote and his nose require the singular and inverse respectively.

- (88) a. *Áwgau Séndé mawthotsówhii mawk’áun áu- sów- hêl*
 REL Sende coyote.BAS nose.INV 3SG:3SG:3INV-hone-EVID
de- peydow,
 BAS-because
- b. *éyhaw- al hétáu mawk’áun máw tsów-gáu bét- dáw.*
 now- also still nose.BAS likeawl- INV :3INV:3PL-be
 ‘Because Sende honed the Coyote’s nose, still nowadays their noses are like awls.’
 (Harrington 1946:240)

Agreement and switch-reference are central to tracking discourse referents in Kiowa (Watkins 1993; A. McKenzie 2012, 2015). Number is implicated in both these systems, but does not itself play a major role in them. Consider agreement. In *Sende and the Mountain Ogres* (Harrington 1946:240–242) it is hard to find a run of three sentences together where neither *Sende* nor the ogres are mentioned by noun phrase. One might have expected singular agreement for *Sende* and inverse for the ogres to be enough to identify who does what to whom. Evidently, though, number alone is felt to be pragmatically or stylistically insufficient.

Switch-reference marking is often triggered between two sentences when the first identifies a group and the second picks out a subset. In (89), the first clause has an animate plural subject, while the second has third singular, corresponding to one member of the plurality. The two are linked by switch-reference marker *-nau* (as opposed to the second and third clauses, which are linked by a same-reference marker, *gau*).

- (89) *Á- maw- tau- nau k'yáahîi tsêy- gau*
 3AN.PL:3SG-move-MOD-when.DIFF man horse-INV
é- pawkâun- tau gau hágyá
 3SG:3INV-bring along-MOD and.SAME somewhere
em- áw- saw-taw.
 3SG:RX-temporarily-sit- MOD
 'When they moved camp, the man would bring the horses and sit awhile.'
 (Redbird 1957)

However, number and subsets are not the driving factor here. In Kiowa, switch-reference across coordinated clauses is “non-canonical” in Kiowa: It does not express the identity or disjointness of the subjects (Haiman and Munro 1983). If the speaker envisages the two conjuncts as constituting a single situation, then same-referent connectives are used (A. McKenzie 2011, 2012), whether with referential (90) or quantificational (91) subjects.

- (90) *Kathryn gya- gút gau Esther-al gya- gút.*
 Kathryn 3SG:3PL-write.PFV and.SAME Esther-also 3SG:3PL-write.PFV
 'Kathryn wrote a letter and Esther wrote one too [e.g., in a campaign].'

- (91) *Étté thówtsep hágyá á- kawley gau páa*
 many flood once 3AN.PL:3SG-cross.IPFV.EVID and.SAME some
á- óba- hîi- hel.
 3AN.PL-drown-die-EVID
 'Many were crossing a flood once and some drowned.'
 (Watkins 1984:159)

The discourse factors above affect switch reference only with coordinating connectives. With subordinating connectives *tsey* ‘when.SAME’ and *ey* ‘when.DIFF’, subject number becomes a factor. In (92), the same-reference marker is ungrammatical.

- (92) *Háatêl Ø- tsán- ey, téy ém- kún- haa.*
 someone 3SG-arrive.PFV-when.DIFF all 3AN.PL:RX-dance.NV-get up.PFV
 ‘When someone [specific] showed up, everyone got up to dance.’
 (A. McKenzie 2012:209)

A more truly discourse-driven use of number involves implicit or associative conjunctions. These involve nonsingular agreement for a personal name or kinship term that would ordinarily govern singular agreement. In (93) and (94), for example, only Satanta and Adam are named, but by dual agreement in both signals references to pairs of individuals, Satanta and Big Tree, and Adam and Eve respectively:

- (93) *Sétt’áyde hegáu óópkau Təháne-ku et- âa- hii- hel.*
 Satanta then far away Texas- to 3INV:3DU-haul-move-EVID
 ‘They carted Satanta [and Big Tree] far away to Texas.’
 (P McKenzie n. d.-a)

- (94) *Édam e- khóbéttáu-dáw dé- tso náu-ál páatsokáw*
 Adam 3DU-sin- be BAS-thus 1- also likewise
ba- khóbéttáu-dáw.
 1IN.NSG-sin- be
 ‘We are sinful as Adam [and Eve] were.’
 (Global Recording Networks n. d.: 5:325:41)

Watkins (p.c.) observes that, in the texts from which (93)–(94) come, Big Tree and Eve have already been in conjunction with Satanta and Adam and the mentioned member of each pair has greater prominence. For Satanta, this relates to his not surviving the incident that the text recounts. For Adam, it relates to his being present and more active for most of the story. That parts of conjunctions are dissociable was already seen in the split conjunction in (17). More relevant here are examples like (95), where a conjunction of two singulars splits across a verb with dual agreement:

- (95) *Éygau Dawk’yaii Ø- dáw-dé- taul e- dáwmêy gau á- tsaw- de.*
 here Jesus 3SG-be- BAS-father 3DU-be.IPFV.EVID and 3POSS-mother-BAS
 ‘Here were Christ’s father and his mother.’
 (P. McKenzie n. d.-h)

Null anaphora in lieu of the second conjunct may underlie associative, or implicit, conjunctions. Null arguments are licensed under similar conditions of discourse familiarity (Watkins 1990).

5 Conclusions

A morpheme like the Kiowa inverse, which makes some nouns singular, others plural, and others both, is sure to capture the attention of typologists and theoreticians alike. However, the inverse is just the start of the grammar of number in Kiowa. In a rare form of linguistic economy, different distributions of that one suffix serve to define four noun classes. Moreover, the system of inverse marking is embedded within a singular-dual-plural number system, and noncanonical uses of these numbers – such as singular for plural and *vice versa* – reveal another four noun classes. Again, this is a radical economy, using independently available numbers as the means of defining noun classes. These properties make for a language in which number and class are inextricably linked and where class is expressed with remarkable morphological economy.

Despite the minimality of these morphological resources, Kiowa is morphologically highly intricate, especially as concerns the tracking of number by the verb. The agreement prefix encodes singular, dual, plural, and animate plural agreement, plus all information about class, whether inverse, singular-for-plural, dual-for-plural, or plural-for-nonsingular, and does so while registering up to three arguments in as many as four persons. These complications mean that number agreement diverges from true cardinality. The most reliable expression of cardinality occurs in the most irregular corner of the language, in the suppletive system. Jointly, agreement and suppletion completely encode number and class. So, the verb is overwhelmingly the morphological locus of core nominal information.

The interest of Kiowa number does not end there. Some properties of the system may be straightforward, such as the inertness of numerals and the availability of singulars from forms that refer to plurals. However, other constructions are more unusual: agreement in *whichever* relatives, implicit or associative conjunctions, and the emergence of dual as the culturally appropriate means of reference for animate plurals.

Kiowa is the best documented member of the endangered Kiowa-Tanoan family, yet it is something of an outlier morphologically. The Tanoan languages all inverse-mark (eligible) nouns in the dual (e.g., Tewa, Harrington 1910a; Taos, Harrington 1910b; Jemez, Yumitani 1984) and some (e.g., Tewa, Jemez, but not Taos) mark personal pronouns in the dual and plural. The extent of singular-for-plural and plural-for-singular agreement is less well documented. And many of their agreement systems are less well articulated, with dual and inverse frequently collapsing (e.g., in Jemez). Given these variations on such a rare design of number system, it would be fascinating to address the questions that underlie the current volume for the family as a whole.

Abbreviations

1	first person
2	second person
3	third person
ADV	adverb
AN	animate
AUX	auxiliary
BAS	basic
DETR	detransitive
DIFF	different subject
DISTR	distributive
DU	dual
EVID	evidential
EX	exclusive
HAB	habitual
IMP	imperative
IN	inclusive
INDEF	indefinite
INV	inverse
IPFV	imperfective
IRR	irrealis
LOC	locative
MALE	male
MOD	modal
NPL	nonplural
NSG	nonsingular
NEG	negative
NV	nonverbal
OBJ	object
PFV	perfective
PL	plural
PRIV	privative
PROH	prohibitive
PROX	proximative
REL	relative
RX	reflexive
SAME	same subject
SG	singular

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