Archaic first person markers in Cariban

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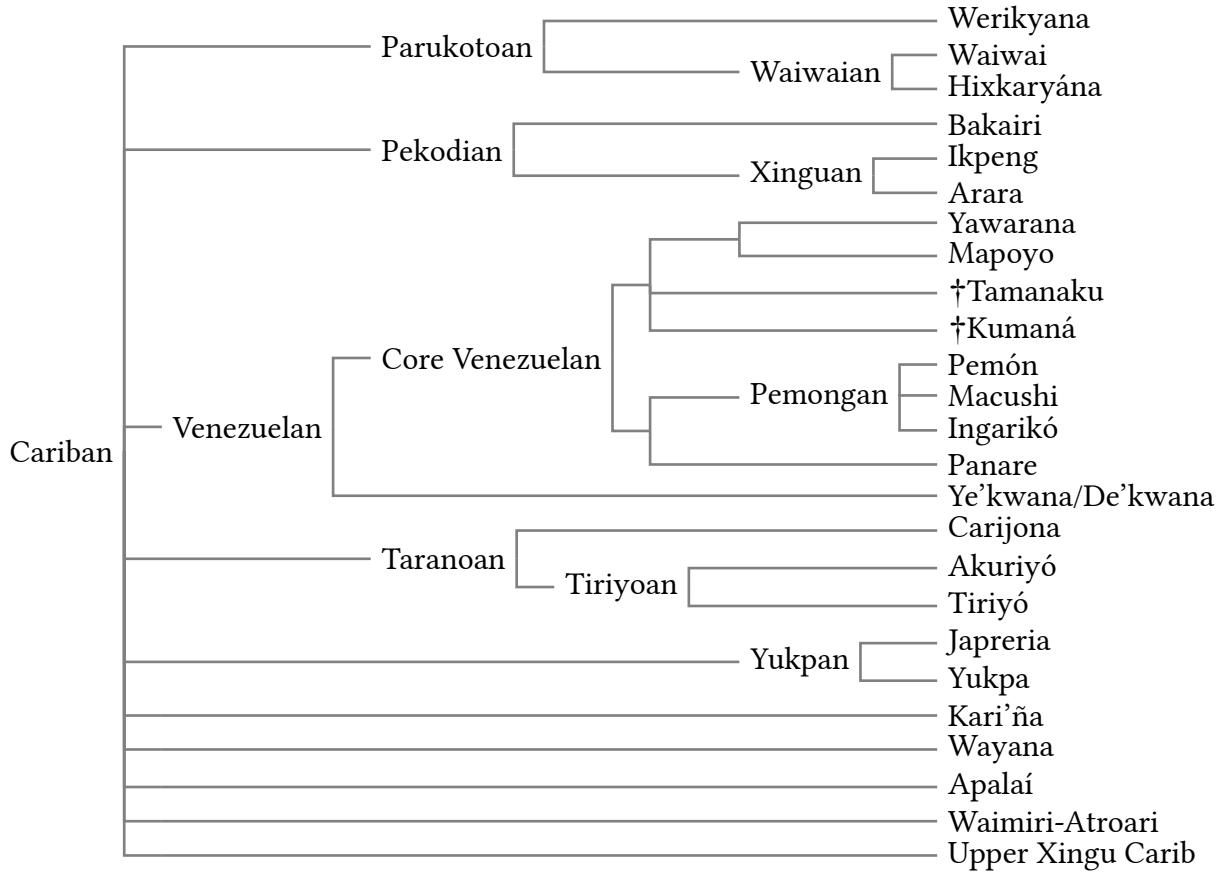

Figure 1: The Cariban language family

1 Introduction

2 Cariban verbal person marking and marker extensions

The archaic person markers discussed in this paper are the result of incomplete person marker extensions, i.e., modifications to the ancestral prefix system. This section provides the necessary background for said ancestral system (Section 2.1), the split-S system which will be relevant later (Section 2.2), and the concept of person marker extensions (Section 2.3).

Table 1: Proto-Cariban Set I (main clause) person markers (Meira et al. 2010: 495; Gildea & Zúñiga 2016: 497)

(a) Transitive

A/P	1	2	1+2	3
1		*k-		*t(i)-
2	*k-			*m(i)-
1+2				*kɨt(i)-
3	*u(j)-	*ə(j)-	*k-	*n(i)-

(b) Intransitive

	S_A	S_P
1	*w-	*u(j)-
2	*m-	*ə(j)-
1+2	*kɨt-	*k-
3	*n-	*n(i)-

2.1 Verbal person marking in Proto-Cariban

Proto-Cariban is reconstructed by Gildea (1998) as using a person paradigm called Set I in its independent verb forms, shown in Table 1.[1] The choice of person marker in transitive verbs can be characterized as being conditioned by a basic person hierarchy 1/2 > 3. The locuphoric markers, those referring to SAP participants, had two forms, an A-oriented one for direct (SAP>3) scenarios and a P-oriented one for inverse (3>SAP) scenarios. This was not the case for third person referents, which only had one marker, since third person only surfaced in nonlocal (3>3) scenarios, and third-person prefixes did not distinguish different different third persons. Local scenarios were expressed in a non-transparent manner, by using the 1+2 prefix *k- in both cases.[2]

Formally identical or etymologically related markers occured in intransitive verbs, which showed a split-S system (Table 1b). That is, S_A verbs took similar markers as the A-oriented ones in transitive verbs, with the exception of first person (1>3 *t(i)- vs $1S_A$ *w-), as well as the absence of *i after all S_A prefixes. On the other hand, S_P verbs took markers fully identical to the P-oriented ones. The third person marker in S_P verbs was identical to the one in 3>3 scenarios (*n(i)-), while the $3S_A$ marker did not have an *i, like the other S_A prefixes.

As in many other split-S systems found in languages of the world, the intransitive verbal lexicon was divided into the two classes, with verbs inherently being S_A or S_P verbs. That is, while in transitive verbs, the choice of the person marker had a crucial semantic contribution, it is predictable in intransitive verbs. This is illustrated with

[1] I use standard IPA symbols in my transcription of Cariban languages, with the exception of coronal rhotics, which I simply represent with ⟨r⟩, rather than ⟨ɽ⟩ for Wayana or ⟨ɾ⟩ for Ye'kwana etc. In languages with strong morphophonological processes and/or subphonemic orthography I show the original transcription in an additional surface line when presented in an interlinearized glossed example. I follow Gildea (2018) in using ⟨ə⟩ for the proto-vowel reconstructed by Meira & Franchetto (2005), although it was likely more back (Gildea et al. 2010).

[2] The presence of a 1+2 person value implies that of a 1+3 value. This is expressed with a free pronoun combined with third person morphology in Cariban languages, so it is not represented in this table.

modern Kari'ña data in (1–2).

(1) Kari'ña

a. *mi-kupi-ja*
2>3-bathe-PRS
'You bathe him/her.' (Hoff 1968: 160)

b. *a-kupi-ja*
3>2-bathe-PRS
'S/he bathes you.' (Yamada 2011: 63)

In (1), the choice between the second person A- and P-oriented markers *mi-* and *a-* depends on the scenario: The transitive verb *kupi* 'to bathe' takes *mi-* in 2>3 scenarios (1a), but *a-* in 3>2 scenarios (1b). While intransitive verbs show the same (or very similar) person markers, they contribute no semantic difference here (2).

(2) Kari'ña

a. *sipi tɨnka-rɨ m-ekema-non hen*
net pull-NMLZ 2-be.afraid-PRS.UNCERT eh?
'You're afraid to pull up the net, aren't you? ' (Courtz 2008: 253)

b. *aj-awoi-ja*
2-get.up-PRS
'You are getting up.' (Hoff 1968: 167)

Rather, *ekema* 'to be afraid' takes an A-oriented marker, since it is an S_A verb (2a), while the S_P verb *awomɨ* 'to get up' takes a P-oriented marker (2b).[3]

In fact, the split-S system is not only fully lexically conditioned, but there are clear semantic mismatches between class membership and semantics: 'to be afraid' with an "agentive" marker can hardly be considered a volitional act, in fact 'you're afraid of pulling up the net' clearly has a second person patient (experiencer). Similarly, 'to get up' with a "patientive" marker is a clear semantic mismatch as well. These mismatches are not isolated cases, as will be discussed in Section 2.2.

2.2 Defining features and origins of the split-S system

As seen in the previous section, the split-S defined two inflectional classes for intransitive verbs within the Set I system. However, there were some other morphological criteria distinguishing S_A from S_P verbs in Proto-Cariban: a) presence vs absence of the

[3]The root *awomɨ* 'to get up' is subject to syllable reduction and assimilation to the prefix-initial *j*.

Table 2: Participles of S_A and S_P verbs (Alves 2017: 118, 207; Camargo 2002: 30, 42; Hoff 1968: 430, 433; Meira 1999: 333, 334; Tavares 2005: 400; Schuring n.d.: 39; T. E. Payne & D. L. Payne 2013: 232, 244)

Language	S_A	S_P
Werikyana	*t-ehurka-t͡ʃe* 'fallen'	*tɨ-ja?-so* 'burnt'
Arara	*t-**o**-ep-te* 'come'	*t-oregrum-te* 'sad'
Tiriyó	*tɨ-**w**-əturu-e* 'talked'	*t-əpəə-se* 'tired'
Wayana	*tə-**w**-epɨ-he* 'bathed'	*t-onopɨ-he* 'painted'
Apalaí	*t-**o**-erama-se* 'returned'	*t-anorɨ-se* 'dried'
Kari'ña	*tu-**w**-o?ka-se* 'come out'	*t-okari-se* 'told'
Panare	*t-**o**-tatɨhpə-se* 'wailed'	*tɨ-sɨrɨke-t͡ʃe* 'tired'

Table 3: Nominalizations of S_A and S_P verbs (Schuring n.d.: 49, 74; Alves 2017: 97; Meira 1999: 246; Tavares 2005: 130, 409; E. Koehn & S. Koehn 1986: 90, 1994: ner2-003; Hoff 1968: 135, 392; T. E. Payne & D. L. Payne 2013: 390; M.-C. Mattéi-Müller 1994: 23)

Language	S_A	S_P
Werikyana	*o-**w**-ehurka-tpɨrɨ* 'your fall'	*o-onenmehɨ-tpɨrɨ* 'your waking up'
Arara	***w**-orik-tubo* 'dancing place'	*ereŋmɨ-tpo* 'killing instrument'
Tiriyó	*ji-**w**-əturu-to* '(for) my talking'	*j-emamina-to* '(for) my playing'
Wayana	*ɨ-**w**-əturu-topo* 'my story'	*j-ɨnɨkɨ-topo* 'my object for sleeping'
Apalaí	*j-epɨ-topo* 'my bathing place'	*j-enuru-topõ-pɨrɨ* 'the place of my birth'
Kari'ña	*a-**w**-ekupi-rɨ* 'your taking a bath'	*aj-ere?na-∅* 'your fainting'
Panare	*j-**u**-t͡ʃireema-n* 'their eating'	*tj-arunkampətɨ-n* 'his hair standing on end'

S_A marker **w*-; b) absence vs presence of the second person prefix **ə(j)*- in imperatives; and c) presence vs absence of a derivational detransitivizing prefix.

Many languages show an S_A class marker in deverbalized forms, which can be reconstructed to Proto-Cariban as **w*-.[4] With S_A verbs, **w*- occurred immediately between the possessive prefixes and the verb stem, while S_P verbs took the bare prefixes. Reflexes of **w*- in languages from different branches are illustrated in Table 2 for participles, and in Table 3 for nominalizations.

The distinction between S_A and S_P is also borne out in imperatives, the suffix for which can be reconstructed as Proto-Cariban **-kə*. Here, S_P verbs took the P-oriented second person prefix **ə(j)*-, while S_A verbs were unprefixed. This is illustrated with reflexes in various modern languages in Table 4. As in the case of the S_A marker **w*-

[4]See Meira (2000: 227), who identifies reflexes of this morpheme as having "no purpose other than being 'class markers', without any obvious semantic or functional load".

Table 4: Imperatives of S_A and S_P verbs (Derbyshire 1965: 44, 89; Alves 2017: 161; Meira 1999: 323; Tavares 2005: 227; E. Koehn & S. Koehn 1986: 62, 1994: Mopo/20; Hoff 1968: 190; M.-C. Mattéi-Müller 1994: 5, 17)

Language	S_A	S_P
Hixkaryána	*omoh-ko* 'come!'	***oj**-okajɨm-ko* 'go up!'
Arara	*odotpot-ko* 'come back!'	***o**-alum-ko* 'jump!'
Tiriyó	*epɨ-kə* 'bathe!'	***ə**-eremina-kə* 'sing!'
Wayana	*əməm-kə* 'enter!'	***əw**-eremi-kə* 'sing!'
Apalaí	*otuʔ-ko* 'eat!'	***o**-nɨʔ-ko* 'sleep!'
Kari'ña	*oʔmaʔ-ko* 'stop!'	***aj**-awon-ko* 'get up!'
Panare	*ape-ʔ* 'flee!'	*ahpən-kə* 'jump!'

participles and nominalizations, some languages have lost the distinction between S_A and S_P verbs in imperatives, for example Panare.

There is one further property uniting S_A verbs, which is not based on inflectional morphology. As mentioned in Section 2.1, mismatches between the semantics of intransitive verbs and their A- or P-oriented inflectional morphology are common. However, the Cariban split-S system goes further than all other known such systems, in that its division of the verbal lexicon does not follow any discernible semantic criteria whatsoever. Meira (2000) takes a sizable corpus of intransitive verbs from Tiriyó, Kari'ña, Apalaí, and Wayana, and categorizes them by applying different criteria commonly encountered in split-S systems. He shows that neither (non)activities, (non-)agency, (in-)animacy, nor Aktionsart satisfactorily predict the class membership of intransitive verbs.

Rather, the reason for a verb to take the A- or P-oriented prefix is (at least diachronically) a morphological one. Meira (2000: 217–221) demonstrates that those intransitive verbs which (etymologically) have a detransitivizing prefix are treated as S_A verbs, while essentially all others are S_P verbs:

> Almost all verbs in the S_A class are detransitivized forms of transitive verbs, either synchronically (with still exisiting transitive sources) or diachronically (with reconstructible but no longer existing transitive sources) (Meira 2000: 201)

Meira (2000: 221–223) also argues that the detransitivizing prefixes are indeed deriving S_A verbs, rather than being inflectional in nature: a) there are a few underived S_A verbs, with no detransitivizing prefix; b) S_A verbs can develop irregular semantics compared to their transitive counterparts; c) it is unpredictable whether the A or P argument of the underlying transitive verb becomes the S of the derived S_A verb; d) some originally derived S_A verbs have lost their transitive counterparts; and e) "basic" concepts are

expressed as derivations of more complex concepts, like 'to dance (S_A)' from 'to dance with (TR)'. He also notes that this leads to an inflectional split not based in meaning, but rather morphology:

> Apparently, the morphological behavior of the S_A verb class is an accidental consequence of the fact that detransitivization, as far back as we can reconstruct, entails all the morphology described [...] as typical of S_A verbs. The alignment of person-marking prefixes appears not to be driven by any semantic forces in the language; it is as though they were being dragged by the evolution of the reflexive marker. (Meira 2000: 226)

As for the form of this reflexive marker, Meira et al. (2010: 505–512) reconstruct two distinct prefixes for Proto-Cariban: reciprocal **əte-* and reflexive **e-*, although they have since merged into a single morpheme in modern Cariban languages. Modern reflexes of **əte/e-*show a range of meanings, which can all be characterized as "detransitive"; this range is illustrated with Tiriyó examples in (3).

(3) Tiriyó (Meira 2000: 218–219, 1999: 128, 256)

nonta 'abandon'	→	*e-nonta*, *əi-nonta*	'abandon each other' (reciprocal)
suka 'wash'	→	*e-suka*, *əi-suka*	'wash self' (reflexive)
pahka 'break (TR)'	→	*e-pahka*	'break (INTR)' (anticausative)
puunəpɨ 'think about'	→	*əh-puunəpɨ*, *əi-puunəpɨ*	'think, meditate' (antipassive)

The morphological variation featured in 'to abandon each other' and 'to wash self' is due to the mentioned collapse between the two Proto-Cariban prefixes: *e-* is a reflex of the reflexive prefix **e-*, while the form *əi-* originates in reciprocal **əte-*. However, both can occur with either meaning – at least for these two verbs.

As mentioned, there are a few S_A verbs that are not derived from transitives, and do not have a reflex of **əte/e-*, either. Meira (2000: 221) characterizes these as very old and exceptional, and counts between 5 and 7 verbs, depending on the language. Gildea & D. Payne (2007) identify 7 such underived S_A verbs as reconstructible to Proto-Cariban, shown in Table 5. These verbs will be discussed in more detail in Section 4.

Table 5: Underived Proto-Cariban S_A verbs (Gildea & D. Payne 2007: 30)

Form	Meaning
**tə(mə)*	'to go'
**ətepɨ*	'to come$_1$'
**ka(ti)*	'to say'
**əmə(mɨ)*	'to enter'
**eti*	'to dwell, be$_2$'
**a(p)*	'to be$_1$, say'
**əməkɨ*	'to come$_2$'

2.3 Person marker extensions in intransitive verbs

The original Proto-Cariban split-S system has been subject to change in many languages, in some even to the point of total loss. Besides such modifications as for example losing the S_A class marker **w-* (Section 2.2) or losing certain person values altogether, these changes have largely been due to person prefixes being extended to new verbs.[5] There have been many such person marker extensions in Cariban languages, and some are still ongoing. This is shown by Gildea (1998), using the Parukotoan languages as an example. We have reproduced his tables as a tree diagram in Figure 2, with adapted transcription – and in the case of Werikyana, the addition of ∅/*j-* as an alternative $1S_P$ marker (Spike Gildea, p.c.). Apart from segmental changes to individual morphemes, the following restructuring innovations happened in the Set I paradigm in Parukotoan:

1. Proto-Parukotoan
   (a) $1S_A$ **w-* to 1>3
   (b) 1+2 **k-* to $1S_P$ (completed in Proto-Waiwaian, ongoing in Werikyana)
   (c) 1+2 **kɨt-* to $1+2S_P$ (completed in Proto-Waiwaian, ongoing in Werikyana)
2. Proto-Waiwaian
   (a) $1S_P$ **k-* to $1S_A$

[5] One could also imagine a scenario whereby verbs of one of the classes are gradually replaced with innovative verbs from the other class, as suggested for Panare by Meira (2000: 225). However, the verbs Meira sampled came from the **A**-section of M.-C. Mattéi-Müller's (1994) dictionary (Spike Gildea, p.c.), and *at-/a͡ʃ-/as-* is a frequent reflex of **ətə/e-*in Panare, meaning that many S_A verbs are *a-*initial, thus explaining the 80:40 S_A:S_P ratio in Meira's sample. Thus, the hypothesis that Panare has largely replaced S_P with S_A verbs remains to be thoroughly tested. For the moment, the most likely scenario leading to the eventual loss of the split-S system features markers being extended to new verbs.

(b) innovative **owɨro j-* '1PRO LK' for 1P

3. Waiwai

(a) $2S_A$ *m-* to $2S_P$

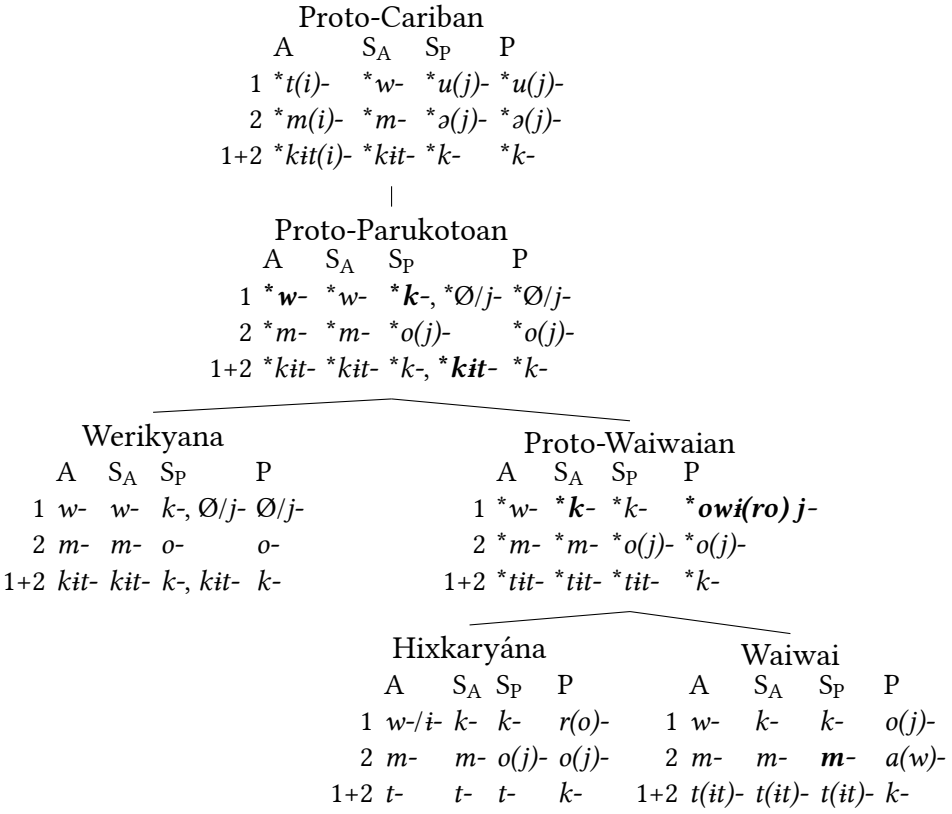

Figure 2: Person marking extensions in Parukotoan, after Gildea (1998: 94)

Hixkaryána has preserved split-S only in the second person prefixes, while Werikyana still shows variation in the first person and 1+2 prefixes. Waiwai, on the other hand, has lost the system entirely, which notably happened via distinct innovations at three different diachronic stages. In this case, the loss of the inflectional classes also entailed the loss of the other morphological traces of the system. That is, the S_A class marker **w-* (Section 2.2) was lost in Waiwai, as evidenced by the contrast between the Waiwai and Werikyana deverbal forms in (4a) and (4b). Similarly, the $2S_P$ prefix *a-* was extended to imperatives of (former) S_A verbs (4c–d), but only C-initial ones (R. E. Hawkins 1998: 62).

(4) a. Waiwai (R. E. Hawkins 1998: 98)
k-eɸɨrka-t͡ʃhe
1+2-fall-ADVZ.after
'after our fall'

b. Werikyana (Schuring n.d.: 49)
ku-w-ehurka-tpɨrɨ
1+2-S_A-fall-NMLZ.PST.PERT
'our fall'

c. Waiwai (R. E. Hawkins 1998: 177)
a-mo-ko
2-come-IMP
'come!'

d. Hixkaryána (Derbyshire 1985: 191)
m-omokɨ-no
$2S_A$-come-IMM
'You have come.'

While different cases of loss of split-S are discussed by Gildea (1998: 91–96), this paper focuses on a so far neglected aspect of these person marking extensions. We argue that they are executed via lexical diffusion, characterized as a type of extension by Harris & Campbell (1995: 106–115); this hypothesis is supported by three facts.

First of all, the variation in first person and 1+2 prefixes described above for Werikyana is not completely free. Rather, some verbs only allow for example first person *k-*, but not *j-*, while others can occur with both, which is the expected pattern in a lexical diffusion scenario. In addition, this is speaker-dependent (Spike Gildea, p.c.), which is what one would expect from a change in progress. Second, while there is no detailed diachronic scenario for the switch of 1>3 **t-* and $1S_A$ in the Tiriyoan languages (Section 3.3), Meira (1998: 111–112) argues that it must have happened gradually rather than instantaneously, and entailed both markers spreading at the same time. Whether this gradual switch was along ordered lines or not, lexical diffusion must have played a role. Finally, the process of lexical diffusion is seen most clearly where it was incomplete. Not all person marker extensions spread through the entire lexicon, but rather stopped short of some verbs. This is illustrated for Tiriyó first person forms of S_A verbs in (5); regular S_A verbs take phonologically determined allomorphs *s-* (/ _*e*) and *t-* (/ _*ə*), but *tən* 'to go' takes an "irregular" or "archaic" prefix *wɨ-*; it was not affected by the spread of innovative *t-*/*s-* and therefore preserves the old prefix.

(5) Tiriyó $1S_A$ verbs (Meira 1999: 292, 294)

s-epɨ	'I bathed'
s-entapo	'I yawned'
t-əturu	'I talked'
t-əənɨkɨ	'I slept'
wɨ-tən	'I went'

This paper is primarily about these incomplete extensions, and the verbs that were not affected by them.

That is, apparently ongoing changes like the situation discussed above for Werikyana will not be investigated in detail. The same is true for extensions that affected the entire verbal lexicon, although we will briefly comment on them. We have investigated the 19 person marker extensions we are aware of, but only 6 of them left a group of irregularly or archaically inflected verbs. Interestingly, these verbs are always S_A verbs, and the irregular marker is always a first person one. While there have been extensions for other person values as well, they never affect S_A verbs, only S_P ones, and they always affect the entire lexicon, at least based on the attested data. Besides the completed extension of **k*- to $1S_P$ and of **tɨt*- to $1+2S_P$ in Proto-Waiwaian (Figure 2), examples include the extension of $1+2S_A$ *s(ɨ)*- (< **kɨt*-) in Apalaí (Table 6a), of $2S_A$ *m(ɨ)*- in Panare (Table 6b),[6] or the extension of the entire S_A set in Waimiri-Atroari (Table 6c).

Table 6: Some examples for completed extensions (Gildea 1998: 90–92)

(a) Apalaí

	S_A	S_P
1	∅/*ɨ*-	*ɨ*-/*j*-
2	*m(ɨ)*-	*o*-
1+2	***s(ɨ)***-	
3	*n(ɨ)*-	

(b) Panare

	S_A	S_P
1	*w(ɨ)*-	∅/*j*-
2	***m(ɨ)***-	
1+2	*n(ɨ)*-	
3	*n(ɨ)*-	

(c) Waimiri-Atroari

	S
1	***w(ɨ)***-/***ɨ***-
2	***m(ɨ)***-
1+2	***h(ɨ)***-
3	*n*-/∅

The remainder of this paper is structured as follows: In Section 3, we discuss each of these six incomplete extensions individually, listing all attested unaffected verbs, and reconstructing proto-paradigms where necessary. In Section 4, we take a comparative look at the verbs that were not affected by these extensions and searches for possible motivations. Finally, we discuss the findings and put them in a general context of language change and morphology in Section 5.

[6]The presence of the third person marker *n*- for 1+2 is due to the wholesale loss of that inflectional value.

3 The innovative $1S_A$ markers

As stated in Section 2.3, the person marker extensions which did not spread through the entire lexicon all have in common that they feature innovative $1S_A$ markers. There are six attested such innovations, three of which can be reconstructed to intermediate proto-languages. The new $1S_A$ prefix is formally identical to the 1+2 marker (Proto-Cariban **k*-) in three cases, to the $1S_P$ marker (Proto-Cariban **u(j)*-) in two cases, and to the 1>3 marker (Proto-Cariban **t*-) in one case. Section 3.1 investigates the innovation of **k*- in Proto-Pekodian, reflected in the three daughter languages Arara, Ikpeng, and Bakairi. Section 3.2 takes a closer look at the extension of **k*- in Proto-Waiwaian, which was briefly shown in Section 2.3. Section 3.3 concerns the extension of **t*- in Proto-Tiriyoan or Proto-Taranoan, reflected in modern Tiriyó and Akuriyó. Sections 3.4 to 3.6 look at innovative first person markers which are only attested in single modern languages: *k*- in Akuriyó, *j(i)*- in Carijona, and *j(ɨ)*- Yukpa.

3.1 Proto-Pekodian **k*-

The Pekodian branch was suggested by Meira & Franchetto (2005), as the result of fieldwork on Bakairi by Meira and the availability of more material on Ikpeng. It consists of closely related Arara and Ikpeng, with Bakairi as a more distant member. Meira & Franchetto (2005) focused on phonological and lexical properties, so no reconstructive work has been done on Proto-Pekodian morphosyntax. All three Pekodian languages have a regular $1S_A$ marker *k*-, as evidenced by the paradigms in (6). Its presence can thus be reconstructed to Proto-Pekodian.

(6)

	Bakairi 'to go up' (Meira 2003a: 4)	Arara 'to dance' (Alves 2017: 150)	Ikpeng 'to run' (Pachêco 2001: 52)
$1S_A$	***k*-əku-**	***k*-origu-**	***k*-aranme-**
$2S_A$	*m-əku-*	*m-origu-*	*m-aranme-*
$1+2S_A$	*kɨd-əku-*	*kud-origu-*	*kw-aranme-*
$3S_A$	*n-əku-*	*∅-origu-*	*∅-aranme-*

For Arara, Alves (2017) reports six[7] S_A verbs which have a first person marker *w(ɨ)*- rather than *k*-, listed in (7). We take these Arara verbs as a starting point for the other Pekodian languages, as Alves (2017) gives the most detailed description of person markers for any language of the branch.

[7] Seven under her analysis, which treats the two meanings of *ɨ̃fʃ̃ɨ* 'to be, to lie down' as different verbs.

(7) Arara (Alves 2017: 153)

wɨ-genɨ	'I said'
w-iʧinɨ	'I was, lied down'
w-ebɨnɨ	'I came'
w-ibɨnɨ	'I bathed'
w-iptoŋrɨ	'I went down'
w-ɨdolɨ	'I went'

From a comparative view, this list is not quite complete, as there is also a reflex of the copula **a(p)*, which is analayzed as a postposition by Alves (2017: 199–201); it is however inflected with Set I prefixes and also shows first person *w-* (8).

(8)

1	*w-aptam*
2	*m-od-aptam*
1+2	*kud-aptam*
3	*∅-aptam*

In his brief discussion of Bakairi verbal person marking, Meira (2003a) reports the existence of two subclasses of S_A verbs, one taking first person *w-*, and one *k-*. The verb used to illustrate the first group is *i* 'to bathe' (9), contrasting with regular *əku* 'to go up' in (6) above. 'to bathe' is also found in the *w*-list for Arara.

(9) Bakairi (Meira 2003a: 4)
w-i-də
$1S_A$-bathe-IMM
'I bathed'

While Meira (2003a: 4) does list *ge* 'to say', *tə* 'to go', and *əe(wɨ)* 'to come' as examples of S_A verbs, he does not indicate whether they belong to the class of S_A-1 verbs, with first person *k-*, or the S_A-2 verbs, with *w-*.[8] Luckily, while von den Steinen (1892) did not accurately record all phonemic distinctions in Bakairi (Meira 2005), he does provide inflected forms of cognates to the Arara verbs in (7). We present them according to the phonemic analysis of Bakairi by Wheatley (1969) and Meira (2003a, 2005) in (10).

(10) Bakairi (von den Steinen 1892: 131, 397, 76, 137, 374, 130)

[8]It should be noted at this point that Meira (2003a) indicates that the same verbs which take first person *w-* in Bakairi also take a 1+2 marker *k-*. However, this marker is only illustrated for 'to bathe', both by Meira (2003a) and von den Steinen (1892). Given the lack of data for other verbs, we will not further discuss this potential additional pattern. If the characterization by Meira is accurate, then the pattern is fully parallel to the distribution of the first person prefixes.

a. ⟨u-ɣépa⟩
u-ge-pa
$1S_A$-say-NEG
'I don't say.'

b. ⟨wi-táki⟩ / ⟨wi-tági⟩
w-i-taki
$1S_A$-be-INT
'I was.'

c. ⟨kχaewí-le⟩
k-əewɨ-lɨ
$1S_A$-come-IMM
'I came.'

d. ⟨kχ-itaké-he⟩
k-ɨtəgɨ-se
$1S_A$-go.down-NPST?
'I go down.'

e. ⟨űta⟩ / ⟨uúta⟩
u-tə
$1S_A$-go
'I go.'

f. ⟨töre-w-akine⟩
tərə w-a-kɨne
there $1S_A$-be-PST.CONT
'I was there.'

All available descriptions of the third Pekodian language, Ikpeng, list *k-* as the only $1S_A$ marker (Pachêco 1997: 55; Campetela 1997: 105; Pachêco 2001: 64; Alves Chagas 2013: 205). However, most Ikpeng cognates of the Arara verbs with $1S_A$ *w-* actually do not take *k-*, but rather *ɨ-* or Ø, as shown in (11). The exception is 'to go', which has *k-* (12). There is a formally identical Ikpeng cognate of Arara *iptoŋ* 'to go down', but no first person forms are attested (Angela Chagas, p.c.). While there are reflexes of **a(p)* 'to be' in Ikpeng, only **eti* forms are attested inflected for first person (Gildea 2018: 401).

(11) Ikpeng

a. *ɨ-ge-lɨ*
1-say-REC
'I said.' (Pachêco 2001: 209)

b. *Ø-etʃi-lɨ*
1-be-REC
'I was.' (Pachêco 2001: 139)

c. *atʃagotpop Ø-ip-tʃi ik-gwa-ktʃi*
always 1-bathe-NPST river-LOC.aquatic-ALL
'I always bathe in this river.' (Pachêco 1997: 68)

(12) Ikpeng (Pachêco 2001: 80)
k-aran-tʃi
1-go-NPST
'I'm going.'

Table 7: Verbs preserving $1S_A$ in Proto-Pekodian

	Proto-Pekodian	Arara	Ikpeng	Bakairi
'say'	**wɨ-ge-*	*wɨ-ge-*	*ɨ-ge-*	*u-ge-*
'bathe'	**w-ipɨ-*	*w-ibi-*	*Ø-ip-*	*w-i-*
'be-1'	**w-ap-*	*w-ap-*	–	*w-a-*
'be-2'	**w-eʧi-*	*w-iʧi-*	*Ø-eʧi-*	*w-i-*
'come'	**w-epɨ*, **k-əd-epi-*	*w-ebi-*	*k-arep-*	*k-əewɨ-*
'go down'	**w-[i/i]ptə-*	*w-iptoŋ-*	*?-iptoŋ-*	*k-ɨtəgɨ-*
'go'	**w-ɨtən-*	*w-ɨdo-*	*k-aran-*	*u-tə-*

While clearly not a regular sound change, Proto-Xinguan **w* is attested as sometimes being lost in Ikpeng, as evidenced by the correspondences in (13). Thus, we suggest that the Ikpeng $1S_A$ marker *ɨ-*/Ø is cognate with Arara $1S_A$ *w(i)-*, and was subject to phonological erosion of **w*, a phenomenon which will also be seen in other languages discussed in following sections.

(13)

Proto-Xinguan	Arara	Ikpeng
**wɨna* 'DAT'	*wɨna*	*ɨna*
**wokori* 'dog, jaguar'	*wokori*	*akari*
**tawe* 'capuchin monkey'	*tawe*	*tae*
**watke* 'to defecate'	*watke*	*atke*
**wɨnkɨ* 'to sleep'	*wɨnkɨ*	*ɨnkɨ*
	(*o-wɨnkɨ* 'sleep!')	(*j-ɨnkɨ-lɨ* 's/he slept')

(Alves 2017: 80; Pachêco 2001: 164, 67, 150; de Souza 2010: 9, 1993: 68; Alves Chagas 2013: 91; Campetela 1997: 40)

Table 7 gives an overview of the first person forms of the seven verbs under discussion, along with our Proto-Pekodian reconstruction. The form for **ge* 'to say' is straightforward to reconstruct; the Bakairi change of **wɨ-* to *u-* is not unexpected given correspondences like Bakairi *udo* (Meira & Franchetto 2005) from Proto-Cariban **wɨ-toto* 'person' (Gildea & D. Payne 2007: 4). 'to bathe' is straightforwardly reconstructible as **ipɨ*. For 'to be', Ikpeng *e* is very likely the original vowel, given the Proto-Cariban form **eti* (Section 4.1).

The forms for 'to come' are not fully cognate; Ikpeng and Bakairi both show a reflex of the detransitivizer in combination with a root reconstructible as **epɨ*. In contrast, the Arara first person form is directly based on this root **epɨ*. However, other person values show a reflex of **əte/e-*in Arara, too (14).

(14) Arara (Alves 2017: 150)
m-odebɨ-nɨ
$2S_A$-come-REC
'You came.'

We can imagine two scenarios leading to this situation: One possibility is that there was some variation in Proto-Parukotoan as to whether or not the first person form of 'to go' was based on **ətepɨ* or **epɨ*. Alternatively, the Proto-Pekodian paradigm had a similar person-based distribution of **əd-* as Arara, and Bakairi and Ikpeng both independently regularized the paradigm to show **əd-epɨ* with all persons. However, in both scenarios there is a correlation of **w-* and **ebɨ*, and **k-* and **əd-ebɨ*.

The forms for 'to go down' are also not fully cognate; Meira & Franchetto (2005) make no mention of a regular correspondence between Bakairi *gɨ* and Ikpeng *ŋ*. Rather, it seems that some roots gained a final *ŋ* in Proto-Xinguan, for so far unclear reasons: a) Proto-Cariban **əne* 'to see', Arara and Ikpeng *eneŋ* (Gildea & D. Payne 2007: 8; Alves 2017: 56; Pachêco 2001: 25); b) Proto-Cariban **əta* 'to hear', Arara *taŋ*, Ikpeng *iraŋ* (Gildea & D. Payne 2007: 8; Alves 2017: 144; Pachêco 2001: 270); and c) Proto-Cariban **ənə* 'to eat meat', Arara *oŋoŋ* 'to bite' (Gildea & D. Payne 2007: 8; Alves 2017: 57). Also, based on the fact Bakairi has generally lost much segmental material, we suggest that Bakairi *gɨ* is yet another addition to a root **ɨptə* or **iptə*, rather than a conservative form.

The forms for 'to go' are all cognate, but while Arara and Bakairi point to **ɨtə*, the Ikpeng form seems rather divergent. However, it is in fact compatible with a reconstruction **ɨtən*, when one considers that Ikpeng *a* is an attested outcome of **ə* (Proto-Xinguan **o*/*e*), for example *akari* 'dog' in (13) above, *anma* 'path' (Pachêco 2001: 24) from Proto-Cariban **ətema* (Gildea & D. Payne 2007: 12), or *jaj* 'tree' from Proto-Cariban **jəje*. This attested change of **ə* to *a* need only be preceded by a assimilatory lowering of initial **ɨ* to **ə*, to yield the form *aran* from **ɨtən*. Other Ikpeng reflexes of 'to go' offer evidence for the suggested intermediate stage **ətən*: *ero-lɨ* 's/he went' (Pachêco 2001: 25).

Summing up, an innovative $1S_A$ marker **k-* is reconstructible to Proto-Pekodian. Seven verbs can be reconstructed as having resisted this innovation, and preserving $1S_A$ **w(ɨ)-* in Proto-Pekodian. For 'to come', two distinct forms **w-epɨ-* and **k-əd-epɨ-* can be reconstructed, although the latter may be two parallel developments in Bakairi and Ikpeng. In later, individual developments, Bakairi introduced *k-* to 'to go down', and Ikpeng to 'to go'.

3.2 Proto-Waiwaian **k-*

This extension was briefly discussed in Section 2.3; the new $1S_P$ prefix **k-*, already innovated at the Proto-Parukotoan stage, was later extended to $1S_A$ in Proto-Waiwaian.

This created a unified 1S category, reflected in both Hixkaryána and Waiwai (15).

(15) Waiwaian **eɸurka* 'to fall' (S_A) and **winiki* 'to sleep' (S_P)

	Proto-Waiwaian		Hixkaryána		Waiwai	
	S_A	S_P	S_A	S_P	S	
1	***k**-eɸurka-*	**ki-winiki-*	***k**-ehurka-*	*ki-niki-*	***k**-eɸirka-*	*ki-wink-*
2	**m-eɸurka-*	**o-winiki-*	*m-ehurka-*	*o-wniki-*	*m-eɸirka-*	*mi-wink-*
1+2	**t-eɸurka-*	**tit-winiki-*	*t-ehurka-*	*ti-niki-*	*ʧ-eɸirka-*	*tit-wink-*
3	**ɲ-eɸurka-*	**ni-winiki-*	*ɲ-ehurka-*	*ni-niki-*	*ɲ-eɸirka-*	*ni-wink-*

(Howard 2001: 510; Derbyshire 1985: 189–191; W. N. Hawkins & R. E. Hawkins 1953: 209–211; R. E. Hawkins 1998: 50)

Waiwai *ka* 'to say' does not take *ki-*, but rather conservative *wi-* (16a). Its Hixkaryána counterpart also takes a reflex of $1S_A$ **w-*, which has the form *i-* (16b). A formally identical prefix is found on transitive verbs in 1>3 scenarios (16c), where it also corresponds to Waiwai *w(i)-* (16d).

(16) a. Waiwai (R. E. Hawkins 1998: 71) *wiikekɲe*
wi-ka-jakɲe
1-say-PST
'I said.'

b. Hixkaryána (Derbyshire 1985: 124) *roxehra nay hami Kaywerye ikekoni*
ro-ʃe-hira n-a-je hami kajwer^{j}e i-ka-jakoni
1-DES-NEG 3-be-NPST.UNCERT EVID K. $1S_A$-say-REM
'I said (to myself), "Kaywerye evidently doesn't like me".'

c. Hixkaryána (Derbyshire 1985: 191) *i-koroka-no*
1>3-wash-IMM
'I washed him.'

d. Waiwai (R. E. Hawkins 1998: 192) *wîyesî*
wi-jo-jasi
1>3-boil-NPST
'I will boil it.'

Thus, similar to the the case of Ikpeng, Hixkaryána has lost the **w* of the / _C allomorph **wi-*. Notably, Derbyshire (1985) does not see this *i-* as an irregular $1S_A$, but as the regular 1>3 marker, because he considers Hixkaryána *ka* 'to say' to be transitive, an issue which will be discussed in Section 4.2.

There are three more verbs which did not take innovative **k-* in Proto-Waiwaian. Two roots are part of the copula **eʃi*/*a(h)*, straightforwardly reconstructed in (17a). The other is 'to go' (17b), somewhat of a special case.

(17) a. Parukotoan ‘to be’

	Proto-Parukotoan	Hixkaryána	Waiwai
$1S_A$	**w-eʃi-*/*w-ah-*	*w-eʃe-*/*w-ah-*	*w-eeʃi-*/*w-a-*
$2S_A$	**m-eʃi-*/*m-ah-*	*m-eʃe-*/*m-ah-*	*m-eeʃi-*/*m-a-*
$1+2S_A$	**t-eʃi-*/*t-ah-*	*t-eʃe-*/*t-ah-*	*t͡ʃ-eeʃi-*/*t-a-*
$3S_A$	**n-eʃi-*/*n-ah-*	*n-eʃe-*/*n-ah-*	*n-eeʃi-*/*n-a-*

(Derbyshire 1985: 197–198 and Spike Gildea, p.c.)

b. Parukotoan ‘to go’

	Proto-Parukotoan	Hixkaryána	Waiwai
$1S_A$	**wɨ-to-*	*ɨ-to-*	*kɨw-to-*
$2S_A$	**mɨ-to-*	*mɨ-to-*	*mɨɨ-to-*
$1+2S_A$	**tɨt-to-*	*tɨ-to-*	*tɨ-to-*/*tɨh-t͡ʃe-*
$3S_A$	**nɨ-to-*	*n-to-*	*nɨɨ-to-*

(Derbyshire 1985: 69–70, 211; R. E. Hawkins 1998: 179 and Spike Gildea, p.c.)

While Hixkaryána has the expected *ɨ-*, Waiwai seems to have combined innovative $1S_A$ *k-* with the old **w-*, an analysis also considered by Gildea (1998: 90). Alternatively, this form was influenced by deverbalized forms of ‘to go’, where a reflex of the S_A class marker **w-* has become fossilized (18).

(18) Waiwai reflexes of the S_A class marker **w-*

a. *o-wto-topo-nho* ‘my trip’ (R. E. Hawkins 1998: 92)

b. *o-wto-t͡ʃhe* ‘after I went’ (R. E. Hawkins 1998: 165)

c. *kɨ-wto-me* ‘for us to go’ (R. E. Hawkins 1998: 204)

In any case, Hixkaryána ‘to go’ was clearly not affected by the extension of **k-*, allowing us to reconstruct a Proto-Waiwaian first person form **wɨ-to-*.

Summing up, we reconstruct the three verbs **et͡ʃi*/*a(h)* ‘to be’, **ka(s)* ‘to say’, and **to* ‘to go’ as preserving the old $1S_A$ marker **w-* in Proto-Waiwaian, while the rest took on innovative **k-*.

3.3 Proto-Tiriyoan **t-*

The Taranoan languages were already grouped together by Girard (1971), consisting of closely related Tiriyó and Akuriyó (subsumed here under the moniker Tiriyoan), and the more distant member Carijona. Meira (1998) provides an extensive phonological, morphological, and lexical reconstruction of Proto-Taranoan. The Set I paradigms of Tiriyó and Akuriyó contain an interesting puzzle: Proto-Cariban 1>3 **t-* and $1S_A$ **w-* seem to have switched places. The question of how this happened in detail (Meira

1998: 107–112) still has no answer, although it seems necessary to assume a scenario whereby both **t-* and **w-* for a time occurred on both transitive and intransitive verbs (Meira 1998: 112).[9] As for verbs unaffected by the spread of **t-*, Meira (1998) lists the four verbs in (19) as being reconstructible to Proto-Taranoan with **w-*; we offer our reconstructed Proto-Tiriyoan forms. In addition, Tiriyó *ei* 'to be', the other copular root, also shows first person *w-* (Meira 1999: 294), allowing us to reconstruct a first-person **w-eʔi-* for Proto-Tiriyoan.

(19) Proto-Tiriyoan $1S_A$ **w-* (Meira 1998: 112–115; Gildea 1994: 85)

	Proto-Tiriyoan	Tiriyó	Akuriyó
'go'	**wɨ-tə(mɨ)-*	*wɨ-tə(mɨ)-*	*ə-təmɨ-/wɨ-təemɨ-*
'say'	**wɨ-ka-*	*wɨ-ka-*	*wɨ-ka-*
'come'	**w-əʔepɨ-*	*w-əepɨ-*	*Ø-eepɨ-*
'be'	**w-ae-*	*w-ae-*	*Ø-aʔe-*

For Akuriyó 'to go', Gildea (1994) registered a different prefix *wɨ-*, rather than Meira's (1998) *ə-*.[10] The two forms can be reconciled by a specific idiosyncratic combination of sound changes: We suggest that *ə* is the outcome of the lowering of the **ɨ* in the prefix **wɨ-*; the same has happened to the vowel in the 1+2 prefix **kɨt-* (20a). Also, *w-* appears to have been subject to ongoing erosion in Akuriyó, also evidenced by its absence in 'to come' and 'to be', but its presence in 'to say' (19). This erosion is also found in the etymologically related 1>3 prefix (20b), as well as in other Cariban languages, like Ikpeng (Section 3.1) or Hixkaryána (Section 3.2).

(20) a. Akuriyó (Meira 1998: 114)
kəʔ-eepɨ
1+2-come
'We came.'

b. Akuriyó (Gildea 1994: 86)
(w)i-toka
1>3-hit
'I hit him/her.'

For the form of the verb, Meira (1998: 114–115) reconstructs Proto-Taranoan **əepɨ* for the first person, and **eepɨ* for the others, based on the idiosyncratic form in Tiriyó and the vowel length in Akuriyó. Akuriyó (and Carijona) would then have levelled the

[9] In fact, the issue of *when* this happened is also open. It could have happened at the Proto-Taranoan stage, but the subsequent introduction of *j-* in Carijona (Section 3.5) would have erased any traces of such an innovation. Accordingly, Meira (1998) hesitates to assign this extension to a specific proto-language.

[10] The Akuriyó recorded by Gildea potentially has strong Tiriyó and/or Wayana influence (Gildea 1998: 253).

original distribution of **əepɨ* and **eepɨ*, similar to what we have suggested for Pekodian in Section 3.1. We agree with this scenario, with the exception that Tiriyó *əepɨ* is clearly cognate with **ət-epɨ* (Section 4.4), meaning that the Proto-Tiriyoan form would have been **əʔepɨ*.

Gildea (1994) also recorded four more Akuriyó verbs seemingly not affected by innovative **t-*. They are listed in (21a). We have only found a Tiriyó cognate for *erama* 'to return', which behaves like a regular S_A verb in taking *s-* (21b). Thus, it is uncertain whether these verbs can be reconstructed as taking **w-* in Proto-Tiriyoan, although its presence in Akuriyó does suggest so.

(21) a. Akuriyó $1S_A$ **w-* (Gildea 1994: 84–86)

'return'	*Ø-erama-*
'get up'	*Ø-eokahtə-*
'jump'	*w-ejahka-*
'go out'	*w-ekɨrɨka-*

b. Tiriyó *s-erama-* (Meira 1999: 301)

Finally, there are two irregularly inflected S_A verbs in Tiriyó, *ɨhtə* 'to go down' and *weka*/*oeka* 'to defecate' (22). They have $1S_A$ markers *p-* and *k-*, which are otherwise entirely unattested in Tiriyó.[11] At least for 'to go down', the Akuriyó cognate suggests that the irregular first person form **p-ɨhtə-* can be reconstructed to Proto-Tiriyoan. Whatever their origins, they were not affected by the extension of **t-*.

(22) Idiosyncratic $1S_A$ prefixes (Meira 1999: 294; Gildea 1994: 84)

	Tiriyó	Akuriyó
'go down'	*p-ɨhtə-*	*p-ɨtə-*
'defecate'	*k-oeka-*	?

In summary, in Proto-Tiriyoan – at the latest – the Proto-Cariban 1>3 marker **t-* largely replaced $1S_A$ **w-*. Four verbs are solidly reconstructible as preserving **w-* in Proto-Tiriyoan, and **ɨhtə* 'to go down' with irregular **p-* was also not affected. There are four movement verbs in Akuriyó which appear to not have been affected by the extension of **t-*, as well as another irregular verb *weka* 'to defecate' in Tiriyó, with first person *k-oeka-*.

3.4 Akuriyó *k-*

After the split-up of Proto-Tiriyoan, when **t-* had largely replaced **w-*, Akuriyó innovated yet another $1S_A$ marker: *k-*. It seems to have replaced **t-* only in specific places,

[11] Although both elements also occur in other irregular forms of these verbs (Meira 1999: 180, 325, 331).

Table 8: Akuriyó $1S_A$ markers in Gildea's fieldnotes

first person *k-*	first person *t͡ʃ-*
ənɨkɨ 'to sleep'	*eepɨ* 'to bathe'
əməmɨ 'to enter'	*ewai* 'to sit down'
əturu 'to talk'	*etonema* 'to lie down'
əət͡ʃena 'to cry'	*ekɨɨrɨka* 'to stay back'
ətajiŋka 'to run'	*entapo* 'to yawn'
əiwa 'to tremble'	
əempa 'to learn'	

with the two markers showing a clear phonologically conditioned distribution in the Akuriyó data available to us (Gildea 1994), with all relevant verbs shown in Table 8. Meira (1998: 107) largely confirms the distribution shown here, but mentions "several cases of first person *t-* in Akuriyó" (on *ə*-initial verbs), albeit without any examples. He also suggests that *k-* could be more recent, with which we agree – since phonologically distributed **t-*/**t͡ʃ-* is reconstructible to Proto-Tiriyoan, a scenario whereby *k-* replaces **t-*, but not **t͡ʃ-*, is the most straightforward. The few *t-* mentioned by Meira (1998) were then either reintroduced under Tiriyó influence, or are the last remnants of the replacement of **t-*.

It has been speculated that the Tiriyó S_A verb with a first person *k-* marker, *weka*/*oeka* 'to defecate' might have something to do with Akuriyó *k-*, which would potentially make the innovation of **k-* a Proto-Tiriyoan matter (Meira 1998: 116). However, this hypothesis faces a problem in that the first person form for Akuriyó 'to defecate' is *j-ereina-* (Gildea 1994: 88). Another hypothesis is that it originated in the corresponding Werikyana form *ku-weka-* (form provided by Spike Gildea, p.c.), although the occurrence of *o* in Tiriyó would still need explanation.

3.5 Carijona *j-*

As discussed by Meira (1998: 105–107), Carijona has extended the $1S_P$ marker *j(i)-* to S_A verbs. This, in combination with the extension of $2S_A$ *m-* and $1+2S_A$ *kɨt-*/*kɨs-* to S_P verbs, results in a single unified S category (23).

(23) Carijona (Meira 1998: 106; Robayo Moreno 2000: 173)

	tuda 'to arrive'	*eharaga* 'to dance'
1	*ji-tuda-*	*j-eharaga-*
2	*mɨ-tuda-*	*m-egaraga-*
1+2	*kɨsi-tuda-*	*kɨs-eharaga-*
3	*ni-tuda-*	*n-eharaga-*

Thus, also detransitivized verbs like *ehɨnəhɨ* 'to fight', which are S_A verbs in other languages, take *j-* (24).

(24) Carijona (Koch-Grünberg 1908: 79)
hẹnẹ(x)tónoko-mā́ɽẹ y-e̱-hẹnẹ́(x)yai̯
hɨnəhtono-ko=marə j-e-hɨnəh-jai
enemy-PL=with 1-DETRZ-kill-NPST.CERT
'I fight with the enemies.'

As noted in Section 3.3, this extension also erased any traces of a putative Proto-Taranoan $1S_A$ marker **t-*. However, it did not fully eclipse the old $1S_A$ marker **w-*, which is attested as being preserved in the verbs *tə* 'to go' (25a) and *a* 'to be' (25b).

(25) Carijona (Guerrero-Beltrán 2016: 5, 42)

a. *wɨ-tə-e=rehe*
1-go-NPST=FRUST
'I almost go (but I am not going to go).'

b. *əji-marə-ne w-a-e*
2-with-PL 1-be-NPST
'I am with you all.'

3.6 Yukpa *j-*

Yukpa has lost most of its Set I constructions, mostly employing innovative ones (Meira 2006). It preserves the Set I prefixes in the immediate past, where the $1S_P$ marker appears to have been extended to S_A verbs, as evidenced by the paradigms in (26). The loss of split-S in favor of the $1S_P$ marker is accompanied by the $2S_A$ marker *m(ɨ)-* displacing $2S_P$ **ə(j)-*, and 1+2 being lost as an inflectional value.

(26) Yukpa (Largo 2011: 72, 76; Meira 2006: 139)

	otum 'to wash self'	*nɨ* 'to sleep'	*ata* 'to fall'
1	*j-otum-*	*jɨ-nɨ-*	*j-ata-*
2	*m-otum-*	*mɨ-nɨ-*	*m-ata-*
3	*n-otum-*	*nɨ-nɨ-*	*n-ata-*

The normal intransitive first person marker is *j(ɨ)-*, including those with clear reflexes of **əte/e-*, like *otum* 'to wash self' in (26). The analysis that this is a reflex of the $1S_P$ marker **u(j)-* is supported by the same form occurring in 3>1 scenarios (27a).

(27) Yukpa (Meira 2006: 139)

a. *aw* *j-esare*
1PRO 3>1-see
'S/he saw me.'

b. *aw* *∅-esare*
1PRO 1>3-see
'I saw it.'

On the other hand, 1>3 scenarios are zero-marked (27b). Since Proto-Cariban $1S_A$ **w(ɨ)-* was extended to 1>3 scenarios in most languages (Gildea 1998: 81–82), and since it is prone to phonological erosion across the family (Sections 3.1, 3.2 and 3.4), we argue that the zero in 1>3 scenarios is in fact the Yukpa reflex of **w-*. The same zero marking is attested for a single intransitive verb: *to* 'to go' (28). Based on regular C-initial verbs taking *jɨ-*, like 'to sleep' in (26), it is clear that also C-initial *to* 'to go' preserved the old $1S_A$ marker **w(ɨ)-*, which was lost due to phonological erosion.

(28) Yukpa (Meira 2006: 139)
aw *∅-to*
1PRO $1S_A$-go
'I went.'

4 Resistant verbs from a comparative perspective

In Section 3, we introduced six distinct extensions of personal prefixes into $1S_A$ territory, and identified verbs resistant to each innovation. The set of unaffected verbs was rather small in most cases, and there is a considerable etymological overlap between the (proto-)language-specific verb groups. In this section, we present these verbs from a comparative perspective and discuss their reconstructability. Section 4.1 treats both roots of the copula **eti/a(p)* 'to be', Section 4.2 **ka(ti)* 'to say', Section 4.3 **ɨtə(mə)* 'to go', and Section 4.4 **(ət)jəpɨ* 'to come'; these are all verbs that Gildea & D. Payne (2007) reconstructed as S_A verbs that were not derived from transitive verbs. Section 4.5 takes a look at **ɨpɨtə* 'to go down', which is resistant in Proto-Tiriyoan and Proto-Pekodian; Section 4.6 investigates Proto-Pekodian **ɨpɨ* 'to bathe', Section 4.7 Tiriyó 'to defecate', and Section 4.8 the Akuriyó movement verbs. The *e*-initial verbs not affected by the extension of **k-* in Akuriyó (Section 3.4) will not be discussed here, as they are a large and phonologically coherent group.

4.1 **eti/a(p)* 'to be'

For a comprehensive comparative overview for this verb, we refer the reader to Gildea (2018: 375–382), who reconstructs two distinct roots serving as verbs 'to be' in modern Cariban languages. One is the older copula **a(p)*, which can be reconstructed as already having various irregularities in Proto-Cariban. The other is a root **eti* reconstructed by Meira & Gildea (2009) and Gildea (2018) as originally meaning 'to dwell, live', but serving as a copula in Proto-Cariban.[12] Various modern languages use reflexes of these two roots in a suppletive manner, conditioned by person and/or TAM value. Both roots preserved $1S_A$ **w-* in Proto-Pekodian, Proto-Waiwaian, and Proto-Tiriyoan (Sections 3.1 to 3.3). Akuriyó *e?i* was not a potential target of innovative *k-* (Section 3.4), due to the verb being *e*-initial. Carijona innovated *j-*, but only in the *e͡ʧi* root allomorph (29a); the *a* root preserves *w-* (29b). Yukpa innovated *j-* for reflexes of both **a(p)* and **eti*, which are preserved as encliticized auxiliaries in certain constructions (30).

(29) Carijona

a. *iretibə e͡ʧinəme gərə je͡ʧiɨ*
ireti-bə e͡ʧi-nə=me gərə j-e͡ʧi-ɨ
then-from be-INF=ATTRZ still 1-be-PFV
'Then I was already grown up.' (Robayo Moreno 1989: 177)

b. *əji-marə-ne w-a-e*
2-COM-PL 1-be-NPST
'I am with you all.' (Guerrero-Beltrán 2016: 42)

(30) cliticized copula forms in Yukpa (Meira 2006: 143–144)

	NPST	PST
1	*=j-a(-s)*	*=j-e*
2	*=mak(o)*	*=m-e*
3	*=mak(o)*	*=n-e*

4.2 **ka(ti)* 'to say'

Most reflexes of this verb are simply *ka*, but a fleeting syllable **ti* is reconstructed by Gildea & D. Payne (2007), illustrated with modern imperative forms in (31).

[12] Such a stative, locative source is also suggested by the existence of *iʧi* 'to lie down' in Arara (Alves 2017: 196).

(31) Proto-Cariban **kati-kə* ‘say!’

a. Apalaí *kaʃi-ko* (E. Koehn & S. Koehn 1986: 35)

b. Wayana *kai-kə* (Tavares 2005: 181)

c. Hixkaryána *kas-ko* (Derbyshire 1985: 128)

d. Panare *kah-kə* (M.-C. Mattéi-Müller 1994: 102)

This verb was not affected by the extensions found in Proto-Pekodian, Proto-Waiwaian, and Proto-Tiriyoan. It was not a potential target of Akuriyó *k-*; we do not know the first person forms of its Carijona and Yukpa reflexes.

As briefly mentioned in Section 3.2, Derbyshire (1985) analyzes this verb as transitive in Hixkaryána. This analytical choice is not only motivated by avoiding an idiosyncratic intransitive first person prefix *ɨ-*, with the usual prefix being *k-*. Hixkaryána *ka* also behaves like a transitive verb in other ways, for instance by showing the complementary distribution of the third person marker *n-* and preceding objects – in this case direct speech or ideophones (32).

(32) Hixkaryána

a. *onɨ wyaro nkekonɨ bɨryekomo, tɨyonɨ wya*
onɨ *wjaro* *n-ka-jakonɨ* *bɨrʲekomo* *tɨ-jonɨ* *wja*
this like 3-say-REM.CONT boy COR-mother OBL
‘This is what the boy said to his mother.’ (Derbyshire 1985: 36)

b. *moro ha, ketxkoná hatá.*
moro *ha* *ka-jaʧkonɨ* *hatɨ*
MED.DEM.INAN INTS say-REM.CONT.PL HSY
‘“That one there” they said.’ (Derbyshire 1965: 14)

In (32a), the prefix *n-* occurs because there is no preceding object (‘he said it like this’). In (32b), it does not occur, because ‘they said’ is preceded by direct speech. This complementary distribution is otherwise only found with transitive verbs (Gildea 1998: 59–60). The verb shows the same pattern, albeit inconsistently, in Tiriyó (Carlin 2004: 267).

Further comparative evidence also points to **ka(ti)* ‘to say’ showing transitive traits: Tiriyó *ka* is characterized as the only intransitive verb being able to take the causative suffix *-po* and the agentive nominalizer *-ne* (Meira 1999: 263, 169). The exceptionality of *ka* ‘to say’ taking *-po* ‘CAUS.TR’ has also been noted for Kari’ña (Courtz 2008: 82) and Wayana (Tavares 2005: 258). Reflexes of another transitive causativizer **-metipo* (Gildea 2015) are found with *ka* in Apalaí (E. Koehn & S. Koehn 1986: 51) and Waiwai (R. E. Hawkins 1998: 52). Panare has innovated a gnomic or nonspecific verbal suffix *-ɲe* from the agent nominalizer **-ne* (Gildea 1998: 184). Its occurrence

on *ka* leads (T. E. Payne & D. L. Payne 2013: 214) to analyze the verb as transitive, in contrast to M.-C. Mattéi-Müller (1994: 102), who categorizes it as intransitive.

Our classification of 'to say' as an intransitive verb is supported primarily by prefix patterns: Kari'ña offers a minimal pair between transitive *ka* 'to remove' and intransitive *ka* 'to say', *sikai* 'I took it away' vs *wɨkai* 'I said' (Courtz 2008: 288, 45).[13] Similarly, 'to say' in Pekodian languages has a reflex of 1S **w-* (Section 3.1), and not 1>3 *s-* (Bakairi) or **ini-* (Proto-Xinguan). Additionally, the S_A class marker *w-* occurs on nominalizations in Kari'ña (33), and it is probably reflected in vowel length in the Tiriyó (Meira 1999: 333) and Wayana (Tavares 2005: 196) participles.

(33) Kari'ña (Courtz 2008: 202)
Òmakon ẁa oti ywykàpo kaiko.
o-ʔma-kon ʔwa oti ɨ-wɨ-ka-ʔpo kai-ko
2-child-PL OBL greeting 1-S_A-say-PST.NMLZ say-IMP
'Pass my greetings to your children.'

Summing up, this verb could be reconstructed as being intransitive based on its prefixes, but transitive based on some suffixes. Hixkaryána has lost the main intransitive criteria, making its reflex look more like a transitive verb.

4.3 **ɨtə(mə)* 'to go'

This verb is reconstructed by Gildea & D. Payne (2007) as **tə(mə)*, with the second syllable only rarely occurring, as in the case of **ka(ti)* 'to say'. It is true that many reflexes are clearly *t-*initial, for example Hixkaryána *ntoje* 'he went' (Derbyshire 1985: 27), Tiriyó *təkə* 'go!' (Meira 1999: 246), or Wayana *kuptəm* 'we went' (Tavares 2005: 195). However, a comparison of selected forms with unambiguously C-initial **ka(ti)* 'to say' suggests that an initial vowel **ɨ* should be reconstructed (34),[14] which was subsequently reanalyzed as part of the prefixes in many languages.

(34)

	go-IMP	go-NEG	say-IMP	say-NEG
Wayana	*ɨtə-kə*	*ɨtə-ra*	*kai-kə*	*ka-ra*
Hixkaryána	*ɨto-ko*	*ɨto-hra*	*kas-ko*	*ka-hra*
Apalaí	*ɨto-ko*	*ɨto-pɨra*	*kaʃi-ko*	*ka-ra*

(Camargo & Tapinkili 2010: 66, 98; Tavares 2005: 235, 258; Derbyshire 1985: 47, 54 194, 1965: 65; E. Koehn & S. Koehn 1994: kuruaz 033, 055; Camargo 2002: 100; E. Koehn & S. Koehn 1986: 107)

[13] Interestingly, the Kari'ña causativized form *kapo* 'to make say' does not have the regular 1>3 prefix *s(i)-*, but irregular *w(i)-* (Courtz 2008: 430).

[14] Many inflected forms, like e.g. Tiriyó *wɨtənne* or Arara *wɨdolɨ* 'I went' (Meira 1999: 43; Alves 2017: 153) are ambiguous, since an epenthetic *ɨ* breaks up CC clusters on the prefix-verb boundary.

Table 9: Reflexes of 'to come' (Alves 2017: 150; Pachêco 2001: 265; Meira 2003a: 4, 1999: 294, 1998: 168; Robayo Moreno 2000: 178; E. Koehn & S. Koehn 1986: 37; Courtz 2008: 429; Cáceres 2011: 438; Stegeman & Hunter 2014: 160; Caesar-Fox 2003: 125; Cruz 2005: 299, 415; Álvarez 2000: 102; Abbott 1991: 32; T. E. Payne & D. L. Payne 2013: 65; Méndez-Arocha 1959: 68; M. C. Mattéi-Müller 1975: 74; Meira & Franchetto 2005: 182; p.c., Spike Gildea)

Language	Form
Werikyana	*johɨ*, *ehɨ*, *oohɨ*
Arara	*ebɨ*, *odebɨ*
Ikpeng	*arep*
Bakairi	*əewɨ*
Tiriyó	*epɨ*, *əepɨ*
Akuriyó	*eepɨ*
Carijona	*ehɨ*
Apalaí	*oepɨ*
Kari'ña	*opɨ*
Ye'kwana	*ehə*
Akawaio	*jepɨ*, *əsipɨ*
Ingarikó	*jepə*, *jə*
Patamona	*jəpɨ*, *jepɨ*
Pemón	*jepɨ*
Macushi	*ɨpɨ*
Panare	*əpɨ*
Yawarana	*əpɨ*
Mapoyo	*epɨ*
Upper Xingu Carib	*ee*

This verb was not affected by the extensions found in Proto-Pekodian, Proto-Waiwaian, Proto-Tiriyoan, Carijona, and Yukpa. It was not a potential target of Akuriyó *k-*.

4.4 **(ət-)jəpɨ* 'to come'

This verb is reconstructed as monomorphemic **ətepɨ* by Gildea & D. Payne (2007: 30), but an inspection of all the attested reflexes (Table 9) suggests a more complex story. Different languages present rather different forms, which we argue are all (partially) cognate, with the reconstructed Proto-Cariban verb having the form **(ət-)jəpɨ*. Reflexes of a bare **j-*initial root **jəpɨ* are found in the Pemongan languages and Werikyana. However, the one form in Werikyana only occurs in the Progressive (35a), and *j(-)* may be a reflex the Set II third person marker **i-* combined with the S_A class marker **w-*, as

suggested by the occurrence of the latter with other person values (35b). On the other hand, while C-initial verbs do show a clear reflex of third person **i-* (35c), regular V-initial verbs do not show *j-*, but Ø (35d). Thus, it seems more likely that the *j* is indeed part of the root, rather than an outcome of **i-w-*.

(35) Werikyana Spike Gildea (p.c.)

a. *johɨ-rɨ*
3.come-PROG
'S/he is coming.'

b. *o-w-ohɨ-rɨ*
2-S_A-come-PROG
'You are coming.'

c. *i-nkɨ-rɨ*
3-sleep-PROG
'S/he is sleeping.'

d. *Ø-osone-rɨ*
3-dream-PROG
'S/he is dreaming.'

Other languages – across the family – have forms reflecting the same root without the initial consonant, **əpɨ*: Kari'ña, Panare, Yawarana, and Upper Xingu Carib.[15] There are also forms reflecting **epɨ*, again across the family: Werikyana, Arara, Tiriyó, Carijona, Ye'kwana, and Mapoyo. The Akuriyó form *eepɨ* looks like a reflex thereof as well, but the length is unexpected, and is analyzed by Meira (1998) as reflecting an earlier diphthong **əe*. A unifying account of these forms starts from a root **jəpɨ*, which is the subject to two major sound changes: a) **j*-loss; and b) **ə*-umlaut after **j*. Both phenomena are widespread in the family (Meira et al. 2010). However, these sound changes appear to have applied irregularly, and not always in the same order. For example, the Kari'ña form *opɨ* can only be explained if **j* was lost before the umlaut of **ə* to **e*, which happened elsewhere after **j*. On the other hand, forms like Ye'kwana *ehə* must be the result of **ə* → **e* / **j_*, with subsequent loss of **j*.

We have so far ignored the forms which form the basis for Gildea & D. Payne's (2007) **ətepɨ*; these are compatible with our reconstructed root **jəpɨ*, with the addition of the detransitivizer **ət(e)-*: **ətjəpɨ*. While most of the modern forms are lacking evidence for **j* and thus look like a reflex of **ətepɨ*, the *i* in the Akawaio form *əsipɨ* is evidence of the sequence **jə*, which has the same outcome *i* in the Macushi reflex of **jəpɨ*, *ipɨ*. Although the semantics of combining a detransitivizer with an intransitive

[15] *e* is the regular outcome of **ə* in Upper Xingu Carib; **e* became *i* (Meira & Franchetto 2005: 176).

verb do not really make sense, some historical S_P verbs are attested as adding the detransitivizer to become S_A verbs. For example, S_P **wənɨkɨ* 'to sleep' becomes Tiriyó *əənɨkɨ* (Meira 1999: 252) and Kari'ña *əʔnɨkɨ* (Courtz 2008: 429), both S_A. Waiwai 'go to sleep' can be *wɨnɨk* (R. E. Hawkins 1998: 30) or *et-wɨnɨk* (W. N. Hawkins & R. E. Hawkins 1953: 204). The parallels to 'to sleep' end here, since bare **jəpɨ* 'to come' apparently already was an S_A verb, as evidenced by its status in Werikyana, Kari'ña, Panare (36), Arara, Tiriyó, and Akuriyó.

(36) Panare (T. E. Payne & D. L. Payne 2013: 65)
ju-w-əəpɨ-n *ka=m* *kano?*
3-S_A-come-NSPEC Q=2.AUX rain
'Do you think it is gonna rain?'

While these sound changes and the addition of **ət(e)-* do account for the majority of the forms in Table 9,[16] the distribution within the family is rather chaotic. Not only do very closely related languages show different forms, like Yawarana and Mapoyo, but distinct forms can even be found within the same language, usually conditioned by different prefixes. This was discussed in Section 3.1 for Arara, which has reflexes of **ətjəpɨ* and **jəpɨ* within the same paradigm. A similar situation is found in Tiriyó, where the Set I paradigm shows a reflex of **ətepɨ* (< **ətjəpɨ*) for first, but of **epɨ* (< **jəpɨ*) for the other persons (37).[17]

(37) Tiriyó (Meira 1999: 294)
1 *w-əepɨ*
2 *mən-epɨ*
1+2 *ke-epɨ*
3 *n-epɨ*

Summing up, this verb is highly irregular, both from a synchronic and diachronic perspective. It seems that reflexes of the detransitivizer **ət(e)-* were optionally added to an S_A verb root **jəpɨ*, which further underwent umlaut and loss of **j*, but in no systematic manner, resulting in the chaotic picture in Table 9.

As discussed in Section 3.1, innovative **k-* was introduced on the Arara reflex of **jəpɨ*, but not on the Ikpeng and Bakairi reflexes of **ətjəpɨ*. Both reflexes of **ətjəpɨ*

[16] Apart from aforementioned Akuriyó *eepɨ*, another exception is the Apalaí form *oepɨ*, where the detransitivizer would have the reflex *os-* (Meira et al. 2010: 506). While *oepɨ* would be a regular outcome of **ə-jəpɨ*, the / _C allomorph of the detransitivizer is *e-*. The form may be due to borrowing from Tiriyó, which has lost intervocalic **t* to create *əepɨ*. Alternatively, Apalaí *oepɨ* could be a fossilized loan Wayana, which has lost its reflex of **ətjəpɨ*, but where regular sound changes would also have resulted in the loss of intervocalic **t* (Tavares 2005: 63).

[17] While the 1+2 form is a regular outcome of **kɨt-epɨ*, the second person form is mysterious.

(Tiriyó) and of **ətjəpɨ* and/or **epɨ* (Akuriyó) resisted the introduction of **t-* in Proto-Tiriyoan. Carijona *ehɨ* shows innovative *j-*, rather than conservative *w-* (38). It is unknown whether there is a Yukpa reflex of this verb, and it was fully replaced in Proto-Waiwaian by **omokɨ* 'to come'.

(38) Carijona (Guerrero Beltrán 2019: 102)
əji-wa-e *j-eh-ɨ*
2-search-SUP 1-come-PFV
'I came looking for you.'

4.5 **ɨpɨtə* 'to go down'

Reflexes of this verb were not affected by the extensions of **t-* in Proto-Tiriyoan (Section 3.3) and *k-* in Akuriyó (Section 3.4). Rather, an irregular first person form **p-ɨptə* can be reconstructed for Proto-Tiriyoan. While it originally resisted the extension of **k-* in Proto-Pekodian, Bakairi subsequently introduced it (Section 3.1). It was also affected by the extension of *j-* in Carijona (39).

(39) Carijona (David Felipe Guerrero, p.c.)
irə *waʧinakano* *tae* *j-ehɨtə-e*
INAN.ANA body.of.water along.bounded 1-go.down-NPST
'…I go down through that guachinacán.'

The situation in Yukpa is unclear, as it is an open question whether *ew(uh)tu* 'to go down' (Meira 2003b) is cognate.

A comparative view (Table 10) shows that while a form **ɨpɨtə* can be reconstructed to Proto-Cariban, the class of this verb is unclear at first sight. The reflexes are fairly evenly split between S_A and S_P – in those languages that preserve the split-S system. In one language, Wayana, the verb shows traits of both classes, leading us to consider it a "mixed" verb. It takes the first and second person S_P markers *j-* and *əw-* (Tavares 2005: 200), but the $1{+}2S_A$ marker *kut-* (Tavares 2005: 206). It also shows the S_A class marker *w-* in nominalizations (40a), but behaves like an S_P verb in taking a second person prefix in imperatives (40b).

(40) Wayana (Tavares 2005: 200)

a. *ïwïptëë*
ɨ-w-ɨptə-rɨ
$1\text{-}S_A$-go.down-NMLZ
'my going down'

Table 10: Reflexes of **ɨpɨtə* 'to go down'

Language	Verb	Class	Source
Werikyana	*ɨhɨto*	S_P	Spike Gildea (p.c.)
Hixkaryána	*hto*	?	Derbyshire (1979: 196)
Waiwai	*hto*	–	R. E. Hawkins (1998: 55)
Proto-Pekodian	**ɨptə*	S_A	Section 3.1
Proto-Tiriyoan	**ɨhtə* (1 **p-*)	S_A	Section 3.3
Carijona	*ehɨtə*	–	Guerrero Beltrán (2019: 118)
Wayana	*ɨptə*	S_A/S_P	Camargo & Tapinkili (2010: 44)
Apalaí	*ɨhto*	S_P	Camargo (2002: 99)
Kari'ña	(*oniʔto*)	S_A	Courtz (2008: 263)
Ye'kwana	*əʔtə*	S_P	Cáceres (2011: 450)
Kapón	(*uʔtə*)	–	Stegeman & Hunter (2014: 139)
Pemón	(*uʔtə*)	–	Álvarez (2008: 139)
Macushi	(*autɨ*)	–	Abbott (1991: 34)
Panare	*əhtə*	S_A	M.-C. Mattéi-Müller (1994: 88)
Yawarana	*əhtə*	–	Méndez-Arocha (1959: 68)
Waimiri-Atroari	*ɨtɨ*	–	Bruno (1996: 58)

b. *əw-ɨptə-k*
2-go.down-IMP
'Go down!'

Its causativized form is *ɨptəka* (Tavares 2005: 255), containing a reflex of the transitivizer **-ka*, which was restricted to S_P verbs in Proto-Cariban (Gildea & Cáceres in preparation).

Further comparative evidence suggests that **ɨpɨtə* 'to go down' was originally an S_P verb which switched its class to S_A in some languages, incompletely so in Wayana. The Arara causativized form is *eniptoŋ* (Alves 2017: 66), and Kari'ña has a cognate form *eniʔto* (Courtz 2008: 263); *oniʔto* 'to go down' in Table 10 is a detransitivized form thereof, lit. 'to get oneself down'. Both causativized forms contain a reflex of the (rare) transitivizer **en-*, which was usually found with S_P verbs (Gildea & Cáceres in preparation). Besides the irregular first person *p-*, Tiriyó *ɨhtə* shows other irregularities, in particular in its causativized forms (Meira 1999: 263). Thus, it seems that this verb was originally S_P, but then switched its class in four and a half languages of the family, for so far unknown reasons.

Table 11: Reflexes of **ɨpɨtə* ‘to go down’ (Meira 1999: 294, 325, 331; Derbyshire 1979: 196; R. E. Hawkins 1998: 55; Guerrero Beltrán 2019: 118; Camargo & Tapinkili 2010: 44; Camargo 2002: 99; Courtz 2008: 263; Cáceres 2011: 450; Stegeman & Hunter 2014: 139; Álvarez 2008: 139; Abbott 1991: 34; M.-C. Mattéi-Müller 1994: 88; Méndez-Arocha 1959: 68; Bruno 1996: 58; Gildea 1994: 84; Alves 2017: 153; von den Steinen 1892: 137; Meira 1998: 116; p.c., Angela Fabíola Alves Chagas, David Felipe Guerrero, Spike Gildea)

Language	Form	Class
Proto-Parukotoan	*ɨɸɨto*	S_P
Werikyana	*ɨhɨto*	S_P
Hixkaryána	*hto*	?
Waiwai	*hto*	–
Proto-Pekodian	*ɨptə*	S_A
Arara	*ɨptoŋ*	S_A
Ikpeng	*ɨptoŋ*	?
Bakairi	*ɨtəgɨ*	S_A
Proto-Tiriyoan	*ɨhtə*	S_A
Tiriyó	*ɨhtə*	S_A
Akuriyó	*ɨtə*	S_A
Carijona	*ehɨtə*	–
Wayana	*ɨptə*	S_P
Apalaí	*ɨhto*	S_P
Kari’ña	(*oniʔto*)	S_A
Ye’kwana	*əʔtə*	S_P
Kapón	(*uʔtə*)	–
Pemón	(*uʔtə*)	–
Macushi	(*autɨ*)	–
Panare	*əhtə*	S_A
Yawarana	*əhtə*	–
Waimiri-Atroari	*ɨtɨ*	–

Table 12: Intransitive and transitive ‘to bathe’

Language	INTR	TR	Source
Werikyana	*eehɨ*	*ɨhɨ*	Spike Gildea (p.c.)
Hixkaryána	*ewehɨ*	*ɨhɨ*	Derbyshire (1979: 198)
Waiwai	*ejepu*	*pɨ*	R. E. Hawkins (1998: 166, 192)
Arara	*ibɨ*	*ɨp*	Alves (2017: 150, 162)
Ikpeng	*ɨp*	*ɨp*	Pachêco (1997: 103) and Campetela (1997: 123)
Bakairi	*i*	*ɨ*	Meira (2003a: 4, 2005: 285)
Tiriyó	*epɨ*	*pɨ*	Meira (1999: 697)
Akuriyó	*epɨ*	*pɨ*	Gildea (1994: 87)
Wayana	*epɨ*	*upɨ*	Camargo & Tapinkili (2010: 24, 52)
Apalaí	*epɨ*	*pɨ*	Meira (2000: 218)
Kari’ña	*ekupi*	*kupi*	Courtz (2008: 304)
Ye’kwana	*eʔhi*	*ɨhɨ*	Cáceres (2011: 439, 454)
Kapón	*ekuʔpi*	*kuʔpi*	Stegeman & Hunter (2014: 37)
Pemón	*ekupɨ*	*pɨ*	de Armellada (1944: 34, 129)
Panare	*akupɨ*	*ɨpɨ*/*kupɨ*	M.-C. Mattéi-Müller (1994: 8, 294)

4.6 Proto-Pekodian **ɨpɨ* ‘to bathe’

This verb only emerged as resisting an extension in the case of Proto-Pekodian (Section 3.1). Verbs for intransitive ‘to bathe’ are usually based on transitive verbs in Cariban languages, which are reflexes of **pɨ*, or **kupi* in Pemongan, Panare, Kari’ña, and Ye’kwana[18] (Table 12). As we have shown in Section 3.1, Proto-Pekodian can be reconstructed as having the pair **ɨpɨ* (INTR) / **ɨp(ɨ)* (TR). Thus, while Proto-Pekodian ‘to bathe (TR)’ has perfectly regular cognates in other languages of the family, intransitive ‘to bathe’ is divergent in this branch, changing **e-* to **i*. The reasons for this are unknown; we are not aware of **i-* as a regular development of the detransitivizer in Pekodian, see also Meira et al. (2010: 506). However, it should be noted that other languages also show unexpected developments in this verb, consider the apparent addition of *ew-* in Hixkaryána or the chaotic mixture of **pɨ* and **kupi* in languages spoken in Venezuela.

4.7 Tiriyó *weka*/*oeka* ‘to defecate’

As in the case of ‘to go down’ (Section 4.5), **weka* ‘to defecate’ was likely originally S_P, with most languages showing an S_P reflex (Table 13). Another parallel to ‘to go down’

[18]For Ye’kwana, note that while intransitive *eʔhi* points to **e-kupi*, transitive *ɨhɨ* looks like a reflex of **pɨ*.

Table 13: **weka* 'to defecate' as a class-switching S_P verb

Language	Verb	Class	Source
Kari'ña	*uweka*	S_P	Courtz (2008: 418)
Ye'kwana	*weka*	S_P	Cáceres (2011: 455)
Werikyana	*weka*	S_P	Spike Gildea (p.c.)
Arara	*watke*	S_P	de Souza (1993: 44)
Ikpeng	*atke*	S_P	Alves Chagas (2013: 118)
Wayana	*uika*	S_A/S_P	Tavares (2005: 86, 206)
Tiriyó	*weka* (1 *koeka*)	S_A	Meira (1999: 294)
Bakairi	*əeke*	S_A	(Meira 2005)
Apalaí	*weka*	?	Camargo (2002: 96)
Panare	*(a)iʔka*	?	M.-C. Mattéi-Müller (1994: 319)

is the mixed S_A/S_P status in Wayana. The Bakairi reflex *əeke* seems to contain a reflex of **ət-*, which would explain its status as an S_A verb. While the class memberships of Panare *aiʔka* and *iʔka* 'to defecate' are both unknown, the first form seems to contain a reflex of the detransitivizer, but not the second form.

4.8 The Akuriyó movement verbs

As discussed in Section 3.4, four Akuriyó S_A verbs are attested as not having the first person marker *t͡ʃ-* in Gildea (1994); instead, they have *w-* or its phonologically reduced form ∅. These verbs share two properties: they are all *e*-initial, and they are all movement verbs. However, there are also *e*-initial movement verbs with a first person marker *t͡ʃ-* (41). As for their etymology, we can only speak to *erama* 'to return', which is a detransitivized form of *rama* 'to put back', a pair which is also found in other Cariban languages. For the other three verbs, we have not encountered potential cognates, but given their *e*-initial nature and their semantics, it seems plausible that they, too, are derived from transitive verbs with meanings like 'to put up' etc. In any case, Akuriyó is only sparsely documented, and there are many open questions about it.

(41) Akuriyó (Gildea 1994: 84)
t͡ʃ-ewai
1-sit.down
'I sat down.'

5 Discussion

5.1 Possible motivations: Bybee's (1985) network model

The fact that reflexes of several reconstructible verbs emerged as being unaffected by different extensions (Sections 4.1 to 4.5) suggests that there is some strong motivation for these verbs to do so. The most well-known contribution regarding irregularity in the lexicon is Bybee (1985), with her network model of morphology, which is well-suited for the data at hand. It aims "to account for cross-linguistic, diachronic and acquisition patterns in complex morphological systems" (Bybee 1995: 428). It does so by modeling shared morphological properties such as inflectional patterns as emerging from connections of differing strength between related words in the mental lexicon. For example, a large group of connected "strong" English verbs with *strɪŋ–strʌŋ* at its center and pairs like *rɪŋ–rʌŋ*, *spɪn–spʌn*, or *stɪk–stʌk* at its periphery is attracting more verbs in certain dialects: *sni:k–snʌk* or *brɪŋ–brʌŋ* (Bybee 1985: 129–130). These verbs are recruited based on the lexical connection they form with prototypical members of the group, and accordingly develop "irregular" past tense forms.

For the causes of these lexical connections, Bybee (1985: 118) suggests the criteria of semantic similarity, phonological similarity, and morphological similarity. Another important factor in her model is frequency, since more frequent words have a higher lexical strength (Bybee 1985: 119). This higher lexical strength results in less influence from other lexemes, meaning that irregular forms are more likely to be preserved in high-frequency items. Thus, from a diachronic perspective, the prediction is a) that semantically/ phonologically/morphologically similar verbs adapt the same morphological properties, and b) that frequent verbs show a certain immunity to changes.

When considering the resistant verbs in our Cariban case, reiterated in Table 14, a very salient property emerges: Most of the verbs lack a reflex of the detransitivizer **ət(e)*-/*e*- usually found in S_A verbs. That is, there is an apparent connection between presence of the detransitivizer and innovating new $1S_A$ markers. This was already noted for a group of Proto-Taranoan verbs taking irregular **w*- by Meira (1998: 112):

> This category includes a small number of stems, among which 'to go', 'to come'. 'to say', 'to go down', 'to defecate', and the copula. These are basically the verbs that are not synchronically or diachronically detransitivized. yet belong to the A conjugation.

The characterization of the absence of **ətelel*-resulting in irregular verbs is also applicable to other languages and branches, most clearly so for Pekodian, which I will discuss in Section 5.1.1.

On the other hand, the fact that reflexes of **ət(e)*-/*e*- are found on "normal" S_A verbs also means that they are all **ə*- or **e*- initial. That is, the morphologically caused lexical connection between regular S_A verbs is also phonological in nature. In some cases,

Table 14: Overview of unaffected verbs

Verb	Comment
**eti/a(p)* 'to be'	
**ka(ti* 'to say'	
**ɨte(mɨ)* 'to go'	
**(ət-)jəpɨ* 'to come'	
**ɨpɨtə* 'to go down'	
**ipɨ* 'to bathe'	only in Proto-Pekodian
weka ⟨to defecate⟩	only in Tiriyó
some movement verbs	only in Akuriyó

phonological conditioning seems to have indeed been the crucial factor, discussed in detail in Section 5.1.2.

Finally, the first four verbs in Table 14 are also united by the fact that they are usually among the most frequent ones. This has e.g. been noted for Kari'ña by Courtz (2008: 75): "It is difficult [...] to imagine an intransitive or transitive origin for some of the most frequent middle verbs". Such frequency effects are discussed in Section 5.1.3.

Semantic connections do not appear to play a role, except potentially in the case of the ill-understood movement verbs in understudied Akuriyó.

In many cases it is difficult to decide which of the three relevant factors best explains the pattern in a specific language. Rather, it seems that the three factors largely converge in the Cariban case, as discussed in Section 5.1.4.

5.1.1 Morphology: Proto-Pekodian

A clear-cut example where morphology is the sole deciding factor is the introduction of Proto-Pekodian **k-*. As I have argued in Section 3.1, there were two forms for 'to come', **epɨ* and **ət-epɨ*, the latter with a detransitivizing prefix. The Arara reflex shows a first person form *w-ebɨ-*, while its sister language Ikpeng and the cousin Bakairi have forms based on **k-ədepɨ*: *k-arep-* and *k-əewɨ-*. For Proto-Pekodian, the group of verbs which resisted the extension of **k-* can succinctly be defined as those without a detransitivizing prefix, fully accounting for the group of unaffected verbs.

5.1.2 Phonology: Akuriyó, Carijona, Yukpa

There is one case where phonological connections account for the lexical distribution of the innovative marker. That is the introduction of Akuriyó *k-*, which only affected *ə*-initial verbs – but not *e*-initial ones, which kept *t͡ʃ-* (Section 3.4). Using Bybee's (1985) network model, these classes form a consistent lexical group, based on their phono-

logical form. The Akuriyó case is rather different from the others under discussion here, as the unaffected group of verbs is fairly large, since it includes regular S_A verbs with a reflex of the detransitivizer **e-*. There are two other cases, namely Carijona *j(i)-* (Section 3.5) and Yukpa *j-* (Section 3.6).

In the case of Carijona, the group of affected verbs can be characterized as being *e-*/*ə*-initial. That is, as in other languages, regular derived S_A verbs – those with a reflex of **ət(e)-*/*e-* underwent the innovation, as shown in Section 3.5. However, underived *e*-initial S_A verbs also took on new markers, as shown in (42).

(42) Carijona

a. *əji-wa-e* *j-eh-ɨ*
2-search-SUP 1-come-PFV
'I came looking for you.' (Guerrero Beltrán 2019: 102)

b. *irə* *waʧinakano* *tae* *j-ehɨtə-e*
INAN.ANA body.of.water along.bounded 1-go.down-NPST
'…I go down through that guachinacán.' David Felipe Guerrero (p.c.)

c. *iretibə eʧinəme gərə jeʧiɨ*
ireti-bə *eʧi-nə=me* *gərə* *j-eʧi-ɨ*
then-from be-INF=ATTRZ still 1-be-PFV
'Then I was already grown up.' (Robayo Moreno 1989: 177)

(42a) shows the verb 'to come', which in Carijona is a reflex of **jəpɨ* (> **epɨ*), not of **ətepɨ*. (42b) shows the verb 'to go down', which has acquired an unexpected *e* in Carijona, compare the reconstruction in Table 10. Whether this development was distinct from the introduction of the new prefix *j-* or whether it was a result of regularization is impossible to say. Finally, (42c) shows the verb *eʧi* 'to be', which also takes *j-*. Interestingly, this verb shows a suppletive alternation between *eʧi* and *a*, where the old marker *w-* is preserved with the latter root allomorph (43).

(43) Carijona (Guerrero-Beltrán 2016: 42)
əji-marə-ne *w-a-e*
2-COM-PL 1-be-NPST
'I am with you all.'

The only other place where this *w-* is attested is with C-initial *tə* 'to go' (44), meaning that the property of being *ə-* or *e*-initial fully accounts for the distribution of innovative *j(i)-*.

(44) Carijona (Guerrero-Beltrán 2016: 5)
wɨ-tə-e=rehe
1-go-NPST=FRUST
'I almost go (but I am not going to go).'

An apparently more extreme case is Yukpa, where *j-* is not only found on the reflex of **eti* (45a), but also on that of **a(p)* (45b).

(45) Yukpa (Meira 2006: 142, 143)

a. *aw utuwanpa=p=j-e*
1PRO study=PROG=1-be
'I was studying.'

b. *aw juwatpɨ=p=j-a-s*
1PRO chief=ESS=1-be-NPST
'I am the chief.'

The only place where I have identified a reflex of **w-* is on C-initial *to* (28). This makes it possible to characterize the extension as affecting all V-initial verbs.

(46) Yukpa (Meira 2006: 139)
aw Ø-to
1PRO $1S_A$-go
'I went.'

5.1.3 Frequency: Bakairi?

Among the investigated cases of incomplete extensions, Bakairi is the only language where one might suggest frequency effects that are not coupled to something else, but the evidence is scarce. In Section 5.1.1, I argued that the Proto-Pekodian verbs **ipɨ* 'to bathe' and **[ɨ/i]ptə* 'to go down' resisted the introduction of **k-* because they did not have a reflex of **əte/e-*. However, while Bakairi *i* 'to bathe' preserved the Proto-Pekodian pattern, *ɨtəgɨ* 'to go down' subsequently innovated *k-*. While it is possible that *i*, which also means 'to wash' (von den Steinen 1892: 105), is more frequent in Bakairi discourse than 'to go down', such a claim would have to be supported by corpus data, which are not available.

5.1.4 Converging factors

I have shown that in one case, morphological criteria account for the distribution of conservative and innovative prefixes, and that three cases can adequately be explained

by purely phonological criteria. I suggested that the development in Bakairi after the Proto-Pekodian stage may be due to frequency, but only very speculatively so. No semantic patterns have emerged as a conditioning factor for preserving old $1S_A$ markers in any of the cases under study. As for the other three factors, the main conclusion is that they largely converge in the case of Cariban S_A verbs. Take for example the "most" resistant verb, which is not attested as having taken on a new first person marker in any language, **ka(ti)* 'to say'. It is at the same time: a) highly frequent; b) the only C-initial S_A verb in Proto-Cariban; and c) one of the few S_A verbs without a reflex of **ət(e)-/e-*. That is, one would expect it to resist morphological innovation based on all three factors: frequency, phonological form, and morphological makeup.

The same kind of convergence is found for most other verbs consistently emerging as resistant across the family. They are more frequent than other S_A verbs, and diverge phonologically and morphologically from them. This results in an overall picture where the factors leading to irregular or archaic morphological patterns strongly overlap, to a degree where one cannot simply decide which factor ultimately contributed. While this means that Bybee's (1985) model for the most part nicely accounts for the Cariban patterns, the conditioning factors she suggests are highly interrelated.

5.2 Conclusion

- why are the most irregular verbs all underived S_A verbs? **something** is there
- ultimately plays into the mystery of how the hell the split-S system actually came into being
- not surprising that more frequent S_A verbs have no **ət-*, but definitely surprising that 'say', 'go', and 'be' are S_A verbs in the first place!

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