Two types of habitu als: Kiowa ingredients of a modular imperfective
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Abstract. This paper argues that the Kiowa language (kio) employs two distinct methods of building habitu als, each with its own morphological representation. The free adverbial àn is a ‘distributive’ over events which gives a sense of plurality ‘strewn’ across the topic time, while the bound adverbial bôː+ is a durative expressing an event that lasts the entire topic time. These methods of imperfectivity are proposed as complementary in the literature, but the Kiowa facts show that the components of the imperfective are modular.

Keywords: imperfective, aspect, habitual, Kiowa, event plurality

1. Introduction

The imperfective has a wide variety of uses, which different approaches derive in distinct components of a broad abstract imperfective morpheme. The habitual use in particular has recently been derived with success by one of two methods. Ferreira (2016) derives habitu als from plurals—many events taking place build a habit. Deo (2009, 2015) argues instead that a regular partition of the relevant time derives the habit.

In Kiowa (kio), however, we find both kinds of imperfective working together to build habitu als, which suggests that they are not necessarily complementary, but instead contribute modularly towards the imperfective. In this paper we demonstrate two habitual morphemes that provide distinct routes to habitual readings. One employs a distributed plurality of events, while the other employs a durative meaning. Instead of partitioning the relevant time, the event is asserted over the entire time, and habituality is one possible interpretation.

This paper relies on examples gathered from texts and elicited through fieldwork with speakers of the Kiowa language, a moribund member of the Kiowa-Tanoan family. It is the heritage language of the Kiowa Tribe of Oklahoma, now centered in SW Oklahoma in the U.S. A brief grammatical note to help readers is that it is ‘non-configurational’, roughly SOV but only V is required. Verbs are polysynthetic, with a structure as follows: [ AGT-DAT-OBJ agreement=incorporated stem+main stem-NEG/ASP/MOOD/EVID ] (Watkins, 1984). Its number system is well-known for its mixture of morphological simplicity and semantic complexity (Harbour, 2008). Kiowa is a tone language, but many morphemes neutralize tones for the rest of the prosodic word they are in, to low tones (Sivertsen, 1956). This ‘lowering’ is indicated with ∗.

2. The Kiowa imperfective

Kiowa imperfective marking (IPFV) is used for ongoing (1), imminent (2), and habitual readings (3). Kiowa lacks tense marking, so any of these imperfective sentences could also be uttered about past times if adverbials allow, even as the translations in this paper focus on present ‘tense’ readings. 2

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(1)  èm= gúnmò
3S-REFL=dance.IPFV
‘She is dancing.’

(2)  kʰjʰhəqʰì:èm= ʒ:zönmò
tomorrow 3D-REFL=start out.IPFV
‘They (two) are setting out tomorrow.’

(3)  Context: Talking about children’s roles in preparing dance grounds
ç:hx=ðə+ pəj+ kùn− ç; èŋ= tʰj:q+ ʒ:ınmò. mòp’á ʒ:èm= tòtòp
present day+summer+dance—at 3I-3P=help+do.IPFV trash HAB 3I-3P=gather up.IPFV
‘At the Gourd Dances these days, they help out. They pick up the trash.’ (Neely, 2012)

3. Two means of providing habitual readings
Habitual readings usually involve the adverbial ân. This form is syntactically fixed in AspP (Adger et al., 2009) below negation. It triggers IPFV in all cases (4a), unless some other morphology blocks it. The blockers are negation, which neutralizes aspect marking (5), and stative verbs, which do not bear aspect marking (6).

(4)  a.  ân  èm= gúnmò
HAB 3S-REFL=dance.IPFV
‘She dances.’
b.  *ân  èm= gún
HAB 3S-REFL=dance.PFV

(5)  a.  hóñ  ân  èm= gúmnò:
not HAB 3S-REFL=dance.NEG
‘She does not dance / she never dances.’
b.  *hóñ  ân  èm= gúnmò
not HAB 3S-REFL=dance.IPFV

(6)  jíkáj  kʰj:s+ tʰj:â  ʒ:â  ʒ:q:"à
young woman blanket+on top HAB 3S=be sitting.SG/DU
‘The young woman usually sits on a blanket.

A second way to build habituals is the stem bòː+, which is incorporated into the verb (7). This form always triggers IPFV as well, unless it is blocked by the same blockers that block it with âñ: Negation (8) and statives (9).

(7)  a.  èm= bòː:+gúmnò
3S-REFL=DUR+dance.IPFV
‘She often/usually/always dances’
b.  *èm= bòː:+gún
3S-REFL=DUR+dance.PFV
(8)  a.  hôn bô:+gû:mô:  
    not  DUR+dance.NEG
    not  3S·REFL=DUR+dance.IPfv
    ‘She does not often/usually/always dance’.
  b. *hôn  èm= bô:+gû:mô

(9)  jô:kôj  tô:j  3S=DUR+be sitting.NS
    young woman  on top 3S=DUR+be sitting.NS
    ‘She is often/usually/always on horseback’

We must point out that bô:+ is often translated as ‘always’ or ‘all the time’, at least since Harrington (1928). However, elicitation shows that the predicate need not hold of every relevant time. For instance, in (10), a follow-up clause (in brackets) contradicts a universal reading, and speakers accept this.

(10)  tô:jpe  *gourd clan+dance–at  3S=ARRIVE=PFV=wh-en.SS  3S·REFL=DUR+dance.IPfv
    [nê  pâ:  hôn  èm= gû:mô:]
    ‘When she comes to Gourd Clan, she usually dances but sometimes she doesn’t.’

4. Distinguishing ân from bô:+

These two forms of the habitual are semantically similar but distinct morphemes. Both have similar translations, and examples like (11) show how neither ân nor bô:+ can be used with single or occasional occurrences.

(11)  khôjôl  Tom  (*ân)  kô:jô:+  tô:j  3S=ARRIVE+Commerce=to  3S=(DUR)+GO.PFV
    yesterday Engl. (HAB) commerce+house—to 3S=(DUR)+go.PFV
    ‘Tom went to the store yesterday.’

We might at first hypothesize that the two forms express the same meaning from distinct categories, one free and one incorporated, especially since they routinely co-occur.

(12)  ãn= bô:+5m+dô:dè–  tsô,  p’idô  ân= 5m+dô:dè;  kô:jô:sê tô:n
    instead  HAB  ·3S·3P=DUR+do+be  NOM—as  down.below  ·3S·3P=do+be.EVID  leggings
    3S·3S=be  set.PL.EVID
    ‘However, as he generally did with his lower body, he had put on leggings.’ (New Clothes for Church)\(^3\)

However, three factors where they differ lead us to distinguish the two forms: With negation, episodic durations, and untested characteristics.

4.1. Negation

The two morphemes trigger different interpretations under negation. With negation, ân is generally translated as ‘habitually doesn’t’ or ‘never’. Given ân’s fixed position under negation, we expect it to have low scope (not > habitual). From this we predict that it allows readings where

\(^3\)X-Y means ‘Y internal argument, X dative’. In (12), these verbs are result passives with a semantic agent expressed as the dative argument.
the described event never occurs or rarely occurs (it habitually does not occur), and also where it occasionally occurs (it does not habitually happen). It should be unavailable with ‘almost always’ readings (not always), and it is.

(13)  hôn ân  ⃰=  t^ôm+tsâmô:  
not  HAB  3S=first+ arrive.NEG  
‘She doesn’t usually get there first./She never gets there first’

1. If she almost always does: Rejected  
2. If she occasionally does: Accepted  
3. If she rarely does:  **Accepted**  
4. If she never does:  **Accepted**

Meanwhile bô:+ also takes scope below negation (not > habitual), but the ‘rarely’ and ‘never’ readings are not accepted.

(14)  hôn ⃰= bô:+  t^ôm+tsâmô:  
not  3S=DUR+first+ arrive.NEG  
‘She doesn’t usually/always get there first.’

1. If she almost always does: Rejected  
2. If she occasionally does: Accepted  
3. If she rarely does:  **Dispreferred**  
4. If she never does:  **Rejected**

4.2. Episodic durations

*Bô:+ can be used in non-habitual contexts to mean ‘the entire time’ (15). In these instances, IPFV marking is still required unless blocked by negation or statives.

(15)  pâqô: kún= kû ⃰= tsân  ɡô  êm=  bô:+  gumô  
one  dance—to  3S=arrive.PFV and.ss  3S·REFL=DUR+ dance.IPFV  
‘She came to only one dance, and she danced/ was dancing the whole time.’

These contexts bar ân.

(16)  *pâqô: kún= kû ⃰= tsân  ɡô  ân  êm=  gumô  
one  dance—to  3S=arrive.PFV and.ss  HAB  3S·REFL=dance.IPFV  
‘She came to only one dance, and she danced/ was dancing the whole time.’

4.3. Untested characteristics

Habituals are well-known for their ability to be true even if the described action has yet to happen. Testing shows that ân can be used for such untested characteristics, while bô:+ cannot be.

(17)  **Context:** Bill is starting a new job tomorrow, and you’re telling your son about it.  
a.  qįː  gâ ân  gâ= sôtò+tô:  
night—at  HAB  3S·3P=work+act.IPFV  
b.  *qįː  gâ  gâ=  bô:+  sôtò+tô:  
night—at  3S·3P=DUR+ work+act.IPFV
‘He works at night.’

With these diagnostics, we determine that àn and bóː+ are semantically distinct morphemes. They both indicate habitual meaning, so we conclude that Kiowa takes two paths to habitual meanings. In the rest of this paper we pursue the ensuing question: How do we follow these paths to habituality and maintain these other distinctions?

5. Incorporating plurality and regularity

In order to clarify the meanings of these morphemes, to account for their differences, we can first try to apply a notion of habituality already proposed. Ferreira (2016) derives habitual readings from progressives via plurality. An operator \( pl \) selects homogeneous sums from the event property’s extension \( P \), which can be partitioned into non-overlapping proper parts that are also in \( P \) (18). Assuming that verbs are lexically cumulative (Kratzer, 2007), the habitual is just the application of this plural to the imperfective.

\[
(18) \quad pl = \lambda P \lambda e. \ P(e) \& \exists e_1, e_2, \ldots, e_n < e : P(e_1) \& P(e_2) \& \ldots \& P(e_n) \& \otimes (e_1, e_2, \ldots, e_n)
\]

However, Deo (2009, 2015) finds that mere plurality fails to capture any temporal quality of habitals. Habits last a while, and are often regular. Mere repetition does not suffice. Kiowa facts reinforce Deo’s point. The sentence in ((17)) ‘Bill works at night’ is not made true simply if Bill works for a few nights. We have to be describing his job, or at least a routine, which lasts throughout the time in question.

5.1. Regular partitions

Deo’s approach (Deo 2015: 488) is an attempt to salvage a universally-quantified imperfective with a proper restrictor: The imperfective introduces a relevant time interval, divides it contextually into regular partitions. Each partition has an event instantiating the predicate.

\[
(19) \quad \text{IPFV}(P)(i) = 1 \text{ iff every (suitably restricted) history } h \text{ continuing } i \text{ contains a } j \text{ where } i \subset_{nf} j \text{ and every subinterval } k \text{ of } j \text{ that is also a cell of a contextually provided regular partition of } j \text{ overlaps with a } P \text{ interval.}
\]

The different readings of the imperfective arise from adjusting the interval. The habitual is one that lasts across the topic (or reference) time. As it is partitioned 1, the partition leads to a habitual reading.

![Figure 1: Partition across the relevant time interval](image)

However, this approach has flaws when applied to habitual meanings of the imperfective, which we will focus on here. First, there is no guarantee that there is a plurality of partitioned subin-
tervals. We must stipulate more than two subintervals (i.e. more than one partition). Worse is an empirical problem: Habitual events are not often that regular.

Deo’s approach does not require the events to be regular, only that the partitions are regularly divided— a partition can have multiple events in it. However, this leads to a Texas Sharpshooter problem. We can divide the interval any way we like to ensure that each partition has one event in it — into two, three, four, however many (Figure 2). There is no obvious link between the regularity of the intervals and the frequency of events. Even if the events are regular, there is no reason why the intervals must match them.

The ability to craft the partitions to ensure a true result weakens Deo’s approach but does not quite falsify it. What does falsify it is the existence of contexts in which an is felicitous but any non-trivial regular partition has empty pieces. On Deo’s account such contexts are predicted to block habituals, but they occur in Kiowa. In fact, they are easy to elicit. In (20), any partition with more than two intervals will contain an interval where no event occurs (Figure 3). A partition with two intervals hardly qualifies as a habit. This leaves no possible partition where a habitual reading can arise from the proposed denotation.

(20) Context: You call your sister about once a day, but sometimes you go a few days without calling; other days you call several times.

Neither Ferreira’s significant plurality nor Deo’s regular intervals suffice to account for the habituals of Kiowa, so we need a different approach.
6. Analyzing two types of habituals

This section lays out the meanings of both habituals, with ãn being a ‘distributive’ that requires plurality and leads to habitual readings, and with bòː as a ‘durative’ that stretches long enough to allow habitual readings, but also permits ‘whole time’ readings.

6.1. Distributive habituals

To capture the meaning of ãn, we propose applying the concept of verbal distributives. The term distributive here is not the one that semanticists typically use for quantification. I will use DIST to distinguish the present use from that use. DIST is an affix common in North American languages, which indicates that the described action takes place multiple times spread out across different places (Mithun 1997: 88).

With nouns and statives, a ‘spread around’ reading obtains.

(21) tukôːyo’ ‘snow’
    tuto-kôːyo ‘snow here and there’ (Quileute, from Mithun 1997: 88)

With eventives, a ‘going around’ reading obtains, even if it does not always wind up in the translation.

(22) wa’– k– nata–hr– nion’
    FACTUAL–1SA–visit–ANDATIVE–DIST.PFV
    ‘I went visiting here and there’ (Mohawk, Mithun 1997: 88)

(23) wa’– k– hnon–nion’
    FACTUAL–1SA–buy– DIST.PFV
    ‘I bought some things’ (Mohawk, Mithun 1997: 88)

Importantly, a plural object does not trigger DIST by itself; the event has to be spread out. Mithun points out that in (23), “The buying was distributed over an assortment of groceries in a shopping cart. This verb would not be used for the purchase of a single carton of eggs.”

Kiowa has a similar construction, with the bound auxiliaries –gôm/gîː occurring with eventives and –yː with statives (Watkins, 1984).

(24) 5kô ∅ = thôn+dɔː=dɛ= ɛm ə= tsàn– gôm
    well 3S=dig+ be= NOM–to 1S=arrive–DIST.PFV
    ‘I got around to places where wells had been dug.’ (Watkins 1984: 180)

(25) kôː jú = kúː– yô
    Kiowa–INV 3P=be lying:PL–DIST
    ‘Kiowas are camped about.’ (Watkins 1984: 84)

Likewise, a plural event does not suffice to trigger DIST by itself; the event has to be spread out. Mithun points out that in (26), “The buying was distributed over an assortment of groceries in a shopping cart. This verb would not be used for the purchase of a single carton of eggs.”

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    well 3S=dig+ be= NOM–to 1S=arrive–DIST.PFV
    ‘I got around to places where wells had been dug.’ (Watkins 1984: 180)
‘She went around putting toys in the bags.’

a. **Yes:** Bags set apart in a circle on a blanket, and she put a toy in each bag
b. **No:** Bags next to each other in the center of a blanket, and she put a toy in each bag

We can formalize DIST as indicating that the event is plural; that is, a sum of atomic subevents of the same predicate, and also that these subevents are *strewn about* the location of the event. The denotation of DIST is given in (27), and is illustrated in Figure 4.

(27) \[ \left[ \text{DIST} \right](\left[ P \right]) = \lambda e' \lambda w. e' \text{ is a sum of atomic/minimal sub-eventualities} \ e \text{ strewn about the location of} \ e \text{ in} \ w, \text{ and} \ \forall e[ e \leq e' \rightarrow P(e)(w) = 1 ] \]

![Figure 4: Subevents strewn about the event location](image)

The choice of *strewn* to describe this distribution is deliberate. It is the participle of the archaic verb *strew* ‘scatter across a surface, spread widely’, so it conjures an image of pieces sprinkled all over the place. Strew requires a substantial plural (or mass) theme, whose atomic (or minimal) components are distributed across the area in question (28).

(28) a. Basketballs are strewn about the court.
b. #Two basketballs are strewn about the court.

These are exactly the concepts we see with the habitual, so we can formalize the proposal. \( \left[ \text{\'an} \right] \) expresses a similar meaning to \( \left[ \text{DIST} \right] \), but instead of spreading subevents around the location of \( e \), it strews them around the relevant time interval introduced by the imperfective ((29), exemplified in Figure 5).

(29) \[ \left[ \text{\'an} \right](\left[ P \right]) = \lambda t \lambda e \lambda w. e \text{ is a sum of atomic/minimal subevents} e' \text{ that are strewn about} \ t \text{ in} \ w, \text{ and} \ \forall e'[ e' \leq e \rightarrow P(e')(w) = 1 ] \]

This denotation can be incorporated into the imperfective simply. It still requires an interval argument, so we assume that \( \left[ \text{\'an} \right] \) can modify a stripped-down imperfective. Strewing derives

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4It might not be a coincidence that PLURAL in Kiowa means 3 or more.
the significant plurality of sub-events in the relevant world. If the habit is modal, the plurality is as well. Since temporal intervals are linear, any sense of ‘strewn around’ is linear as well.

As with [DIST], the strewing of events in [àn] can be regular, but need not be. Figure 6 exemplifies this regularity. Thus, the particle is compatible with regular or irregular habits.

Strewing is compatible with spreading events out, because it requires breadth. The pieces cannot all be in the same place.

The described habit need not stretch throughout the relevant time interval. In (30), the relevant interval is 2016, as modified by the temporal adverbial. However, there were no events in the second half of the year.

(30) Context: You sang at some pow-wows in the spring and summer of 2016, but sat out the fall and winter ones.

2016–jò: kún– g̀ à àn g̀ àt= dò:+ tò:
2016–in dance–at HAB 1S–3P=sing+act.IPFV
‘In 2016, I sang at pow-wows.’

6.2. Durative habituals

We propose that the second habitual, bò:+, denotes a durative (DUR), asserting that P holds of event e at every subinterval of the relevant time t.

(31) \[ \lambda(t \epsilon \lambda w. P(e)(w) = 1 \& \forall t'[ t' \leq t \rightarrow \exists e'[ e' \leq e \& P(e')(w) = 1 ]] \]
(32) \( \emptyset = \text{bô:}_s + \text{dê:}+ \text{tsòi:} \)  
3S=\text{DUR+sleep+be lying:SG–EVID} 
‘He slept the whole time.’

(33) \( \text{hón} \emptyset = \text{bô:}_s + \text{dê:}+ \text{gá:}– \text{hèl} \)  
not 3S=\text{DUR+sleep+be lying:SG–NEG–EVID} 
‘He didn’t sleep the whole time.’ (comment: He did sleep some of the time.)

If P does not have this property, [\[ \text{bô:}_+ ][ P ]] (t) cannot straightforwardly hold of its events e.

(34) \( \text{gjà:} = \text{bô:}_s + \text{gò:bòp} \)  
1S-3S=\text{DUR+ miss.IPFV} 
‘I am missing it (the target) all the time.’ (Harrington 1928: 64)

Instead, P is coerced into a state of affairs P, with the subinterval property, akin to what happens with the universal perfect (cf. He has built houses for 25 years).

The habitual reading emerges if the speech act participants infer associated subevents where P holds (but not P), and if the relevant time is long enough for a habit to form (7).

6.3. Both habituals together

Essentially, Kiowa speakers can build habitual readings with two distinct mechanisms. The ‘true’ habitual \( \text{àn} \) conditions the event’s subevents as strewn about the relevant time, and a sense of duration is derived from the time it takes for those subevents to take place. Alternately, the durative \( \text{bô:}_+ \) conditions the event itself as lasting the entire relevant time, and a sense of habit is derived from coercing events that cannot reasonably last that long.

This distinction allows the two forms to co-occur (12), to assert that the event lasts the entire relevant time and its subevents are strewn about the relevant time. Each asserts the other’s implicature, as Figure 8 demonstrates for (35).

(35) \( \text{gá} \ \text{àm} \ \text{àn} \ \text{è:}gò: \ \text{sòttè}_s + \text{kùypà:}gò:– \text{dè} = \ \text{àl} \ \text{àl} = \ \text{bô:}_s + \text{tsél} \)  
and.SS ANAPH HAB now.PRS new+ Lone Wolf–NAME=also 3S·3I= \text{DUR+ be set.SG} 
\text{k’ènhò:li:}dò  
hat.INV 
‘And you know how Lone Wolf the Younger always has a hat on.’ (New Clothes for Church 2:27)

7. Deriving distinctions between habituals

Now that we have established two distinct habituals in Kiowa, we can explore how this distinction explains their distinguishing characteristics. In section 4 we demonstrated how the two forms behaved differently under negation, with episodic duration, and with characteristic readings.

For episodic duration, we see that \( \text{bô:}_+ \) involves a subinterval property, which lends itself naturally to a ‘whole time’ reading. Meanwhile, \( \text{àn} \) requires multiple events dispersed but not necessarily taking place over the entire time period.
Behavior under negation proves trickier to resolve. Negation àn leads to a straightforward result: the predicate is not strewn about the relevant time interval. It can occur sometimes, rarely, or not at all. Negating bô:+ with a durative reading should allow any reading weaker than ‘always’. However, only the occasional reading is accepted readily. More elicitation is required, but as a hypothesis, it appears that there is a lower limit to bô:+, which requires it to be true in at least some cases, and this limit is not subject to negation. Perhaps it is a presupposition. Also, if bô:+ expresses that P holds over ‘most’ rather than ‘all’ subintervals, it fits better. It would still allow the ‘all’ reading, and its negation would rule out the ‘almost always’ reading.

To prevent characteristic readings in bô:+, we hypothesize that a limit on coercion in these cases only licenses it when the speaker’s coercive choice depends on actual events. This may involve another presupposition on bô:+.

8. Conclusion
Whatever the exact denotations may turn to be, we have distinguished two ways of achieving habitual readings in Kiowa, reflected in distinct morphemes. One resembles the plural but has a condition spreading the events out. The other is durative in nature, and leads to habituality by coercion. Since they both can occur together, their meanings reinforcing each other, we may think of the ingredients of the imperfective as modular rather than complementary. That in turn may lead to better explanations for habitual progressives like I can’t talk with him; he’s always reading his phone.

References


