Verbs with conservative first person forms in Cariban languages

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Cariban languages feature relatively rich verbal morphology, both pre- and suffixes, inflecting for person, number, tense, aspect, and evidentiality, combined with a range of valency-modifying derivational markers. A split-S system can be reconstructed to Proto-Cariban, discussed in more detail in Section 1.2.3. Table 1 shows person paradigms for four Hixkaryána verbs, members of the S_A inflectional class.[1][2][3] [4]A comparison of these paradigms shows that the verb 'to be' diverges from the others in its first person marker. That prefix is *w-*, while other S_A verbs like 'to fall' have *k(ɨ)-*. A similar example can be found in Tiriyó, where the verb 'to go' has a first-person prefix *wɨ-* while other S_A verbs have a prefix with phonologically conditioned allomorphs *t-* / *_ə* and *s-* / *_e* (Table 2). In both languages, the verbs on the left of the table are representative for the S_A class, since the vast majority is inflected identically. In both languages, there are only a few other verbs inflected identically to the divergent ones on the right; for example, the first-person form of Tiriyó 'to be' is *w-ei-* (Meira 1999: 339).

In our synchronic analyses of these two languages, we consider these verbs and their first person prefixes IRREGULAR, contrasting with regular prefixes on regular S_A verbs, *k(ɨ)-*

[1]The presence of a 1+2 person value implies that of a 1+3 value. This is usually expressed with a free pronoun combined with third person morphology in Cariban languages, so it is not represented as a distinct value in the paradigms we show.

[2]In Table 1 and the remainder of this paper, we omit any TAM suffixes found in the original forms found in the literature, since a) our focus lies on the prefixes and stems, and b) full paradigms containing the same TAM suffix are rarely found.

[3]We use standard IPA symbols in our transcription of Cariban languages, with the exception of coronal rhotics, which we simply represent with ⟨r⟩, rather than ⟨ɽ⟩ for Wayana or ⟨r̲⟩ for Ye'kwana etc. In languages with strong morphophonological processes and/or subphonemic orthography we show the original transcription in an additional surface line when presented in an interlinearized glossed example. We 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).

[4]Glossing abbreviations:

Table 1: Some Hixkaryána verbs (Howard 2001: 150, 510, 511, 513, 520; Derbyshire 1985: 197, 198)

	'to fall'	'to be afraid'	'to walk'	'to cut self'	'to be'
1	*k-ehurka-*	*k-oserʲehɨ-*	*k-atarʲeknohɨ-*	*k-atama-*	*w-eʃe-*
2	*m-ehurka-*	*m-oserʲehɨ-*	*m-atarʲeknohɨ-*	*m-atama-*	*m-eʃe-*
1+2	*t-ehurka-*	*t-oserʲehɨ-*	*t-atarʲeknohɨ-*	*t-atama-*	*t-eʃe-*
3	*ɲ-ehurka-*	*n-oserʲehɨ-*	*n-atarʲeknohɨ-*	*n-atama-*	*n-eʃe-*

Table 2: Some Tiriyó verbs (Meira 1999: 292, 294; Carlin 2004: 274)

	'to sleep'	'to see self'	'to bathe (INTR)'	'to yawn'	'to go'
1	*t-əəniki-*	*t-əene-*	*s-epi-*	*s-entapo-*	*wi-tən-*
2	*m-əəniki-*	*m-əene-*	*m-epi-*	*m-entapo-*	*mi-tən-*
1+2	*kit-əəniki-*	*k-əene-*	*ke-epi-*	*k-entapo-*	*ki-tən-*
3	*n-əəniki-*	*n-əene-*	*n-epi-*	*n-entapo-*	*ni-tən-*

Table 3: 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				**kit(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	**kit-*	**k-*
3	**n-*	**n(i)-*

and *t-*/*s-*. However, there is no widely accepted definition of irregularity (Stolz et al. 2012), and many stricter definitions (Haspelmath & Sims 2010: e.g.) require the pattern to occur at a single place in the grammar. For such approaches, these verbs simply belong to a small inflectional (sub-)class. Regardless of synchronic analysis, the explanation for these inflectional patterns lies, as so often, in diachrony. Our story starts with the verbal person marking system of Proto-Cariban, discussed in Section 1.2.1. That system was subject to different kinds of innovations; the one responsible for the irregular Hixkaryána and Tiriyó verbs is introduced in Section 1.2.2. A particular component of that system, the distinction between S_A and S_P verbs, played a major role in the developments under discussion and is the topic of Section 1.2.3.

1.2.1 Proto-Cariban verbal person marking

Proto-Cariban is reconstructed by Gildea (1998) as using a person paradigm called Set I in its independent verb forms, shown in Table 3. The choice of person marker in transitive verbs can be characterized as being conditioned by a basic person hierarchy $\boxed{1/2 > 3}$. The locuphoric markers had two forms, an A-oriented one for direct (SAP>3) scenarios and a P-oriented one for inverse (3>SAP) scenarios. There was a single aliophoric marker *$n(i)$-, which only surfaced in nonlocal (3>3) scenarios, without morphologically expressed distinctions between different third person referents. Local scenarios were expressed in a nontransparent manner, both using the 1+2 prefix *k-.

Formally identical or etymologically related markers occured in intransitive verbs, which showed a split-S system (Table 3b). 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 (*$n(i)$-).

Equipped with knowledge about the ancestral system, it becomes clear that the irregularly inflected Hixkaryána and Tiriyó preserve the original Proto-Cariban $1S_A$ prefix *w- and are therefore CONSERVATIVE. They contrast with regular S_A verbs, which are innovative in both languages. The reflexes of *w- may be considered RELICS, old and restricted to specific lexically conditioned contexts, contrasting with the innovative prefixes found elsewhere. The verbs and their prefixes are comparable with the few English nouns like *ox*, which preserve the old plural suffix *-en*. It, too, was once more widespread, being the normal plural suffix of the weak inflection, compare German *Ochse-n* 'ox-en', *Name-n* 'name-s', *Hase-n* 'hare-s', *Bär-en* 'bear-s'. Since the irregular Hixkaryána and Tiriyó prefixes are conservative and the regular prefixes are innovative, the next question to be addressed is where these new prefixes came from.

1.2.2 Person marker extensions in intransitive verbs

In his discussion of the Proto-Cariban split-S system and reconstruction of the intransitive person prefixes, Gildea (1998: 88–96) shows that the system has undergone many different modifications in various languages. The main mechanism of change leading to these modifications are **person marker extensions**, i.e. the use of verbal person prefixes being extended to contexts previously occupied by other prefixes. There have been many different person marker extensions in Cariban languages, and some are still ongoing. This is illustrated by Gildea (1998), using the three Parukotoan languages as an example. Apart from segmental changes to individual morphemes, the following 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 *kit- to $1+2S_P$ (completed in Proto-Waiwaian, ongoing in Werikyana)
2. Proto-Waiwaian
   (a) $1S_P$ *k- to $1S_A$
   (b) innovative *$owiro\,j$- '1PRO LK' for 1P
3. Waiwai

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

All innovations are person marker extensions except 2b, which combined a pronoun with the linker **j-*. They are printed in bold in Figure 1, which reproduces Gildea's (1998) tables as a tree diagram, with adapted transcription and the additional alternative Werikyana $1S_P$ marker *∅/j-* (Spike Gildea, p.c.). Hixkaryána has preserved split-S only in the second person

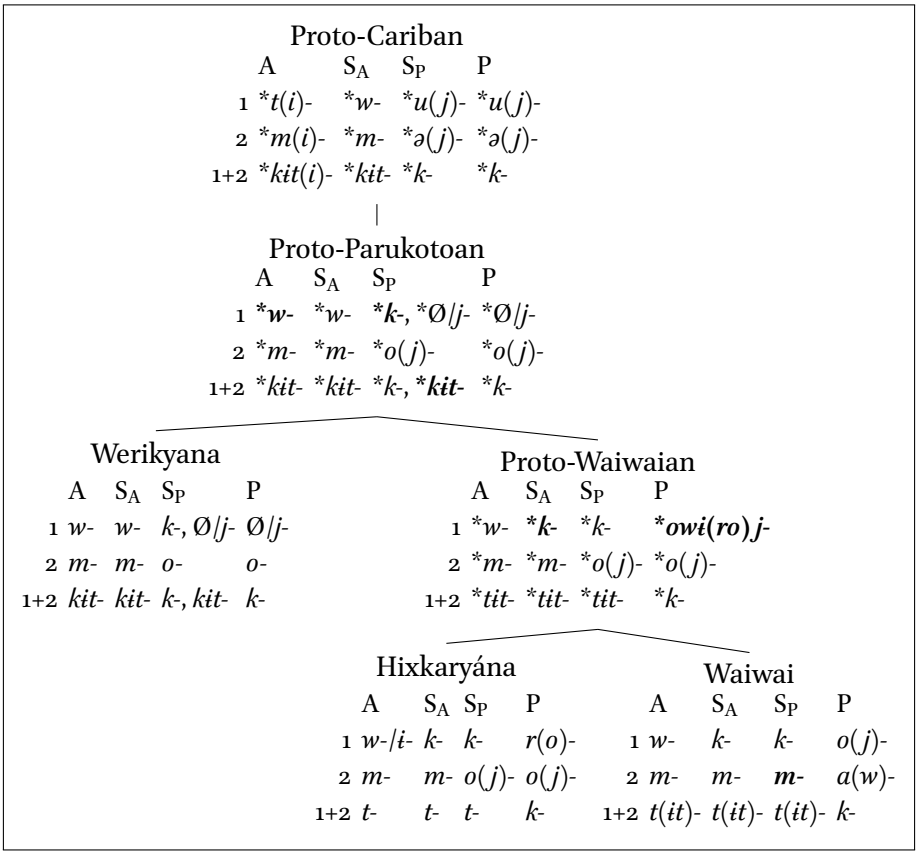

Figure 1: Person marking extensions in Parukotoan, after Gildea (1998: 94)

prefixes, while Werikyana still shows the variation in the first person and 1+2 prefixes that is reconstructible to Proto-Parukotoan. Waiwai, on the other hand, has lost the system entirely, which notably happened via distinct innovations at three different diachronic stages.

Gildea (1998) discusses person marker extensions only in the context of the loss of the split-S system and the accompanying changes to indexing alignment; for our story we will zoom in on a so far neglected aspect of these extensions. To begin, we argue that they took place via lexical diffusion, a type of extension (Harris & Campbell 1995: 106–115); this hypothesis is supported by three facts. First, 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

Table 4: 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-*/∅

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 2.3), Meira (1998: 111–112) convincingly 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.

Our third argument in favor of the lexical diffusion scenario brings us back to the Hixkaryána and Tiriyó verbs with conservative first person forms: In both cases, the innovative $1S_A$ prefixes were introduced by a person marker extension spreading via lexical diffusion. We interpret the continued presence of the old $1S_A$ marker in a few verbs as the extension stopping short of these verbs, rather than affecting all targets (S_A verbs). In our investigations of person marker extensions, we identified 19 individual cases affecting intransitive verbs, and found 6 of them to be incomplete. These incomplete extensions have left between 1 and 7 conservatively inflected verbs in 9 Cariban languages. Interestingly, all six extensions featured innovative first person markers on S_A verbs. While extensions occurred with other person values as well, they never affected S_A verbs, only S_P ones, and they always affected all potential targets. Illustrative examples for complete extensions are shown in Table 4: the extension of $1+2S_A$ *s(ɨ)-* (< **kɨt-*) to S_P verbs in Apalaí (Table 4a), of $2S_A$ *m(ɨ)-* in to S_P verbs in Panare (Table 4b),[5] or the extension of the entire S_A set to S_P verbs in Waimiri-Atroari (Table 4c).

The markedly different behavior of S_A and S_P verbs with regards to the extent of extensions affeting them points to the split-S system playing some role, a suspicion which will be confirmed in Section 4. Thus, we will discuss that system in a little more detail before moving on to the incomplete extensions. This will also give readers an idea how it is possible for the S_A/S_P distinction to be lost only for a single person, or for S_P verbs to take on S_A markers with apparent semantic impunity.

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

Table 5: Participles of S_A and S_P verbs (Schuring n.d.: 39; Alves 2017: 118, 207; Meira 1999: 333, 334; Tavares 2005: 400; E. Koehn & S. Koehn 1986: 35, 1994: kuruaz-154; Hoff 1968: 430, 433; T. E. Payne & D. L. Payne 2013: 232, 244)

Language	S_A	S_P
Werikyana	*t-ehurka-ʧe* 'fallen'	*ti-jaʔ-so* 'burnt'
Arara	*t-**o**-ep-te* 'come'	*t-oregrum-te* 'sad'
Tiriyó	*ti-**w**-əturu-e* 'talked'	*t-əpəə-se* 'tired'
Wayana	*tə-**w**-epi-he* 'bathed'	*t-onopi-he* 'painted'
Apalaí	*t-**o**-ito-se* 'gone'	*t-ihto-se* 'gone down'
Kari'ña	*tu-**w**-oʔka-se* 'come out'	*t-okari-se* 'told'
Panare	*t-**o**-tatihpə-se* 'wailed'	*ti-sirike-ʧe* 'tired'

Table 6: 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-tpiri* 'your fall'	*o-onenmehi-tpiri* 'your waking up'
Arara	***w**-orik-tubo* 'dancing place'	*ereŋmi-tpo* 'killing instrument'
Tiriyó	*ji-**w**-əturu-to* '(for) my talking'	*j-emamina-to* '(for) my playing'
Wayana	*i-**w**-əturu-topo* 'my story'	*j-iniki-topo* 'my object for sleeping'
Apalaí	*j-epi-topo* 'my bathing place'	*j-enuru-topõ-piri* 'the place of my birth'
Kari'ña	*a-**w**-ekupi-ri* 'your taking a bath'	*aj-ereʔna-∅* 'your fainting'
Panare	*j-**u**-ʧireema-n* 'their eating'	*tj-arunkampəti-n* 'his hair standing on end'

1.2.3 The morphological basis of the split-S system

As seen in Section 1.2.1, the Proto-Cariban distinction between S_A and S_P verbs was implemented by two inflection classes within the Set I prerson paradigm, but this was not the only morphological criterion: Many languages show an S_A class marker in deverbalized forms, which can be reconstructed to Proto-Cariban as **w-*.[6] 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 Tables 5 and 6 for participles and nominalizations. The distinction between S_A and S_P was also borne out in imperatives. Here, S_P verbs took the P-oriented second person prefix **ə(j)-*, while S_A verbs were unprefixed (both suffixed with **-kə*). This is illustrated with reflexes in various modern lan-

[6] 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 7: 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**-okajim-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!'

guages in Table 7. Both the S_A marker **w-* in participles and nominalizations and the prefixes in imperativees have been lost in some languages, but are reconstructible to Proto-Cariban. However, there was one further property uniting most S_A verbs, not based on inflectional morphology.

Mismatches between the semantics of intransitive verbs and their A- or P-oriented inflectional morphology are common, exemplified with 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). The intransitive verbs in (2) show the same person markers, but there is no choice what marker a specific verb uses.

(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. *aya:woiya*
aj-awomi-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 *awomi* 'to get up' takes a P-oriented marker (2b). It seems that in both cases, the prefix does not contribute to the semantics of the predicate, since there are clear mismatches: 'to be afraid' with an "agentive" marker can hardly be considered a volitional act, while 'to get up' with a "patientive" marker must be considered volitional. 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 marker, Meira et al. (2010: 505–512) reconstruct two distinct prefixes for Proto-Cariban: reciprocal **ətɛ-* and reflexive **e-*, although they have since merged

into a single morpheme, apparently in all 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.

1.2.4 Summary and outlook

We identified S_A verbs that irregularly inflect for first person in 9 Cariban languages. These irregular forms are actually conservative, unaffected by person marker extensions spread via lexical diffusion. Such conservative forms are only found among the first person forms of (etymological) S_A verbs. Our primary goal is to establish what verbs remained unaffected by the individual extensions and to search for factors explaining the patterns, proceeding as follows: The topic of Section 2 are the six incomplete innovations, the innovative markers they introduced, and the verbs they left untouched. Since these verbs show considerable etymological overlap between languages, they are reconstructed and discussed in more detail in Section 3. Finally, we search for factors motivating the resistance of these verbs, discuss the findings and put them in a general context of language change and morphology in Section 4.

2 Incomplete extensions: the innovative 1S_A markers

As stated in Section 1.2.2, the person marker extensions which did not affect all potential targets all have in common that they feature innovative first person markers on verbs that are (at least historically) members of the S_A class. Of the six attested incomplete extensions,

Table 8: Regular Pekodian S_A verbs (Meira 2003a: 4; Alves 2017: 150; Pachêco 2001: 52)

	Bakairi 'to go up'	Arara 'to dance'	Ikpeng 'to run'
1	*k-əku-*	*k-origu-*	*k-aranme-*
2	*m-əku-*	*m-origu-*	*m-aranme-*
1+2	*kid-əku-*	*kud-origu-*	*kw-aranme-*
3	*n-əku-*	*∅-origu*	*∅-aranme-*

three can be reconstructed to intermediate proto-languages, while three others happened in earlier stages of single modern languages. The sources of innovative markers vary, but not much: the innovative $1S_A$ prefix is formally identical to the $1+2P/S_P$ marker (Proto-Cariban *k-) in three cases, to the $1P/S_P$ marker (Proto-Cariban *$u(j)$-) in two cases, and to the 1>3 marker (Proto-Cariban *t-) in one case. We discuss each extension separately, contrasting regular and innovative verbs with irregular and conservative verbs, and reconstructing forms where necessary: Section 2.1 investigates the innovation of *k- in Proto-Pekodian, reflected in the three daughter languages Arara, Ikpeng, and Bakairi. Section 2.2 takes a closer look at the extension of *k- in Proto-Waiwaian, which was briefly shown in Section 1.2.2. Section 2.3 concerns the extension of *t- in Proto-Tiriyoan (or Proto-Taranoan), reflected in modern Tiriyó and Akuriyó. Sections 2.4 to 2.6 look at innovative first person markers which are only attested in single modern languages: k- in Akuriyó, and j- in Carijona and Yukpa.

2.1 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 on Proto-Pekodian morphosyntax can be found in the literature. However, all three Pekodian languages have a regular $1S_A$ marker *k*-, as evidenced by the paradigms in Table 8. Thus, it is possible to reconstruct a Proto-Pekodian $1S_A$ marker *k-.

In the most detailed description of a Pekodian language, Alves (2017) describes six[7] Arara S_A verbs forming a subclass defined by a first person marker $w(i)$- rather than *k*-, listed in (4). From a comparative perspective, this list is not quite complete, as there is also a reflex of the copula *$a[p]$, serving syntactically as a postposition introducing adverbial clauses meaning 'if' or 'when' (Alves 2017: 199–201). However, its inflectional morphology features verbal Set I prefixes, including first person *w*- (5).

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

(4) Arara (Alves 2017: 153)

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

(5) Arara (Alves 2017: 200)

1	*w-aptam* 'when/if I was'
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' (6), contrasting with regular *əku* 'to go up' in Table 8 above.

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

Since 'to bathe' is also found in the *w*-list for Arara, other Bakairi cognates of these verbs are of interest. 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 (4). We present them in (7) according to our current understanding of Bakairi phonology and verbal morphology, based on Wheatley (1969), Meira (2003a, 2005), and Franchetto & Meira (2016).

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

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.'

[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.

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. ⟨ű́ta⟩ / ⟨uúta⟩
u-tə
1S_A-go
'I go.'

f. ⟨töre-w-akine⟩
tərə w-a-kine
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 (8). The exception is 'to go', which has *k-* (9). There is a formally identical Ikpeng cognate of Arara *iptoŋ* 'to go down', but no first person forms are attested (Angela Chagas, p.c.). Further, while there are reflexes of **a*[*p*] 'to be' in Ikpeng, it seems that only reflexes of **eti* occur with first person inflectional prefixes (Gildea 2018: 401).

(8) Ikpeng

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

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

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

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

Table 9 gives an overview of the first person forms of the seven verbs under discussion, along with our Proto-Pekodian reconstruction. The presence and distribution of the Ikpeng 1S_A marker *ɨ-*/Ø suggests that it is cognate with Arara 1S_A *w*(*ɨ*)*-*. Indeed, Proto-Xinguan **w* is attested as sometimes being lost in Ikpeng, as evidenced by the correspondences in Table 10. While it is by no means a regular sound change, it allows us to securely connect the two

Table 9: Verbs preserving $1S_A$ **w-* in Proto-Pekodian (Alves 2017: 153, 200; Pachêco 2001: 42, 80, 139, 209; von den Steinen 1892: 76, 130, 131, 137, 374, 397; Pachêco 1997: 68; Meira 2003a: 4; p.c., Angela Fabíola Alves Chagas)

	Proto-Pekodian	Arara	Ikpeng	Bakairi
'say'	**wɨ-ge-*	*wɨ-ge-*	*ɨ-ge-*	*u-ge-*
'bathe'	**w-ipɨ-*	*w-ibɨ-*	*∅-ip-*	*w-i-*
'be-1'	**w-ap-*	*w-ap-*	–	*w-a-*
'be-2'	**w-eʧi-*	*w-iʧi-*	*∅-eʧi-*	*w-i-*
'come'	**w-epɨ-*	*w-ebɨ-*	*k-arep-*	*k-əewɨ-*
'go down'	**w-ɨptə-*	*w-iptoŋ-*	*?-iptoŋ-*	*k-ɨtəgɨ-*
'go'	**w-ɨtən-*	*w-ɨdo-*	*k-aran-*	*u-tə-*

Table 10: Loss of **w* in Ikpeng (de Souza 1993: 44, 70; Alves Chagas 2013: 118; Alves 2017: 143; Pachêco 2001: 21, 164; de Souza 2010: 9; Campetela 1997: 40)

Meaning	Arara	Ikpeng
'to defecate'	*watke*	*atke*
'DAT'	*wɨna*	*ɨna*
'dog'	*wokori*	*akari*
'capuchin monkey'	*tawe*	*tae*
'to sleep'	*wɨnkɨ*	*ɨnkɨ*

prefixes. Similarly, the supposed change of **wɨ* to Bakairi *u* is found in other correspondences, like *udo* (Meira & Franchetto 2005) from Proto-Cariban **wɨtoto* 'person' (Gildea & D. Payne 2007: 4). Thus, we reconstruct a $1S_A$ prefix **w(ɨ)-* to Proto-Pekodian, identical to the Arara one both in form and distribution.

As for the forms of the verb stems, a few comments are necessary: For 'to be', Ikpeng *e* is very likely the original vowel, given the Proto-Cariban form **eti* (Section 3.1). For 'to go down', we reconstruct **ɨ* as the initial vowel rather than **i* (Section 3.5). Further, the forms are not fully cognate; Meira & Franchetto (2005) make no mention of a regular correspondence between Bakairi *gɨ* and Ikpeng *ŋ*. However, the addition of a final *ŋ* in Proto-Xinguan is attested elsewhere,[9] and based on the fact Bakairi has generally lost much segmental material, we suggest that both *ŋ* and *gɨ* are later additions to a root **ɨptə*.

The forms for 'to come' are not fully cognate, either: Ikpeng and Bakairi both show a reflex of the Proto-Pekodian detransitivizer **əd-* in combination with a root reconstructible

[9] a) Proto-Cariban **əne* 'to see', Arara and Ikpeng *eneŋ*; b) Proto-Cariban **əta* 'to hear', Arara *taŋ*, Ikpeng *iraŋ*; and c) Proto-Cariban **ənə* 'to eat meat', Arara *oŋoŋ* 'to bite' (Gildea & D. Payne 2007: 8; Alves 2017: 56, 144, 57; Pachêco 2001: 25, 270).

as **epɨ*. In contrast, the Arara first person form is directly based on this root **epɨ*. However, reflexes of **əd-epɨ* can be found elsewhere in the Arara paradigm (10).

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

On the other hand, both Ikpeng and Bakairi show reflexes of **əd-ebɨ* throughout the whole paradigm. Following the line of reasoning used by Meira (1998: 114) (see also Section 2.3) for a similar pattern in the three Taranoan languages, we suggest that the idiosyncratic pattern in Arara is reconstructible to Proto-Pekodian, and that Bakairi and Ikpeng independently regularized the paradigm to only use **əd-epɨ*; similar issues are found outside of Pekodian (Section 3.4).

Finally, the V-initial nature of Proto-Pekodian 'to go' is evidenced in its Xinguan forms; while the Bakairi change **wɨ* → *u* obscured the morpheme boundary, other forms are V-initial (Section 3.3). The Ikpeng form *aran* is compatible with our reconstruction **ɨtən* when considering that Ikpeng *a* is an attested outcome of **ə*.[10] 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 **ə̲tə̲n*: *e̲ro̲-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. In later, individual developments, Bakairi extended *k-* to 'to go down', and Ikpeng to 'to go'. Further, both languages regularized the paradigm of 'to come' to **əd-epɨ*, accompanied by the introduction of first person5 *k-*.

2.2 Proto-Waiwaian **k-*

This extension was briefly discussed in Section 1.2.2; the new $1S_P$ prefix **k-*, already innovated at the Proto-Parukotoan stage, was later extended to $1S_A$ in Proto-Waiwaian. For regularly inflected verbs, this created a unified 1S category, reflected in both Hixkaryána and Waiwai (Table 11). Not all verbs were affected by this extension, though: Waiwai *ka* 'to say' does not take *kɨ-*, but rather conservative *wɨ-* (11a). Its Hixkaryána counterpart has a prefix *ɨ-* (11b), a potential reflex of $1S_A$ **w(ɨ)-*. A formally identical prefix occurs in 1>3 scenarios in Hixkaryána (11c), which regularly corresponds to Waiwai *w(ɨ)-* (11d).

[10] a) *akari* 'dog' in Table 10 above; b) *anma* 'path' (Pachêco 2001: 24) from Proto-Cariban **ətema* (Gildea & D. Payne 2007: 12); and c) *jaj* 'tree' (Pachêco 2001: 98) from Proto-Cariban **jəje*.

Table 11: Regular 'to fall' (S_A) and 'to sleep' (S_P) in Proto-Waiwaian (Howard 2001: 150; W. N. Hawkins & R. E. Hawkins 1953: 209, 211; Derbyshire 1985: 189, 190, 196; R. E. Hawkins 1998: 30)

	Proto-Waiwaian		Hixkaryána		Waiwai	
	'to fall'	'to sleep'	'to fall'	'to sleep'	'to fall'	'to sleep'
1	*k-eɸurka-	*ki-winiki-	k-ehurka-	ki-niki-	k-eɸirka-	ki-winiki-
2	*m-eɸurka-	*o-winiki-	m-ehurka-	o-wniki-	m-eɸirka-	mi-winiki-
1+2	*t-eɸurka-	*tit-winiki-	t-ehurka-	ti-niki-	ʧ-eɸirka-	tit-winiki-
3	*ɲ-eɸurka-	*ni-winiki-	ɲ-ehurka-	ni-niki-	ɲ-eɸirka-	ni-winiki-

(11) a. Waiwai (R. E. Hawkins 1998: 71)
wɨikekɲe
wɨ-ka-jakɲe
1-say-PST
'I said.'

b. Hixkaryána (Derbyshire 1985: 124)
roxehra nay hamɨ Kaywerye ɨkekonɨ
ro-ʃe-hira n-a-je hamɨ kajwerʲe ɨ-ka-jakonɨ
1-DES-NEG 3-be-NPST.UNCERT EVID K. $1S_A$-say-REM.CONT
'I said (to myself), "Kaywerye evidently doesn't like me".'

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

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

This correspondence allows us to establish Hixkaryána *ɨ-* a reflex of **w(ɨ)-*, similar to Ikpeng (Section 2.1). Notably, Derbyshire (1985) does not see this *ɨ-* 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 3.2.

There are three more verbs which did not take innovative **k-* in Proto-Waiwaian, shown alongside **ka* 'to say' in Table 12. The two roots for 'to be' are straightforwardly reconstructible, whereas 'to go' is somewhat of a special case. While Hixkaryána has the expected *ɨ-*, Waiwai seems to have combined innovative *k-* with the old **w-*, an etymological analysis also considered by Gildea (1998: 90). Alternatively, this form might have been influenced by deverbal-

Table 12: Verbs preserving $1S_A$ *w- in Proto-Waiwaian (Derbyshire 1979: 4; R. E. Hawkins 1998: 71, 85; Derbyshire 1985: 70, 197, 198; p.c., Spike Gildea)

	Proto-Waiwaian	Hixkaryána	Waiwai
'say'	*wɨ-ka-	ɨ-ka-	wɨ-ka-
'be-1'	*w-ah-	w-ah-	w-a-
'be-2'	*w-eʃɨ-	w-eʃe-	w-eeʃɨ-
'go'	*wɨ-tom-	ɨ-to-	kɨw-tom-

ized forms of 'to go', where a reflex of the S_A class marker *w- has become fossilized (12).

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

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

b. *o-wto-ʧhe* '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-tom-.

Summing up, we reconstruct the four verbs *eʃɨ and *a[h] 'to be', *ka[s] 'to say', and *[ɨ]to[m] 'to go' as preserving the old $1S_A$ marker *w- in Proto-Waiwaian, while the rest took on innovative *k-.

2.3 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. This resulted in a regular $1S_A$ marker of the form *ʧ- / _e, *t- / _ə (Table 13); the latter allomorph was subsequently replaced by *k-* in Akuriyó (Section 2.4).

The question of how this switch 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).[11] As for intransitive

[11] In fact, even the issue of *when* this happened is open. It could have happened at the Proto-Taranoan stage, but the subsequent introduction of *j-* in Carijona (Section 2.5) would have erased any traces of such an innovation. Accordingly, Meira (1998) hesitates to assign this extension to a specific proto-language. We take a conservative stance and reconstruct it to Proto-Tiriyoan only, but acknowledge the possibility of it happening already in Proto-Taranoan.

Table 13: Regular Proto-Tiriyoan S_A verbs (Meira 1999: 292, 294; Gildea 1994: 87)

	'to bathe (INTR)'			'to sleep'		
	Proto-Tiriyoan	Tiriyó	Akuriyó	Proto-Tiriyoan	Tiriyó	Akuriyó
1	**ʧ-epɨ-*	*s-epɨ-*	*ʧ-epɨ-*	**t-əəniki-*	*t-əəniki-*	*k-əəniki-*
2	**m-epɨ-*	*m-epɨ-*	*m-epɨ-*	**m-əəniki-*	*m-əəniki-*	*m-əəniki-*
1+2	**ke-epɨ-*	*ke-epɨ-*	*ke-epɨ-*	**kit-əəniki-*	*kit-əəniki-*	*kəʔ-əəniki-*
3	**n-epɨ-*	*n-epɨ-*	*n-epɨ-*	**n-əəniki-*	*n-əəniki-*	*n-əəniki-*

Table 14: Verbs preserving $1S_A$ **w-* in Proto-Tiriyoan (Meira 1999: 292, 294, 339, 1998: 112, 113, 114, 115, 165)

	Proto-Tiriyoan	Tiriyó	Akuriyó
'go'	**wɨ-təmɨ-*	*wɨ-tən-*	*ə-təmɨ-*
'say'	**wɨ-ka-*	*wɨ-ka-*	*wɨ-ka-*
'come'	**w-əʔepɨ-*	*w-əepɨ-*	*∅-eepɨ-*
'be-1'	**w-a-*	*w-a-*	*∅-a-*
'be-2'	**w-eʔi-*	*w-ei-*	*ʔ-eʔi-*

verbs unaffected by the spread of **t-*, Meira (1998) reconstructs the first four items in Table 14 as taking **w-* in Proto-Taranoan; we offer our reconstructed Proto-Tiriyoan forms. To this list, we add the other copular root **eʔi* (Proto-Taranoan **eʧi* [Meira 1998: 165]), which has first person *w-*, at least in Tiriyó.

We agree with Meira's (1998: 113) identification of the idiosyncratic Akuriyó first person prefix *ə-* on 'to go' as a reflex of **wɨ-*. Both components of the irregular change **wɨ- > ə-* – loss of **w* and lowering of **ɨ* to *ə* – are found in other person prefixes (13).

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

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

For 'to come', Meira (1998: 114–115) reconstructs Proto-Taranoan **əepɨ* for first person, and **eepɨ* for the other person values, based on an idiosyncratic paradigmatic pattern in Tiriyó and the vowel length in Akuriyó. Akuriyó (and Carijona) then levelled this original distribu-

tion, similar to what we have suggested for Pekodian (Section 2.1). We agree with this scenario, with the exception that Tiriyó *əepɨ* is clearly a reflex of **ət-epɨ* (Section 3.4), meaning that the Proto-Tiriyoan form would have been **əʔepɨ*.

In addition, Gildea (1994) recorded four more Akuriyó verbs seemingly not affected by innovative **t-* (14a), all *e*-initial movement verbs. We have only found a Tiriyó cognate for *erama* 'to return', which behaves like a regular S_A verb in taking *s-* (14b). Further, these verbs are not mentioned by Meira (1998), who was also working with Gildea's (1994) data. Given that this data potentially has strong Tiriyó and/or Wayana influence (Gildea 1998: 253) and the lack of support by Meira's data, we cannot reconstruct these verbs as not being affected by the extension of Proto-Tiriyoan **t-*.

(14) 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)

2.4 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 environments, 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 15. 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-* might be more recent, with which we agree; since the distribution **t-* / _*ə* / **ʧ-* / _e is reconstructible to Proto-Tiriyoan, the most likely scenario is *k-* replacing **t-* but not **ʧ-*. The few *t-* mentioned by Meira (1998) were then either reintroduced under Tiriyó influence, or are the last remnants of the replacement of **t-*. Since there are no examples of or information about *ə*-initial verbs with *t-*, we cannot discuss these cases.

All verbs in Table 14 above did of course not introduce *k-*, either; we do not know the first-person form of the copular verb *e?i*. In addition, there is an S_A verb *ɨ(h)tə* 'to go down', which has an irregular first person marker *p-* in Akuriyó, also reconstructible to Proto-Tiriyoan (15). It was not affected by the extension of Akuriyó *k-*, but whether it existed when Proto-Tiriyoan **t-* was extended is unclear (see Section 3.5).

(15) First person forms of 'to go down' (Meira 1999: 294; Gildea 1994: 84)

Tiriyó	*p-ɨhtə-*
Akuriyó	*p-ɨtə-*

Table 15: Regular Akuriyó $1S_A$ markers (Gildea 1994: 77, 79, 82, 84, 85, 86, 87)

first person *k-*	first person *ʧ-*
əempa- 'to learn'	*epɨ-* 'to bathe (INTR)'
əəʧena- 'to cry'	*ekɨrika-* 'to stay back'
əɨwa- 'to tremble'	*entapo-* 'to yawn'
əməmɨ- 'to enter'	*etonema-* 'to lie down'
ətajiŋka- 'to run'	*ewai-* 'to sit down'
əturu- 'to talk'	*ehpa-* 'to bathe (INTR)'
əənɨkɨ- 'to sleep'	

Table 16: Regular Carijona verbs (Robayo Moreno 2000: 173; Meira 1998: 106)

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

2.5 Carijona *j-*

As discussed by Meira (1998: 105–107), Carijona has extended the $1S_P$ marker *j*(*i*)- to S_A verbs.[12] 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 (Table 16). Although the split-S system has been lost entirely, former S_A verbs can be identified by taking a detransitivizer, like *ehinəhɨ* 'to fight', derived from *hinəhɨ* 'to kill' (Robayo Moreno 2000: 179), shown in (16).

(16) Carijona (Koch-Grünberg 1908: 79)
hẹnẹ(x)tónoko-mɑ́ɽẹ y-e̱-hẹné(x)yaɨ̯
hinəhtono-ko=marə j-e-hinəhɨ-jai
enemy-PL=with 1-DETRZ-kill-NPST.CERT
'I fight with the enemies.'

As noted in Section 2.3, this extension also erased any traces of a potential 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' (17a) and *a* 'to be' (17b).

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

[12] Since all affected S_A verbs are V-initial, only the / _V allomorph *j-* occurs in that context.

Table 17: Regular Yukpa verbs (Largo 2011: 72, 76; Meira 2006: 139)

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

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.'

In addition, the verb *ka* 'to say' has a zero-marked first-person form (18). Based on other C-initial verbs like *tə* 'to go' or *tuda* 'to arrive', one would either expect *wɨ-* or *ji-*. We analyse this ∅ as a reflex of **wɨ-*, primarily based on the (albeit more regular) loss of **w* in Ikpeng and Hixkaryána, and the presumedly higher propensity of an irregular marker for idiosyncratic phonological erosion. Further, one may suggest the difference between C-initial *ka* 'to say' and *tə* 'to go' to result from the latter's earlier V-initial nature (Section 3.3).

(18) Carijona David Felipe Guerrero-Beltran (p.c.)
dëmëmara kae ëwï ɨya
n-tə-mə=mara ∅-ka-e əwɨ i-ja
3-go-PST=DUB 1-say-NPST.CERT 1PRO 3-OBL
'"Did s/he leave?", I say to him.'

2.6 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 Table 17. The loss of split-S in favor of the $1S_P$ marker is accompanied by the $2S_A$ marker *m(ɨ)-* extending to S_P verbs, and 1+2 being lost as an inflectional value.

The normal intransitive first person marker is *j(ɨ)-*, including those with clear reflexes of the detransitivizer **əte/e-*, like *otum* 'to wash self' in Table 17. 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 (19a).

(19) 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 (19b). Since Proto-Cariban $1S_A$ *$w(i)$- 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 2.1 and 2.2), we argue that the zero in 1>3 scenarios is in fact the Yukpa reflex of *w-.

In intransitive verbs, this first-person zero marking is attested only for *to* 'to go' (20). It contrasts with regular C-initial verbs taking *ji*-, like 'to sleep' in Table 17. Thus, we conclude that the extension of *j*- in Yukpa stopped short of *to* 'to go', which preserves a phonologically reduced reflex of *wi-.

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

3 Resistant verbs from a comparative perspective

In Section 2, 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 (proto-)languages show a considerable degree of overlap in what verbs are unaffected. In this section, we present these verbs from a comparative perspective. Section 3.1 treats both roots of the copula *$eti/a[p]$ 'to be', Section 3.2 *$ka[ti]$ 'to say', Section 3.3 *$ɨtə[mə]$ 'to go', and Section 3.4 *$(ət)jəpɨ$ 'to come'; these are all verbs that Gildea & D. Payne (2007) reconstruct as S_A verbs that were not derived from transitive verbs. Section 3.5 takes a look at *$ɨpɨtə$ 'to go down', which is resistant in Proto-Tiriyoan and Proto-Pekodian, and Section 3.6 investigates *e-$pɨ$ 'to bathe', of which the Proto-Pekodian reflex *i-$pɨ$ resisted the extension of *k-. The *e*-initial verbs not affected by the extension of *k- in Akuriyó (Section 2.4) will not be discussed here, as they are a large and phonologically coherent group.

3.1 **eti* and **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.[13] 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 2.1 to 2.3). Akuriyó *a* was not affected by the extension of *k-* (Section 2.4), while *e?i* is not attested in a first-person form. Carijona innovated *j-*, but only in the *eʧi* root allomorph (21); the *a* root preserves *w-* (Section 2.5). Yukpa innovated *j-* for reflexes of both **a[p]* and **eti*, which are preserved as encliticized auxiliaries in certain constructions (22).

(21) Carijona (Robayo Moreno 1989: 177)
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.'

(22) Yukpa (Meira 2006: 143–144)

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

3.2 **ka[ti]* 'to say'

Most reflexes of this verb are simply *ka*, but a fleeting syllable **ti* is reconstructed by Gildea & D. Payne (2007), best visible in the imperative forms of some languages (23).

(23) Apalaí
kaʃi-ko 'say!'
(E. Koehn & S. Koehn 1986: 35)

A comparison of the longest forms attested in each language is shown in Table 18. Segments of cognate forms in this and other tables were aligned automatically with LingPy (List et al. 2021), for easier recognition of correspondences. This verb was not affected by any of the

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

Table 18: Reflexes of *$ka[ti]$ 'to say' (Meira 2003a: 4; Franchetto 2008: 48; Pachêco 2001: 209; Alves 2017: 153; Derbyshire 1985: 182; Meira 1998: 113; E. Koehn & S. Koehn 1986: 107; R. E. Hawkins 1998: 26; Camargo & Tapinkili 2010: 66; Abbott 1991: 59; Swiggers 2010: 123; Courtz 2008: 430; Caesar-Fox 2003: 125; M.-C. Mattéi-Müller 1994: 102; p.c., Spike Gildea)

Language	Form				
Werikyana	$ka[s]$	k	a	s	
Hixkaryána	$ka[h]$	k	a	h	
Waiwai	$ka[s]$	k	a	s	
Arara	*ke*	k	e		
Ikpeng	*ke*	k	e		
Bakairi	*ke*	k	e		
Tiriyó	*ka*	k	a		
Akuriyó	*ka*	k	a		
Carijona	*ka*	k	a		
Wayana	$ka[i]$	k	a		i
Apalaí	$ka[ʃi]$	k	a	ʃ	i
Kari'ña	*ka*	k	a		
Kapón	*ka*	k	a		
Pemón	*ka*	k	a		
Macushi	*ka*	k	a		
Panare	$ka[h]$	k	a	h	
Upper Xingu Carib	*ki*	k	i		

extensions found in Proto-Pekodian, Proto-Waiwaian, Proto-Tiriyoan, Akuriyó, or Carijona (Sections 2.1 to 2.5). We do not know the first person prefix of its Yukpa reflex *ka*.

As briefly mentioned in Section 2.2, Derbyshire (1985) analyzes this verb as transitive in Hixkaryána. This analytical choice is not only motivated by avoiding an idiosyncratic intransitive first person prefix *i-*: 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 (24).

(24) Hixkaryána

a. *oni wyaro nkekoni biryekomo, tiyoni wya*
oni *wjaro* *n-ka-jakoni* *birʲekomo* *ti-joni* *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-jaʧkoni* *hati*
MED.DEM.INAN INTS say-REM.CONT.PL HSY
'"That one there" they said.' (Derbyshire 1965: 14)

In (24a), the prefix *n-* occurs because there is no preceding object ('he said it like this'). In (24b), 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). The agent nominalizer **-ne* gave rise to the Panare gnomic verbal suffix *-ɲe* on transitive verbs (Gildea 1998: 184–185). The occurrence of *-ɲe* on *ka* has led to differing categorizations as transitive (T. E. Payne & D. L. Payne 2013: 214) or intransitive (M.-C. Mattéi-Müller 1994: 102). 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).

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 *wikai* 'I said' (Courtz 2008: 288, 45).[14] Similarly, 'to say' in Pekodian languages has a reflex of 1S **w-* (Section 2.1), and not 1>3 *s-* (Bakairi) or **ini-* (Proto-Xinguan). Additionally, the S_A class marker *w-* occurs on nominalizations in Kari'ña (25), and it is probably reflected in vowel length in the Tiriyó (Meira 1999: 333) and Wayana (Tavares 2005: 196) participles.

[14] 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).

(25) 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. It is not attested as being affected by any of the person marker extensions under discussion.

3.3 *ɨtə[mə] 'to go'

This verb is reconstructed by Gildea & D. Payne (2007) as *tə[mə], like *ka[ti] 'to say' with a fleeting second syllable. 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, once one considers all forms of the various reflexes of this verb (Table 19), an initial vowel *ɨ must clearly be reconstructed – in contrast to unambiguously C-initial *ka[ti] 'to say'.[15] This verb was not affected by the any of the extensions discussed in Section 2.

3.4 *(ət-)jəpɨ 'to come'

This verb is reconstructed as *ətepɨ by Gildea & D. Payne (2007: 30), but an inspection of all the attested reflexes (Table 20) suggests a somewhat more complex story. Crucially, the *ət part of their reconstruction is not reflected in the majority of forms, and many languages ostensibly have reflexes of *əpɨ, *jepɨ, or *jəpɨ for the *epɨ part. We analyze these forms as going back to a Proto-Cariban verb of the form *(ət-)jəpɨ, morphologically segmentable into a detransitivizer and a root *jəpɨ.

Evidence for the originally *j-initial nature of the root is found in the Pemongan languages and Werikyana, although the simultaneous presence of *oohɨ* in Werikyana raises the question of whether the *j* is part of the root in *johɨ*. This form only occurs in the Progressive (26a), and indeed *j*(-) may be a reflex of *i-w- '3-S_A-', as the S_A class marker *w- is present with other person values (26b). However, while C-initial verbs do show a clear reflex of third person *i- (26c), regular V-initial S_A verbs do not show *j*-, but Ø (26d). Thus, we are confident that this *j* is indeed part of the root, rather than an outcome of *i-w-, which in turn allows us to reconstruct *j back to Proto-Cariban.

[15] As indicated by the brackets in Table 19, there are many languages where the initial vowel is only present in some forms. Also, the prefix-verb boundary in many inflected forms like e.g. Tiriyó *wɨtənne* or Arara *wɨdolɨ* 'I went' (Meira 1999: 43; Alves 2017: 153) is ambiguous, since an epenthetic *ɨ* breaks up potential CC clusters.

Table 19: Reflexes of **ɨtə[mə]* 'to go' (Cruz 2005: 291; Meira 1999: 292; Tavares 2005: 195; Gildea 1994: 87; Alves 2017: 153; Derbyshire 1985: 27, 248; R. E. Hawkins 1998: 45, 62; Pachêco 2001: 54, 80; von den Steinen 1892: 112, 374; Cáceres 2011: 181, 216; Meira 1998: 112; Hoff 1968: 168; Meira 2006: 139; Cáceres & Gildea 2018: 4; M. C. Mattéi-Müller 1975: 74; M.-C. Mattéi-Müller 1994: 198; Abbott 1991: 48, 50; García Ferrer 2006: 172; Franchetto 2002: 6; Camargo 2002: 99; p.c., Spike Gildea)

Language	Form					
Werikyana	*to*[*mo*]		t	o	m	o
Hixkaryána	[*ɨ*]*to*	ɨ	t	o		
Waiwai	[*e*]*to*[*m*]	e	t	o	m	
Arara	*ɨdo*	ɨ	d	o		
Ikpeng	*aran*	a	r	a	n	
Ikpeng	*ero*	e	r	o		
Bakairi	[*ɨ*]*tə*	ɨ	t	ə		
Tiriyó	*tə*[*n*]		t	ə	n	
Akuriyó	[*ə*]*tə*[*mɨ*]	ə	t	ə	m	ɨ
Carijona	*təmə*		t	ə	m	ə
Wayana	[*ɨ*]*tə*[*m*]	ɨ	t	ə	m	
Apalaí	*ɨto*	ɨ	t	o		
Kari'ña	*to*		t	o		
Kari'ña	[*ɨ*]*ʔ*	ɨ	ʔ			
Ye'kwana	*ɨtə*[*mə*]	ɨ	t	ə	m	ə
Ingarikó	*ətə*	ə	t	ə		
Pemón	[*e*]*tə*	e	t	ə		
Macushi	[*a*]*tɨ*	a	t	ɨ		
Panare	*tə*[*n*]		t	ə	n	
Yawarana	*tə*		t	ə		
Mapoyo	*tə*		t	ə		
Upper Xingu Carib	[*e*]*te*	e	t	e		
Yukpa	*to*		t	o		

Table 20: Reflexes of *(*ət-*)*jəpɨ* 'to come' (Abbott 1991: 32; Álvarez 2000: 102; Caesar-Fox 2003: 125; Cruz 2005: 299, 415; Cáceres 2011: 438; Robayo Moreno 2000: 178; Meira 1998: 168; M. C. Mattéi-Müller 1975: 74; Meira 1999: 294; Alves 2017: 150; E. Koehn & S. Koehn 1986: 37; Pachêco 2001: 265; Stegeman & Hunter 2014: 160; Meira 2003a: 4; T. E. Payne & D. L. Payne 2013: 65; Méndez-Arocha 1959: 68; Courtz 2008: 429; Meira & Franchetto 2005: 182; p.c., Spike Gildea)

Language	Form							
Werikyana	*oohɨ*					oo	h	ɨ
Werikyana	*johɨ*				j	o	h	ɨ
Werikyana	*ehɨ*					e	h	ɨ
Arara	*odebɨ*	o	d	-		e	b	ɨ
Arara	*ebɨ*					e	b	ɨ
Ikpeng	*arep*	a	r	-		e	p	
Bakairi	*əewɨ*	ə		-		e	w	ɨ
Tiriyó	*əepɨ*	ə		-		e	p	ɨ
Tiriyó	*epɨ*					e	p	ɨ
Akuriyó	*eepɨ*					ee	p	ɨ
Carijona	*ehɨ*					e	h	ɨ
Apalaí	*oepɨ*	o		-		e	p	ɨ
Kari'ña	*opɨ*					o	p	ɨ
Ye'kwana	*ehə*					e	h	ə
Akawaio	*əsipɨ*	ə	s	-		i	p	ɨ
Akawaio	*jepɨ*				j	e	p	ɨ
Ingarikó	*jə*				j	ə		
Ingarikó	*jepə*				j	e	p	ə
Patamona	*jepɨ*				j	e	p	ɨ
Patamona	*jəpɨ*				j	ə	p	ɨ
Pemón	*jepɨ*				j	e	p	ɨ
Panare	*əpɨ*					ə	p	ɨ
Yawarana	*əpɨ*					ə	p	ɨ
Mapoyo	*epɨ*					e	p	ɨ
Upper Xingu Carib	*ee*					ee		

(26) 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. *ɨ-nkɨ-rɨ*
3-sleep-PROG
'S/he is sleeping.'

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

Most forms corresponding to Gildea & D. Payne's (2007) **ətepɨ* do not show evidence for this **j*. However, we interpret the *ɨ* in the Akawaio form *əsipɨ* as additional evidence of the sequence **jə*, which has the same outcome *ɨ* in the Macushi reflex of bare **jəpɨ*, *ipɨ*.

Turning to the many forms apparently reflecting **əpɨ* and **epɨ*, we find that both are distributed widely in the family, sometimes even co-occurring in the same language. A unifying account of these forms requires the root **jəpɨ* to undergo two major sound changes: a) **j*-loss; and b) **ə*-umlaut after **j*. Both phenomena are found in other contexts throughout the family (Meira et al. 2010). For this particular verb, 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 would have been triggered by **j*. On the other hand, forms like Ye'kwana *ehə* must be the result of **ə* → **e* / **j_*, with subsequent loss of **j*. 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*.

Our interpretation of the **ət* portion as a detransitivizer is primarily based on its form, as well as its paradigmatically conditioned occurrence in some languages. Although the semantics of combining a detransitivizer with an intransitive verb do not really make sense, some historical S_P verbs are attested as adding the detransitivizer to become S_A verbs. For example, the Proto-Cariban S_P verb **winɨkɨ* 'to sleep' becomes Tiriyó *əənɨkɨ* (Meira 1999: 252) and Kari'ña *əʔnɨkɨ* (Courtz 2008: 429), both S_A. Also, 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 (27), Arara, and Tiriyó.

(27) 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-* do account for the majority of the forms in Table 20,[16] the distribution within the family is rather chaotic. Apart from the distribution of **əpɨ* and **epɨ*, forms with and without **ət-* can be found within the same language, usually conditioned by different prefixes. This was briefly discussed in Section 2.1 for Arara and in Section 2.3 for Tiriyó (and Proto-Tiriyoan and Proto-Taranoan). To illustrate, the Tiriyó Set I paradigm shows a reflex of **ətepɨ* (< **ətjəpɨ*) for first, but of **epɨ* (< **jəpɨ*) for the other persons (28).[17][18]

(28) 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 20.

As discussed in Section 2.1, innovative **k-* was introduced on the Ikpeng and Bakairi reflexes of **ətjəpɨ*, but not on the Arara reflex of **jəpɨ*. Both reflexes of **ətjəpɨ* (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-* (29). It is unknown whether there is a Yukpa reflex of this verb, and it was fully replaced in Proto-Waiwaian by **omokɨ* 'to come' and was thus not a potential target of innovative **k-*.

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

[16] Apart from aforementioned Akuriyó *eepɨ*, another irregular form is Apalaí *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-* in Apalaí. 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 from Wayana, which has replaced 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.

[18] It should be noted that the paradigmatic distributions of forms with and without **ət-* in different languages share no discernible patterns.

3.5 **ɨpɨtə* 'to go down'

Reflexes of this verb were not affected by the extensions of **k*- in Proto-Pekodian (Section 2.1) and *k*- in Akuriyó (Section 2.4). The resistance against the former extension was subsequently overcome in Bakairi; its fate in Ikpeng is unknown. When Akuriyó extended *k*-, the verb already had an irregularly inflected first person form with *p*-, inherited from Proto-Tiriyoan.

At first sight, it may seem that it also was affected by the independent extensions of *j*- in Carijona (30a) and Yukpa (30b).

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

b. Yukpa (Meira 2003b)
aw yéwtu
aw j-ewuhtu
1PRO 1-go.down
'I went down.'

However, a look at the comparative picture suggests a much more complicated situation. Table 21 shows all attested forms, including verb class membership where applicable; parenthesized forms indicate uncertainty about cognacy status. It turns out that while a form **ɨpɨtə* can be reconstructed to Proto-Cariban, different (proto-)languages do not agree about the class of this verb. Its reflexes in languages that preserve the split-S system are split fairly evenly between S_A and S_P.

In one language, Wayana, the verb shows traits of both classes, leading us to consider it a "mixed" verb in our synchronic analysis of Wayana. 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 (31a), but behaves like an S_P verb in taking a second person prefix in imperatives (31b).

(31) Wayana (Tavares 2005: 200)

a. *ïwïptëë*
ɨ-w-ɨptə-rɨ
1-S_A-go.down-NMLZ
'my going down'

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

Table 21: Reflexes of **ɨpɨtə* 'to go down' (Meira 2003b; 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., Spike Gildea, Angela Fabíola Alves Chagas)

Language	Form	Class														
Proto-Parukotoan	**iɸɨto*	S_P					ɨ	ɸ	ɨ	t	o					
Werikyana	*ɨhɨto*	S_P					ɨ	h	ɨ	t	o					
Hixkaryána	*hto*	?						h		t	o					
Waiwai	*hto*	–						h		t	o					
Proto-Pekodian	**ɨptə*	S_A					ɨ	p		t	ə					
Arara	*ɨptoŋ*	S_A					i	p		t	o	-	ŋ			
Ikpeng	*ɨptoŋ*	?					i	p		t	o	-	ŋ			
Bakairi	*ɨtəgɨ*	S_A					ɨ			t	ə	-	g	ɨ		
Proto-Tiriyoan	**ihtə*	S_A					ɨ	h		t	ə					
Tiriyó	*ihtə*	S_A					ɨ	h		t	ə					
Akuriyó	*ihtə*	S_A					ɨ	h		t	ə					
Carijona	*ehɨtə*	–					e	h	ɨ	t	ə					
Wayana	*ɨptə*	S_A / S_P					ɨ	p		t	ə					
Apalaí	*ihto*	S_P					ɨ	h		t	o					
Kari'ña	*oniʔto*	(S_A)	o	-	n	-	ɨ	ʔ		t	o					
Ye'kwana	*əʔtə*	S_P					ə	ʔ		t	ə					
Kapón	(*uʔtə*)	–														
Pemón	(*uʔtə*)	–														
Macushi	(*autɨ*)	–														
Panare	*əhtə*	S_A					ə	h		t	ə					
Yawarana	*əhtə*	–					ə	h		t	ə					
Yukpa	(*ewuhtu*)	–														
Waimiri-Atroari	*ɨtɨ*	–					ɨ			t	ɨ					

Its causativized form is *ɨptə-ka* (Tavares 2005: 255); the restriction of **-ka* to S_P verbs in Proto-Cariban (Gildea & Cáceres in preparation) points to S_P membership. These patterns lead us to posit the hypothesis that the verb was a regular member of the S_P class in pre-Wayana, but partially switched to the S_A class. This in turn implies that all reflexes of this verb with S_A status at some point switched from the S_P class.

Wayana-external comparative evidence supports this hypothesis: The Arara causativized form is *eniptoŋ* (Alves 2017: 66), and Kari'ña has a cognate form *enɨʔto* (Courtz 2008: 263); *onɨʔto* 'to go down' in Table 21 is a detransitivized form thereof, lit. 'to get oneself down'. Both causativized forms contain a reflex of the 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.

These circumstances make it impossible to answer the question of whether 'to go down' was affected by the extensions in Proto-Waiwaian, Proto-Tiriyoan, Carijona, and Yukpa. For Proto-Tiriyoan, we cannot establish a relative chronology of the verb class change, the introduction of the idiosyncratic marker **p-*, and the extension of **t-*. For Proto-Waiwaian, we lack knowledge not only about the first person form, but even about class membership (in Hixkaryána). For Carijona and Yukpa, we cannot know whether the verb potentially switched class before the breakdown of the entire split-S system. While there is no language-internal evidence for such a switch, 'to go down' does have an inclination for class switches; in the case of Carijona, that could have already happened at the Proto-Taranoan stage. In all four cases, it is possible that the verb had S_A status at the time of the extension, resisting and keeping its old marker, but it is also possible that it was not even a potential target due to its S_P status. On the other hand, the class change must have happened before the split-up of Tiriyó and Akuriyó, and therefore this verb resisted the extension of Akuriyó *k-*. Likewise, it seems very likely that the class change took place before the extension of Proto-Pekodian **k-*. Otherwise, the newly-turned-S_A verb would have taken on archaic and lexically heavily restricted **w-*, either in Proto-Taranoan, Proto-Xinguan, or Arara.

3.6 **e-pɨ* 'to bathe'

This verb resisted extensions in Proto-Pekodian (Section 2.1) and Akuriyó (Section 2.4), but is a regularly inflected S_A verb elsewhere. Verbs for intransitive 'to bathe' are usually detransitivized derivations of transitive roots in Cariban languages, which are reflexes of **pɨ*, or **kupi* in some Venezuelan languages (Table 22). As we have shown in Section 2.1, Proto-Pekodian can be reconstructed as having the pair **ipɨ* (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 entirely mysterious; we are not aware of **i-* as a reflex of the detransitivizer in Pekodian, see also Meira et al. (2010: 506). However, it should be noted that other languages also show unexpected devel-

opments in this verb, considering the apparent glide insertion in Waiwaian or the chaotic distribution of **pɨ* and **kupi* in Venezuelan languages.

Table 22: Comparison of intransitive and transitive 'to bathe' (Derbyshire 1979: 198; R. E. Hawkins 1998: 192, 203; Alves 2017: 150, 162; Pachêco 1997: 103; Campetela 1997: 123; Meira 2003a: 4, 2005: 285, 1999: 697; Gildea 1994: 87; Camargo & Tapinkili 2010: 24, 52; Meira 2000: 218; Courtz 2008: 304; Cáceres 2011: 439, 454; Stegeman & Hunter 2014: 37; de Armellada 1944: 34, 129; M.-C. Mattéi-Müller 1994: 8, 294; p.c., Spike Gildea)

(a) Reflexes of **e-pɨ* 'to bathe (INTR)'

Language	Form							
Werikyana	*eehɨ*			ee	-	h	ɨ
Hixkaryána	*ewehɨ*	e	w	e	-	h	ɨ
Waiwai	*ejeɸu*	e	j	e	-	ɸ	u
Arara	*ibɨ*			i	-	b	ɨ
Ikpeng	*ip*			i	-	p	
Bakairi	*i*			i			
Tiriyó	*epɨ*			e	-	p	ɨ
Akuriyó	*epɨ*			e	-	p	ɨ
Wayana	*epɨ*			e	-	p	ɨ
Apalaí	*epɨ*			e	-	p	ɨ

(b) Reflexes of **e-kupi* 'to bathe (INTR)'

Language	Form							
Kari'ña	*ekupi*	e	-	k	u		p	i
Ye'kwana	*eʔhi*	e	-			ʔ	h	i
Kapón	*ekuʔpi*	e	-	k	u	ʔ	p	i
Pemón	*ekupɨ*	e	-	k	u		p	ɨ

(c) Reflexes of **ə-kupi* 'to bathe (INTR)'

Language	Form						
Panare	*akupɨ*	a	-	k	u	p	ɨ

(d) Reflexes of **(ɨ)pɨ* 'to bathe (TR)'

Language	Form			
Werikyana	*ɨhɨ*	ɨ	h	ɨ
Hixkaryána	*ɨhɨ*	ɨ	h	ɨ
Waiwai	*pɨ*		p	ɨ
Arara	*ɨp*	ɨ	p	
Ikpeng	*ɨp*	ɨ	p	
Bakairi	*ɨ*			ɨ
Tiriyó	*pɨ*		p	ɨ
Akuriyó	*pɨ*		p	ɨ
Wayana	*upɨ*	u	p	ɨ
Apalaí	*pɨ*		p	ɨ
Ye'kwana	*ɨhɨ*	ɨ	h	ɨ
Pemón	*pɨ*		p	ɨ
Panare	*ɨpɨ*	ɨ	p	ɨ

(e) Reflexes of **kupi* 'to bathe (TR)'

Language	Form					
Kari'ña	*kupi*	k	u		p	i
Kapón	*kuʔpi*	k	u	ʔ	p	i
Panare	*kupɨ*	k	u		p	ɨ

4 Discussion

In Section 3, we reconstructed the verbs which were unaffected by the incomplete extensions discussed in Section 2. Table 23 shows what verbs were affected by which extensions, except for the *e*-initial Akuriyó verbs unaffected by the extension of *k*-. In a few cases we do not know the first person form, in others we have reason to believe that the verb does not occur at all or at least not inflected for first person, and in the case of 'to go down' we do not know whether or when the switch to S_A happened. The patterns in this table make clear just how pervasive the tendency for certain verbs to resist innovative markers is. Every × stands for a language in which this particular S_A verb has an archaic first person form, while regularly inflected S_A verbs have an innovative form.

These patterns suggest that there is some strong motivation for these verbs to not be affected by innovative markers. To illustrate: the first three verbs all retained their old marker in at least five individual innovations. The question arises what properties unite these verbs and make them so conservative. We will discuss possible answers to this question in Section 4.1, using Bybee's (1985) network model of morphology.

4.1 Possible motivations for archaicity

The most well-known contribution regarding irregularity in the lexicon is Bybee (1985) with her network model of morphology, which seems 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 new verbs in certain dialects: *sniːk–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, phonological, and morphological similarity – the English strong verbs are an example for a phonologically motivated network. Another important factor in the 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 the diachronic perspective on Cariban we are taking here, the prediction is that a) semantically/phonologically/morphologically similar verbs will be affected by person marker extensions, and b) high-frequency verbs will tend to resist them and thus remain archaic.

When considering the verbs that resisted any of the extensions investigated (Table 23), a salient morphological property emerges: Most of the verbs lack a reflex of the detransitivizer **ətə/e-*, which normal S_A verbs do possess (Section 1.2.3). This was already noted by Meira

Table 23: Overview of extensions and (un-)affected verbs

	*ka[ti] 'say'	*ɨtə[mə] 'go'	*a[p] 'be-1'	*eti 'be-2'	*(ət-)jəpɨ 'come'	*ɨpɨtə 'go down'	*e-pɨ 'bathe'
Proto-Waiwaian *k-	×	×	×	×	–	N/A	✓
Hixkaryána	×	×	×	×	–	N/A	✓
Waiwai	×	(✓)	×	×	–	N/A	✓
Proto-Pekodian *k-	×	×	×	×	×	×	×
Arara	×	×	×	×	×	×	×
Ikpeng	×	✓	–	×	✓	?	×
Bakairi	×	×	×	×	✓	✓	×
Proto-Tiriyoan *t-	×	×	×	×	×	N/A	✓
Tiriyó	×	×	×	×	×	N/A	✓
Akuriyó	×	×	×	?	×	N/A	✓
Akuriyó *k-*	×	×	×	?	×	×	×
Carijona *j-*	×	×	×	✓	✓	N/A	?
Yukpa *j-*	?	×	✓	✓	–	N/A	–

✓ affected; × not affected; ? unknown first person prefix; – does not occur; (✓) affected with surviving old marker; N/A not meaningfully answerable

(1998) for the group of Proto-Taranoan verbs taking irregular first person *w-:

> This category includes a small number of stems, among which 'to go', 'to come', 'to say', [...][19] and the copula. These are basically the verbs that are not synchronically or diachronically detransitivized, yet belong to the A conjugation. (Meira 1998: 112)

A further common property is phonological in nature, since regular S_A verbs all have reflexes of *ətə/e-, they all begin with reflexes of *ə or *e. Finally, at least the first four verbs in Table 23 are very likely the most frequent S_A verbs. The correlation between the absence of a detransitivizer and frequency 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". There are no semantic patterns that would be obvious, which is not unsurprising given the lack of semantic patterns in the split-S system overall (Section 1.2.3). This leaves us with three possibly relevant factors: phonology, morphology, and frequency.

To test these factors, we defined a test for each to see what fate it would predict for a given verb. The morphological criterion was of course the presence or absence of a detransitivizer, which predicted affectedness or unaffectedness, respectively. The phonological pat-

[19] The original list includes 'to go down' and 'to defecate'. While these verbs are indeed underived S_A verbs in Tiriyó, no irregular first person *w- can be reconstructed. As their inclusion in the list was most likely an error, we have omitted them here.

Table 24: Proportion of (un-)affected verbs accurately predicted by potential factors

	morphological	phonological	frequency
Proto-Waiwaian *_k_-	5/5 (100%)	4/5 (80%)	5/5 (100%)
Proto-Pekodian *_k_-	7/7 (100%)	5/7 (71%)	4/7 (57%)
Proto-Tiriyoan *_t_-	5/6 (83%)	4/6 (67%)	5/6 (83%)
Akuriyó _k_-	5/6 (83%)	6/6 (100%)	3/6 (50%)
Carijona _j_-	3/5 (60%)	5/5 (100%)	4/5 (80%)
Yukpa _j_-	1/3 (33%)	3/3 (100%)	1/3 (33%)

tern uniting regular derived S_A verbs is _e_- and _ə_/_o_-initialness, so we checked whether the initial segment of each verb stem fit that criterion. To increase the accuracy of prediction, we then changed the criteria on the initial segment for some languages, based on the patterns we noticed, see below. A major obstacle to investigating frequency effects was that we are not aware of frequency counts of individual lexemes for any Cariban language. In absence of such data, we simply categorized the verbs based on the following assumptions: a) 'to say', 'to go', and 'to be' are the most frequent S_A verbs; and b) 'to come', 'to go down' and 'to bathe' are much less frequent. The prediction was then that the four frequent verbs would retain their old marker, and the three infrequent ones would innovate, but it should be kept in mind that any statements about frequency effects are based on assumptions.

Finally, we compared the information about (un-)affectedness of verbs (Table 23) with the predictions and established the proportion of verbs whose behavior was correctly predicted, by each factor, for each extension. The results of that comparison are shown in Table 24. As can be seen, there are quite a few combinations of factor and extension where 100% of the behavior was correctly predicted. However, it is important to understand that the proportions shown in that table only refer to the group of seven verbs in Table 23, i.e. those that are attested as resisting at least one extension. For each extension, there are many run-of-the-mill S_A verbs which are regularly inflected. The morphological and phonological criteria would in each case correctly predict 100% of these regular verbs; if our assumptions about frequency were indeed accurate, so would this criterion.

The extent of the extensions in both Proto-Waiwaian and Proto-Pekodian is fully predicted by the presence or absence of a detransitivizer. In Proto-Waiwaian, only the four underived S_A verbs were not affected, while all other S_A verbs (with *_ətɛ_/_e_-) have regular *_k_-. The case for a morphologically conditioned lexical network is even stronger in Proto-Pekodian, where all seven unaffected verbs have no detransitivizing prefix, contrasting with a plethora of derived S_A verbs with *_k_-. Note that it is necessary for this analysis to assume that the idiosyncratic evolution of *_e-pɨ_ 'to bathe (INTR)' to *_ipɨ_ effectively removed the transparent derivational prefix. Not seen in Table 24 are subsequent evolutions in the daughter languages: First, we argued that both Ikpeng and Bakairi regularized the paradigm to use forms with de-

transitivizer for first person, which in both languages led to an introduction of *k-*.[20] Second, the subsequent introduction of *k-* to Ikpeng *aran* 'to go' (< **ɨtən*) potentially suggests a reanalysis of *ar* as a detransitivizer.

Three extensions are fully predicted by phonological criteria, those in Akuriyó, Carijona, and Yukpa. We have already discussed Akuriyó *k-* (Section 2.4), which only appears on *ə*-initial verbs. In Carijona, the extension of *j-* affected *e-* and *ə*-initial verbs, including *eh* 'to come' or *eʧi* 'to be', which do not have a detransitivizing prefix. Only *ka* 'say', *təmə* 'go', and *a* 'be-1' did not take on *j-*. Similarly, the extension of Yukpa *j-* can succinctly be characterized as affecting all vowel-initial verbs; the only verb attested as unaffected is C-initial *to* 'to go'. It may be worth noting that the three extensions which we do not reconstruct to a proto-language (i.e., which are more recent) seem to be phonologically conditioned.

There is one extension where our model of frequency correctly predicted 100% of (un-)affected verbs, in Proto-Waiwaian. The four unaffected S_A verbs are the ones we assume to be the most frequent. Incidentally, they are also the only ones without a detransitivizer, so both factors predict the same outcome. This brings us to the cases where not all outcomes were correctly predicted; in many cases, the proportion is still quite high. For example, the morphological criterion accounts for the behavior of 5/6 verbs in the case of Proto-Tiriyoan; the one divergent verb is **əʔepɨ* 'to come', where the synchronic presence of a detransitivizer is debatable. Similarly, frequency correctly predicts the behavior of 4/5 verbs in the extension of Carijona *j-*; the only incorrect one is *eʧi* 'to be'. Or consider 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) one of the few S_A verbs without a reflex of **ət*(*e*)*-*/*e-*; b) the only C-initial S_A verb in Proto-Cariban; and c) highly frequent. That is, one would expect it to resist morphological innovation based on all three factors: morphological makeup, phonological form, and frequency. Thus, while Bybee's (1985) model for the most part correctly predicts the patterns, it is not always clear which is the decisive conditioning factor, as they are strongly interrelated in Cariban S_A verbs.

4.2 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!

[20] If one instead assumes that first person **w-ebɨ-* and **k-əd-ebɨ-* already co-existed in Proto-Pekodian, the clear correlation remains.

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