

THE ORIGINS OF THE AUSTRONESIAN VOICE SYSTEM AND SUBJECT-ONLY RESTRICTION

GAŠPER BEGUŠ AND MAKSYMILIAN DĄBKOWSKI
UNIVERSITY OF CALIFORNIA, BERKELEY
MANUSCRIPT *as of* MAY 6, 2025

ABSTRACT The Austronesian voice system (AVS) is among the most typologically intriguing and well-studied phenomena in syntax. Previous diachronic accounts have used the comparative method to argue that either the voice function or the nominalization function of the voice affixes should be reconstructed to Proto-Austronesian (PAN). In this paper, we use internal reconstruction to lay out a tentative alternative. First, we assume that both the voice and nominalization functions go back to PAN. Second, we suggest that the non-active voice affixes originated in Pre-PAN as prepositions, and were later incorporated into the verb complex as postverbs. The nominalizing function, on the other hand, arose through an inter-stage with compounds. This proposal accounts for several properties of AVS, including the prominence of arguments promoted to subject position and the subject-only restriction, and is supported by a typological parallel in Dinka.

KEYWORDS historical syntax, morphosyntax, focus, diachronic, voice, internal reconstruction

1 INTRODUCTION

The Austronesian voice system (henceforth AVS) is one of the most well-known and thoroughly investigated syntactic properties of the family, appearing in many Austronesian languages (cf. Wouk and Ross, 2002).¹ In such languages, a change in verbal morphology corresponds to changes in argument marking and restrictions on \bar{A} -extraction. Languages that exhibit the Austronesian voice system are commonly referred to as *Philippine-type languages* (Chen, 2017). A typical Philippine-type language can have up to four voices, including the actor voice (AV), patient voice (PV), locative voice (LV), and instrumental voice (IV), as shown in Paiwan (1).²

- (1) PAIWAN VOICES (Ferrell, 1979, p. 202)
- a. ACTOR VOICE
- q(m)alup a caucau tua vavuy i gadu tua vuluq*
(AV)hunt PIVOT man CM pig LOC mountain CM spear
“The man hunts wild pigs in the mountains with a spear.”

¹ Various terms for this phenomenon have been proposed in the literature, the most common being “voice” and “focus.” We will use the term voice throughout this paper, in keeping with the majority of the literature. See Blust (2002, 2013) and Ross and Teng (2005), for an overview of terminology in the literature.

² Glosses and translations are sometimes modified from the original source for uniformity in the current article. Non-standard glossing abbreviations include: AV = actor voice; BV = benefactive voice; CM = case marker; IV = instrumental voice; LV = locative voice; PV = patient voice.

b. PATIENT VOICE

qalup-en nua caucau a vavuy i gadu tua vuluq
 hunt-PV GEN man PIVOT pig LOC mountain CM spear

“The man hunts *wild pigs* in the mountains with a spear.”

c. LOCATIVE VOICE

qalup-an nua caucau tua vavuy a gadu tua vuluq
 hunt-LV GEN man CM pig PIVOT mountain CM spear

“The man hunts wild pigs *in the mountains* with a spear.”

d. INSTRUMENTAL VOICE

si-qalup nua caucau tua vavuy i gadu a vuluq
 IV-hunt GEN man CM pig LOC mountain PIVOT spear

“The man hunts wild pigs in the mountains *with a spear*.”

One argument in each clause has a special, “pivotal” role, as indicated by its marking, discourse prominence, and ability to \bar{A} -extract; the semantic role of this privileged argument is indicated by a verbal voice affix. In Paiwan (1), that argument is marked with *a* PIVOT.

Across Philippine-type languages, there is some variation in the number of distinct voices, their semantics, and the case marking of their internal arguments, but the basic descriptive facts remain the same. Theoretical analyses of AVS, however, are quite heterogeneous: the phenomenon has been characterized as a primarily valence-changing phenomenon, promoting different arguments to subject position (Guilfoyle, Hung, and Travis, 1992; Guzman, 1976; Mithun, 1994; Payne, 1982) or as an information-structural phenomenon, identifying one argument as the focus or topic (Chen, 2017; Pearson, 2001, 2005; Rackowski, 2002; Rackowski and Richards, 2005; Richards, 2000; Schachter, 1976; Shibatani, 1988).³ All these proposals converge on the idea that the constituent indexed by a particular voice marker is privileged in some way, either discursively (pragmatically) or syntactically. We will refer to this privileged argument as a “subject,” though we do not commit to any particular synchronic analysis of AVS.

The other fundamental property of AVS is a subject-only restriction on \bar{A} -extraction (henceforth SOR), whereby the privileged argument is uniquely available for relativization, topicalization, focus, and/or clefting (Keenan, 1976). In order to extract a clausal argument, the verb must be marked with the voice affix corresponding to that argument. In Tagalog, for example, the locative argument can only be \bar{A} -extracted when the verb appears in locative voice (2a); in any other voice that does not privilege the locative argument, such as the benefactive (2b) or actor voice (2c), extraction of the locative argument is ungrammatical.⁴

(2) SUBJECT-ONLY RESTRICTION ON \bar{A} -EXTRACTION (Rackowski and Richards, 2005, p. 566)

a. *sino an b(in)igy-an nan lalaki nan bulaklak?*
 who NOM (PERF)give-LV GEN man GEN flower

“Who did the man give the flower to?”

³ Besides the question of whether the system regulates voice or information structure, scholars also disagree on whether arguments in the clause structure are base-generated where they surface or whether the surface structure is derived via movement (Chung and Polinsky, 2009).

⁴ For the extraction of non-DP arguments in AVS languages, see Kroeger (1993, 43ff), Erlewine (2018), and Hsieh (2020). (Note that genitive agents may be extractable under certain circumstances; Erlewine, 2018; Hsieh, 2020.)

- b. **sino aŋ i-b(in)igay naŋ lalaki aŋ bulaklak?*
 who NOM BV-⟨PERF⟩give GEN man NOM flower
 “Who did the man give the flower to?”
- c. **sino aŋ n-ag-bigay aŋ lalaki naŋ bulaklak?*
 who NOM AV-ASP-give NOM man GEN flower
 “Who did the man give the flower to?”

Given the close link between SOR and the larger voice system, it seems likely that the two are diachronically related. As such, proposals that derive AVS should also seek to explain the \bar{A} -extraction restrictions that accompany it.

The AVS is uncontroversially reconstructable to Proto-Austronesian (see e. g. Aldridge, 2021; Blust, 2015; Blust and Chen, 2017; Ross, 2006, 2009, 2012; Wolff, 1973), as it is found all of the ten primary Austronesian branches (Aldridge, 2021). While the reconstructed forms are fairly standard, the functions of these affixes in Proto-Austronesian (henceforth PAN) and its later stages are disputed. Common to most proposals is the observation that voice affixes often serve a second function as nominalizers. In Paiwan, for example, the patient voice affix *-en* can appear with the verb *kan* ‘eat’ as a matrix clause voice affix (3a) or on the nominalized verb meaning ‘food’ (3b).

- (3) VOICE AND NOMINALIZING FUNCTIONS OF *-EN* IN PAIWAN (Chen, 2017, p. 3)
- a. *kan-en ni kama a vasa*
 eat-PV GEN father PIVOT taro
 “Father ate the taro.”
- b. *t(ə)m(alagalj aken tua tja kan-en*
 ⟨AV⟩COOK 1SG.PIVOT CM 1PL.EXCL.POSS eat-NMLZ
 “I cooked our food (thing to be eaten).”

Diachronic accounts of AVS typically assume that these two affix functions are distinct, and that only one of these functions can be reconstructed to PAN. One major strand of literature, beginning with Starosta, Pawley, and Reid (1981), takes the nominalizing function of these affixes to be original and reconstructable to PAN, while the voice function developed secondarily (Aldridge, 2016; Kaufman, 2009a,c, 2017; Ross, 2009, 2012; Zeitoun and Teng, 2016). A primary source of evidence for this analysis is the distribution of the voice function—while the nominalization function is found in all branches, a few primary branches, namely Puyuma, Rukai, and Tsou, do not display the voice function. To account for this, these proposals suggest that the voice function was innovated later by a primary branch that grouped all Austronesian (henceforth AN) languages to the exclusion of Puyuma, Rukai, and Tsou. However, as Chen (2017) and Blust and Chen (2017) point out, it is also possible that these languages lost a voice function that was present in PAN, such that the presence of both functions in some languages is a retention from the proto-language.

In this article, we offer an alternative pathway for the development of AVS. Following Blust and Chen (2017) and Chen (2017), we assume that both voice and nominalizing functions can be reconstructed to PAN. We restrict our focus instead to the development of this system

prior to PAN, and use internal reconstruction to speculate on the Pre-PAN stages. Drawing on work by Peterson (2007) and Starosta, Pawley, and Reid (1981), we propose that the non-active voice affixes developed from a series of prepositions, which were incorporated into the verbal complex as “postverbs” (functional elements following the verb) or applicatives. The active voice affixes, on the other hand, developed from reflexives and were incorporated into the voice system later under pressure from the non-active voices. The preposition proposal provides a plausible historical explanation for the development of AVS which allows us to account for the prominence of pivot arguments as well as the subject-only restriction on extraction. Finally, our proposal draws support from a similar trajectory attested in Dinka, a Western Nilotic language of Sudan (Erlewine, T. Levin, and van Urk, 2017; van Urk, 2015).

Our analysis relies on internal reconstruction of the syntactic stages of both the proto-language and its pre-proto-stages. We thus probe the question of how far internal reconstruction can take us when it comes to providing a diachronic explanation for typologically unusual phenomena, such as the Austronesian voice system. In doing so, we develop a methodological model that can be applied in future research on pre-stages of typologically unusual or comparatively sparse syntactic phenomena (Section 3).⁵

2 THE PROTO-AUSTRONESIAN VOICE SYSTEM

The current proposal focuses specifically on the development of the indicative voice affixes, which correspond to the four well-known voice morphemes originally reconstructed by Wolff (1973). These four PAN morphemes indicate actor voice, patient voice, locative voice, and instrumental voice.⁶ Standard reconstructions of the non-past-voice affixes are given in (4).

| | | | |
|--|-----------------|-----------------|-----------------------|
| (4) PAN VOICE-MARKING INDICATIVE AFFIXES | | | (Blust, 2013, p. 438) |
| ACTOR | PATIENT | LOCATIVE | INSTRUMENTAL |
| <i>*⟨um⟩stem</i> | <i>*stem-en</i> | <i>*stem-an</i> | <i>*Si-stem</i> |

In this section, we discuss each of the four reconstructed voices and survey the variety of functions they have across Austronesian. A distinction is typically made in the literature between the three non-active voice affixes, **-en*, **-an*, and **Si*,⁷ and the active voice **⟨um⟩*. We

⁵ We note that our proposal has no immediate bearing on recent disputes on subgrouping, particularly the status of Formosan languages like Puyuma, Rukai, and Tsou with respect to the rest of the family. The voice system itself has often been used as foundational evidence for subgrouping, as is the case for the Nuclear Austronesian hypothesis proposed by Ross (2009, 2012) and the Ergative Austronesian hypothesis proposed by Aldridge (2016). Adopting the present analysis would invalidate these arguments as they currently stand, given that we reconstruct both verbal and nominal functions of the voice affixes for PAN. Nevertheless, the loss of one of these functions in a language or set of languages (e. g. Puyuma, which shows only nominal functions) could continue to serve as evidence for subgrouping, a line of inquiry which we do not pursue here.

⁶ Wolff (1973) terms the voices “active,” “direct passive,” “instrumental passive,” and “local passive.” Various other terminology has been employed in the literature: subject voice, object voice, etc. In this paper, we will refer to actor, patient, instrumental, and locative voice, grouping the latter three voices as “non-active” voices.

⁷ There are two variants of the prefix, **Si-* and **(S)a-*, and the distribution between the two is not entirely clear (Blust, 2013, p. 381). The first prefix is reported in the Formosan languages Pazeh, Rukai, and Amis, as well as in Malagasy. The latter is attested in Formosan Atayal, Bunun, and Paiwan, as well as in extra-Formosan Itbayaten, Ilokano, Bontok, Pangasinan, Tagalog, Bikol, and Cebuano (Blust, 2013, p. 381). One way to explain the existence of the two prefixes is to assume that one had a benefactive function and the other an instrumental function.

adopt this distinction as well, for reasons we outline below, and account for it in our proposal. We also address the infix **⟨in⟩*, which marks perfectivity. In [Section 4](#), we turn to previous diachronic proposals of AVS. Besides the non-past and perfective forms, there are three other reconstructed paradigms of voice-marking affixes in PAN: optative/hortative, imperative, and dependent. We briefly discuss those paradigms in [Section 4.5](#).

2.1 Affix functions

Across Philippine-type languages, the three non-active affixes are often described as having two functions: a voice function, which appears in matrix clauses and interacts with the extraction restriction, and a nominalizing function, which appears in derived nominals and relative clauses. The resulting nominalizations correspond to the semantic role privileged by each affix; **-en* creates patient nominals, **-an* creates locative nominals, and **Si-* creates instrumental nominals. Examples of such nominalizations are provided in (5).

- (5) NOMINALIZING FUNCTIONS OF NON-ACTIVE AFFIXES
- a. THAO **-en*: *kan* ‘eat’ vs. *kan-in* ‘food’ (Blust, 2013, p. 395)
 - b. TAGALOG **-an*: *títis* ‘cigar(ette) ash’ vs. *títis-án* ‘ash tray’ (Blust, 2013, p. 395)
 - c. SEEDIQ **Si-*: *-uyas* ‘sing’ vs. *s-uyas* ‘instrument for singing’ (Chen, 2017, p. 215)

The nominalizing functions are present even in languages that do not have a Philippine-type voice system. For instance, **-en* shows a nominalizing function in Yami, Ilokano, Casiguran Dumagat, Botolan Sambal, Kalagan, Kalamian Tagbanwa, Tausug, and Malagasy, as well as non-AVS languages such as Mukah Melanau, Kayan, Palauan, Tongan, Rennellese, Nukuoro. In this latter group of languages, however, the nominalizing function of **-en* is limited to a single noun derived from the verb ‘to eat’ (Blust, 2013, pp. 395–6).

As mentioned earlier, there are three higher-order languages where only the nominalizing function is found: Puyuma, Rukai, and Tsou. In Puyuma, for example, the finite transitive verb in (6a) takes the suffix *-aw*, which never appears in relative clauses; the relative clause verb in (6b), by contrast, takes the perfective aspect marker *⟨in⟩* and the nominalizing *-an*. The lack of a matrix voice function for the non-active voice affixes in these three languages is notable, and has spurred a number of proposals for subgrouping (as we discuss in [Section 2.2](#)).

- (6) PUYUMA *-AN* NOMINALIZES ONLY (Teng, 2008)
- a. *tu-trakaw-aw na paisu kan Isaw*
3.GEN-steal-TR DEF.NOM money SG.OBL Isaw
 “Isaw stole the money.” (p. 147)

Evidence for such an analysis comes from a systematic gap that we observe for **(S)a-*. Specifically, the **(S)a-* prefix never marks the benefactive voice, whereas **Si-* marks both instrumental and benefactive, as well as some other relationships (Blust, 2013, p. 381). This distributional pattern suggests a stage in the development of PAN in which **(S)a-* marked instrumental and **Si-* benefactive, following which the **Si-* prefix spread to the instrumental function and became the productive prefix for this function in some branches (Blust, 2013, p. 381). Following Wolff (1973), Blust (2013, p. 381) proposes that instrumental and benefactive voice go back to the same affix, which showed complementary distribution based on function: for animate arguments, it marked instrumental function, and for inanimate arguments, benefactive function.

- b. *ala amuna sadru [tu=tr<in>ekelr-an] na asi*
 maybe because many 3-⟨PRF⟩drink-NMLZ DEF.NOM milk

“Maybe because the milk he drank is a lot.”

(p. 105)

The nominalization function is one way that the non-active voice affixes, **-en*, **-an*, and **Si-*, are typically contrasted with the active voice **⟨um⟩*, which is said to have primarily verbal functions. While this point has been disputed (Chen, 2017),⁸ there are other ways in which **⟨um⟩* differs from the other three affixes. The first is a morphological difference: the non-active voices are either suffixal or prefixal, while **⟨um⟩* is an infix. Second, the voice-marking function of **⟨um⟩* is found in languages that do not show voice functions for the other three affixes. In Puyuma, which only shows nominalization functions for the non-active affixes, the infix *⟨em⟩* (from **⟨um⟩*) marks active voice in matrix clauses (7).

- (7) PUYUMA *⟨EM⟩* MARKING MATRIX ACTIVE VOICE

(Teng, 2008, p. 47)

trakaw dra paisu i Isaw
 ⟨AV⟩steal ID.OBL money SG.NOM Isaw

“Isaw stole money.”

Third, while the non-active affixes show (at most) two functions, namely voice and nominalization, **⟨um⟩* and its derivatives show additional functions linked to transitivity and inchoativity. There are three affixes in PAN that have been connected to active voice marking: **⟨um⟩*, **manj-*, and **mar-*. Only **⟨um⟩* can be reliably reconstructed to PAN; **manj-* and **mar-* (originally from **⟨um⟩* + **panj-* and **par-*; Wolff, 2018) are likely a later, Malayo-Polynesian innovation. All three affixes feature additional functions besides the voice marking function (Blust, 2013): **⟨um⟩* can mark intransitivity and inchoativity (p. 383), **manj-* functions as a transitivity marker (p. 378) and **mar-* appears on intransitives/reflexives and forms denominative verbs (p. 378–9).

The affix **⟨um⟩* shows both intransitive marking and inchoative marking functions (Blust, 2013, p. 383). Although these functions have been noted in the literature, no adequate explanation has yet been proposed for their origins. As Blust (2013, p. 383) notes, PAN reconstructions with **⟨um⟩* are “almost always intransitive;” this function is even more prominent in languages that innovate active voice morphology and introduce prefixes such as **manj-* to their system that predominantly appear on transitive verbs. The fact that verbs with **⟨um⟩* are in PAN intransitive (even if this is just a tendency) suggests that, at some stage of development, **⟨um⟩* had a function associated with intransitivity. The third function of **⟨um⟩* and its origins are even less discussed: data show that reflexes of **⟨um⟩* produce an inchoative reading (Blust, 2013, p. 383), though this has been debated.⁹ The inchoative function can clearly be seen in Western Malayo-Polynesian (8).

⁸ Chen (2017) notes that **⟨um⟩* does appear to have a nominalizing function in agent relative clauses in a number of languages, including Seediq; the same is noted in Starosta, Pawley, and Reid (1981).

⁹ It is not entirely clear whether this function can be reconstructed for the proto-language as well. There are two possibilities: (a) to assume that **⟨um⟩* functioned as an inchoative marker already in PAN, but was preserved in this function only in Western Malayo-Polynesian; or (b) to assume that the infix developed the function of forming inchoatives only in Western Malayo-Polynesian. The first option seems much more probable, as it would be difficult to imagine a development from voice marking to inchoative marking.

- (8) INCHOATIVE FUNCTION IN WESTERN MALAYO-POLYNESIAN (Blust, 2013, p. 383)
- a. BONTOK: *bikas* ‘energetic’ vs. *b(um)ikas* ‘he is becoming energetic’
 - b. TAGALOG: *sakit* ‘pain’ vs. *s(um)akit* ‘become painful’
 - c. TINDAL DUSUN: *gayo* ‘big’ vs. *g(um)ayo* ‘become big’
 - d. MUKA: *gadun* ‘green’ vs. *mə-gadun* ‘become green; make sth. green’

The intransitive and inchoative functions of **⟨um⟩* are likely related: inchoatives and intransitives often pattern together. E. g., intransitives of certain causative verbs function as inchoatives across languages and the intransitive/inchoative morphology can be overt, related to reflexives or passives (Alexiadou and Anagnostopoulou, 2004; B. Levin and Hovav, 1995).

The prefixes **man-* and **mar-* are active-voice prefixes with an uncertain status in PAN. Besides their voice-marking function, **man-* and **mar-* appear to have additional functions: *man-* marks transitivity, while **mar-* marks intransitivity (Blust, 2013, p. 378). Because **man-* and **mar-* are a later innovation, they likely originated as transitivity/causative and intransitivity markers, respectively, and got incorporated into the voice-marking paradigm at a later stage. In Section 4.3, we will propose that at an earlier stage of development, the active voice **⟨um⟩* also originated outside of the voice-marking system and was subsequently incorporated into the paradigm. Thus, the development of **man-* and **mar-* into voice prefixes parallels our analysis of **⟨um⟩*, providing additional typological support for the proposal.

Besides transitivity/causative and intransitivity marking, **mar-* shows traces of a verbalizing function in the daughter languages, e. g. *mag-anak* ‘to have children’ from *(t-)anak* ‘child.’¹⁰ Both prefixes also have “counterpart” prefixes without the initial nasal: **pan-* and **par-*. These two prefixes had a nominalizing function: they formed instrumental nouns in Western Malayo-Polynesian (Blust, 2013, pp. 378–9). In Tagalog, for example, this function is still preserved: *pam-bili* ‘means for buying’ from *bili* ‘to buy’ or *pang-hampás* ‘sth. for hitting’ from *hampás* ‘to hit’ (Himmelmann, 2005, p. 373). The prefix **par-* is used as an innovative instrumental voice marker in Ilokano (e. g. instrumental voice *pag-íwa* ‘to slice with;’ from Rubino, 2005, p. 366). The functions of the prefixes **man-*, **mar-*, **pan-*, and **par-* are summarized in (9).

- (9) PREFIXES **MAN-*, **MAR-*, **PAN-*, **PAR-* AND THEIR FUNCTIONS
- a. **man-*, **mar-* active voice marker
 - b. **mar-* intransitives
 - c. **man-* transitives
 - d. **mar-* verbalizer
 - e. **pan-*, **par-* instrumental nouns
 - f. **par-* instrumental voice

The diverse functional properties—as well as surface phonology—of these prefixes offer crucial insight into their pre-history. First, it is very likely that the four prefixes have a common source (**pan-* and **par-*) and that the nasal-initial forms arose through a morphophonological

¹⁰ The fact that **mar-* shows traces of a verbalizing function would be another argument against the nominalizing origin of this suffix; it would be typologically rare to develop the verbalizing function from the nominalizing one.

operation from **p(um)an-* and **p(um)ar-*, i. e. through the addition of the **⟨um⟩* infix (Wolff, 1973, p. 72; Wolff, 2018; Kaufman, 2009c; Blust, 2013, p. 374). As Kaufman (2009c) points out, **pan-* and **par-* are further analyzable into the constituent **pa-* plus **η* or **R*. The reconstructed **pa-* was a causative prefix in PAN (e. g. Kayan *pə-tani* ‘make someone cry’ from *tani* ‘cry’; Blust, 2013, p. 379). The functions of **η* and **R* are more difficult to reconstruct, as they rarely appear in isolation; the **R* element probably functioned as a reflexive or middle voice marker, and **η* perhaps as a plural object/plural marker (as reconstructed in Kaufman, 2009c).

Finally, the infix **⟨in⟩* is reconstructed with a perfective aspect or past tense function (Blust, 2013; Wolff, 1973). The exact semantics is difficult to establish, and reconstructions vary; henceforth, we will term these forms past/perfective. In all but the patient voice, the infix **⟨in⟩* combined with the voice-marking affix to mark past/perfective forms. For example, Tagalog *bilí* ‘to buy’ forms the perfective benefactive voice form *i-b⟨in⟩ilí* ‘bought for’ by combining with the benefactive voice prefix *i-* and the perfective infix *⟨in⟩*. For patient voice, however, only the perfective marker surfaced and marked both perfective and patient voice. The past/perfective morphology for the four reconstructed voices is provided in (10).

| | | | | | | | | | | |
|--------------------|--|-------------------------------|---------------------|----------|--------------|--------------------|------------------|---------------------|---------------------|--|
| (10) | PAN PAST/PERFECTIVE VOICE AFFIXES | (based on Ross, 2009, p. 296) | | | | | | | | |
| | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; text-align: center;">ACTOR</td> <td style="width: 25%; text-align: center;">PATIENT</td> <td style="width: 25%; text-align: center;">LOCATIVE</td> <td style="width: 25%; text-align: center;">INSTRUMENTAL</td> </tr> <tr> <td style="text-align: center;"><i>*⟨umin⟩stem</i></td> <td style="text-align: center;"><i>*⟨in⟩stem</i></td> <td style="text-align: center;"><i>*⟨in⟩stem-an</i></td> <td style="text-align: center;"><i>*Si-⟨in⟩stem</i></td> </tr> </table> | ACTOR | PATIENT | LOCATIVE | INSTRUMENTAL | <i>*⟨umin⟩stem</i> | <i>*⟨in⟩stem</i> | <i>*⟨in⟩stem-an</i> | <i>*Si-⟨in⟩stem</i> | |
| ACTOR | PATIENT | LOCATIVE | INSTRUMENTAL | | | | | | | |
| <i>*⟨umin⟩stem</i> | <i>*⟨in⟩stem</i> | <i>*⟨in⟩stem-an</i> | <i>*Si-⟨in⟩stem</i> | | | | | | | |

Like the non-active voice affixes, **⟨in⟩* also had a nominalizing function in PAN (Blust, 2013, p. 387). The reflexes of **⟨in⟩* form deverbal (and occasionally denominal) nouns, which typically denote the event’s intended result (11). This function is consistent with the perfective reading of the stems because perfective is assessed with respect to the intended result. In other words, at some stage in the development, **⟨in⟩* likely formed perfective participial nouns. In some non-Philippine-type languages, nominalization is the only function of **⟨in⟩*.

| | | | | | | | | |
|------|--|-----------------------|---|----|--|----|---|--|
| (11) | RESULT NOUNS DERIVED WITH <i>*⟨IN⟩</i> | (Blust, 2013, p. 387) | | | | | | |
| | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; vertical-align: top;">a.</td> <td style="width: 85%;">ILOKANO: <i>bayu-en</i> ‘to mill rice, crush, bruise’ and <i>b⟨in⟩áyo</i> ‘milled rice’</td> </tr> <tr> <td style="vertical-align: top;">b.</td> <td>TAGALOG: <i>tápa</i> ‘to slice thinly, as meat’ and <i>t⟨in⟩ápa</i> ‘meat sliced thinly’</td> </tr> <tr> <td style="vertical-align: top;">c.</td> <td>HOAVA: <i>mae</i> ‘come’ and <i>m⟨in⟩ae</i> ‘people who have arrived’</td> </tr> </table> | a. | ILOKANO: <i>bayu-en</i> ‘to mill rice, crush, bruise’ and <i>b⟨in⟩áyo</i> ‘milled rice’ | b. | TAGALOG: <i>tápa</i> ‘to slice thinly, as meat’ and <i>t⟨in⟩ápa</i> ‘meat sliced thinly’ | c. | HOAVA: <i>mae</i> ‘come’ and <i>m⟨in⟩ae</i> ‘people who have arrived’ | |
| a. | ILOKANO: <i>bayu-en</i> ‘to mill rice, crush, bruise’ and <i>b⟨in⟩áyo</i> ‘milled rice’ | | | | | | | |
| b. | TAGALOG: <i>tápa</i> ‘to slice thinly, as meat’ and <i>t⟨in⟩ápa</i> ‘meat sliced thinly’ | | | | | | | |
| c. | HOAVA: <i>mae</i> ‘come’ and <i>m⟨in⟩ae</i> ‘people who have arrived’ | | | | | | | |

To summarize, the affixes we will be concerned with here include the non-active voices **-en*, **-an*, and **Si-*, which have voice and nominalization functions; the active voice marker **⟨um⟩* and its derivatives *man-* and **mar-*, which show (in)transitive and inchoative functions; and **⟨in⟩*, a past/perfective marker which also functioned as a nominalizer.

2.2 Voice and nominalizer proposals

The voice-nominalizer homophony of **-en*, **-an*, and **Si-* has provided the foundation for nearly all diachronic analyses of AVS. Proposals typically assume that only one of these functions is reconstructable to PAN, with the other function developing secondarily; we will

refer to these as “voice-first” and “nominalizer-first” hypotheses.¹¹ The latter hypothesis has been more prominent in the literature, beginning with Starosta, Pawley, and Reid (1981) and followed by Ross (2009, 2012), Kaufman (2009a, 2017), Aldridge (2016, 2017), and Zeitoun and Teng (2016). However, recent work by Chen (2017) and Blust and Chen (2017) have identified some potential flaws in the nominalizer-first hypothesis, some empirical and some theoretical. In this paper, we follow Chen (2017) and Blust and Chen (2017) in rejecting the nominalizer-first hypothesis, instead reconstructing both functions to PAN.

The voice-first hypothesis was proposed by Dahl (1973), who argued that voice affixes were present already in the proto-language while the nominalizing morphemes either developed from the voice system or had different sources. Dahl argues that the AN voice affixes do not completely correspond to nominalizers/case markers, which he takes to mean that the nominalizing function must either have developed independently or had a different origin (p. 121). Neither of these two possibilities are discussed any further, and no models are given for how this development could have taken place. Notably, the development of nominalizing affixes from voice morphemes would be (to the best of our knowledge) unprecedented.

A more thorough treatment of the origins of AVS is presented by Starosta, Pawley, and Reid (1981), who argue that the affixes originally had only the nominalizing function, from which the voice system developed. The nominalizer-first analysis has been promoted more recently by Ross (2009, 2012), who argues that the voice function of these affixes was innovated by a subgroup of languages he terms Nuclear Austronesian, which includes all Austronesian languages to the exclusion of Puyuma, Rukai, and Tsou. Additional work in this vein includes the nominalist hypothesis (Kaufman, 2009a, 2017), under which matrix clauses are synchronically nominalizations.

3 METHODOLOGICAL NOTES ON INTERNAL RECONSTRUCTION

We reconstruct both verbal and nominal functions of the voice affixes to PAN and focus on the Pre-PAN development of these two functions. In doing so, we present a tentative proposal that relies heavily on internal evidence in the absence of comparative material; as such, some clarifications on historical linguistic methodology are warranted.

Internal reconstruction has been able to illuminate typologically frequent phenomena. The question we raise in this paper is: Can it prove equally useful for reconstructing typologically unusual morphosyntactic systems? To deal with a morphosyntactic phenomenon that is typologically rare, we propose a methodological principle, which may have broad applicability beyond the confines of this study.

The methodology we propose is based on the premise that all the functions of a system’s affixes (or other morphological markers) should be identified and given due consideration. The most likely origin of all attested functions can then be reconstructed based on grammaticalization theory. More precisely, we know that morphological and morpho-syntactic change follows common trajectories and is strongly unidirectional—the development “leads from

¹¹ Blust (2002) also discusses the origins of voice system by capitalizing on word order and the correlation between voice systems and verb initiality. However, the proposal does not discuss the exact stages of the development. For yet another explanation, see Kikusawa (2012).

less grammatical to more grammatical forms and constructions” (Heine and Kuteva, 2002, p. 4). This means that we can reconstruct the most likely origin of a certain morpheme based precisely on this directionality (for a discussion on directionality, see also Haspelmath, 2004). The success of internal reconstruction in historical syntax depends primarily on the number of functions a given affix serves—the more attested functions, the easier it will be to narrow down and recover the likeliest origin. Thus, while each individual function of a morpheme may have several possible origins, this number shrinks when all the functions of a given morpheme are evaluated together. We dub our proposal the *function of origin* principle (12).

(12) FUNCTION OF ORIGIN PRINCIPLE

The most likely origin of a morpheme is the common potential source of all its attested functions. The potential sources of a morpheme are established by grammaticalization theory based on the assumed unidirectionality of morphosyntactic change.

It is crucial to distinguish the two temporal substrata within reconstructed languages. One, usually called the *proto-language* (e. g. Proto-Austronesian, Proto-Indo-European) is reconstructed using the comparative method and represents the last stage of the proto-language before a family splits up into daughter languages. An earlier stage of such a proto-language, usually called the *pre-proto-language* (e. g. Pre-Proto-Austronesian, Pre-Proto-Indo-European), is usually reconstructed using internal reconstruction and represents an earlier stage of the proto-language. This notion will be crucial in reconstructing the PAN voice system. Unlike the proposal so far, in what follows, we will not reconstruct the proto-language, but speculate on its pre-stages. For example, we will suggest that in the proto-language, the suffix **-an* had both voice-marking and nominalizing functions, whereas in the proto-stages, it functioned as a preposition.

4 A PREPOSITIONAL ORIGIN FOR THE VOICE SYSTEM

In this section, we use internal reconstruction to present a plausible alternative path of development for the PAN voice system. We propose that both the voice marking function and the nominalizing function of **-en*, **-an*, and **Si-* were present already in PAN. Our account seeks to explain how these two functions developed in PAN by reconstructing the characteristics of the earlier Pre-PAN stage. If we posit that the voice and nominalization functions of the non-active affixes go back to PAN, we can reconstruct the likely origins of the voice system by identifying a single possible source for the functions found in the daughter languages based on the principle in 12. We also assume, like most of the literature, that the active voice affixes most likely had different origins than the non-active affixes, a conclusion supported by three pieces of evidence: (i) the non-active affixes are prefixes and suffixes, rather than infixes; (ii) **⟨um⟩* shows a voice function in languages that do not show voice functions for the other three affixes; and (iii) **⟨um⟩* and its derivatives show additional functions beyond voice and nominalization.

We propose that the non-active voice affixes in Proto-Austronesian originally developed from a system of prepositions in Pre-Proto-Austronesian (13). This proposal is based on the *function of origin* principle in (12)—prepositions are a likely origin in the sense that they are common to all attested functions of these affixes, namely nominalizing and voice-marking.

- (13) *PREPOSITIONS > NON-ACTIVE VOICE AFFIXES
 PAN non-active voice-marking affixes go back to prepositions in Pre-PAN.

Two different developmental paths were taken by these prepositions. On the one hand, the prepositions grammaticalized into nominalizing affixes, probably via an inter-stage with compounds. On the other hand, they were morphosyntactically reanalyzed as postverbs (verbal suffixes), causing the concomitant reanalysis and promotion of their former arguments to subject position. We also argue that the active voice markers developed differently, originating as a reflexive marker which later developed into (in)transitivity- and inchoative-marking morphemes (Section 4.3). The proposed development also provides grounds for explaining why postverbs (and, later, non-active-voice markers) surface as suffixes in PAN and why in languages like Vedic, preverbs precede the verbal head. This proposal explains another peculiar syntactic property of PAN that is often connected to the voice system: the subject-only restriction. A detailed account of how SOR follows from our proposal is provided in Section 5.

Positing a prepositional origin for PAN suffixes has several precursors in the literature, though our proposal differs in significant ways from previous accounts. Our account is in some ways similar to Pawley and Reid's (1979) and Starosta, Pawley, and Reid's (1981) proposals for the development of two different PAN suffixes: *-i and *-aken. (The suffix *-aken is no longer reconstructed to PAN.) These authors claim that the affixes *-i and *-aken go back to prepositions, which were reanalyzed as verbal affixes due to the proximity of the preposition to the verbal head. In this paper, we argue that a similar pathway holds for the non-active voice marking affixes *-en, *-an, and *Si-, as well as *-i in the non-indicative paradigms, rather than *-aken.

More recently, Peterson (1997, 2007) and Kaufman (2015b) have argued that a subset of the voice-marking affixes go back to adpositions as well. Peterson's (1997, 2007) proposal introduces an important contribution as he analyzes AN voice system as involving applicative constructions and suggests that adpositions offer the likely origin for these applicatives. Similarly, Kaufman (2015b) proposes case-marking origins for *-en and *-an.

The two proposals, however, lack an elaborate treatment of the development of the voice system and face some similar problems to those faced by the nominalizing hypothesis. Peterson (1997, 2007), for example, assumes that only location and instrument voice markers go back to adpositions: for active and patient voice markers, he follows the nominalizing hypothesis, which is problematic for the reasons outlined in Section 2.2. Peterson's account of the development from adpositions to nominalizers also differs crucially from ours: he assumes that this development occurred through reanalysis of the voice-marking affixes in relative clauses. This proposal struggles to explain why nominalizing affixes can also form denominatives, not only deverbatives (as is the case in Tagalog). His account also fails to provide an explanation for how applicative constructions develop into a voice system with the prominent argument in the subject position.

In this section, we first outline the development of the nominalizing function (Section 4.1). We then discuss the development of the voice system (Section 4.2). Two instances of reanalysis take place along the voice pathway. First, prepositions are reanalyzed as applicative postverbs. Second, the applied argument is reanalyzed as the subject. We suggest that the active voice *⟨um⟩ developed from a Pre-PAN reflexive, which got incorporated into the voice system by

analogy with the non-active voice affixes (Section 4.3). We propose that the past/perfective *⟨in⟩ ultimately goes back to a resultative marker (Section 4.4). Finally, we speculate that similar development took place in the non-indicative paradigms (Section 4.5).

4.1 *Nominalizing function*

The proposal that non-active-voice affixes go back to prepositions lets us explain the development of affixes into nominalizers on one hand, and into voice markers on the other. For their development into nominalizers, we propose that this change occurred through an inter-stage with compounds; in other words, that the prepositions initially formed compounds with their nominal complements, and from there the nominalizing function emerged.

Postulating a compound stage aligns this developmental shift with the usual trajectory of grammaticalization. One common way to form nouns with spatial, temporal, or instrumental semantics is to compound nouns with prepositions. We can assume that the meaning of such compounds in Pre-PAN could be approximated as *‘having X_1 X_2 ,’ where X_1 is the meaning of the first member of the compound and X_2 is the meaning of the second member. Under such an assumption, we get precisely the compounds that could serve as the basis for the development from prepositions to nominalizers, e. g. Tagalog *titis* ‘cigarette ash’ > *titis-ân* *‘having ash in’ > ‘ashtray.’ From there, the affix can have easily been reanalyzed as a locative nominalizer—precisely what we have attested in the daughter languages today. This analysis holds for the other two affixes as well.¹²

4.2 *Voice-marking function*

The development of the voice-marking function is more complex. As already mentioned, AVS is, descriptively speaking, simply a way of marking the “prominent” or “pivotal” role that one particular argument has in a clause. Depending on the thematic role of this argument, different markers surface on the verb. We will argue that this “prominent” role—and the voice system itself—developed as prepositions were reanalyzed as verbal affixes. Traditionally, such verbal affixes in other language families have been labeled as *preverbs* (see Booij and Kemenade, 2003). Since the PAN voice suffixes attach to the right edge of the verb, we will refer to them as *postverbs*. There are two primary developments that transform a system of prepositions into a fully-fledged voice system: first, prepositions are reanalyzed as postverbs, which begin to surface on the verbal complex; second, the argument previously governed by the preposition is reanalyzed as a prominent argument, reinforced through pro-drop of the agent. We will discuss each of these developments in turn, starting with the reanalysis of prepositions as postverbs.

4.2.1 *Prepositions to postverbs*

Adpositions are cross-linguistically common sources of preverbs and postverbs. In fact, the usual trajectory of grammaticalization goes from (a) adverbs to adpositions and pre-/postverbs or (b) adpositions to pre-/postverbs (Booij and Kemenade, 2003, Helmbrecht,

¹² Peterson (1997, 2007) assumes that the nominalizing function developed from a reanalysis of subordinated verbal forms with voice markers, which is not impossible. However, his account cannot explain why the affixes in question formed not only deverbatives, but also denominatives, as is clear from Tagalog *titis-ân* ‘ashtray.’

2008, p. 139). When an adposition moves into the verbal domain and becomes a pre-/postverb, the semantics of the adposition get incorporated into the verbal semantics. More importantly, the corresponding argument or adjunct becomes the prominent argument in the clause, functioning structurally as a direct object. The argument then assumes the role of a patient and starts functioning as the “perceptual center,” a process that Starosta, Pawley, and Reid (1981) call “recentralization.” They propose that when **-i* and **-aken* get reanalyzed as verbal affixes, the argument previously governed by one of these prepositions starts functioning as a direct object (cf. also Peterson, 1997). We extend this explanation to the PAN affixes **-en*, **-an*, and **Si-*, and propose that they come from Pre-PAN prepositions **en*, **an*, and **Si* and propose that they get reanalyzed not as objects, but as subjects via reanalysis (Section 4.2.2).

Instances of adpositions or adverbs becoming preverbs, postverbs, or applicatives that then surface on verbs are common cross-linguistically. Adverbs and adpositions tend to surface either freely in the sentence or next to the DP that they modify, whereas preverbs and postverbs surface on the verb or in some other special position. When the adposition becomes a pre-/postverb, the argument previously governed by that adposition comes to function as a direct object, exemplified synchronically in the following example from Kinyarwanda (Peterson, 1997). The preposition *mú* in (14a) governs the noun *máazi* ‘water.’ In (14b), it becomes a postverb *-mo*. The argument previously governed by the preposition now functions morphologically and syntactically as a direct object (Peterson, 1997).

- (14) PREPOSITION FUNCTIONING AS A DIRECT OBJECT IN KINYARWANDA (Peterson, 1997)
- a. *úmwáana y-a-taa-ye igitabo mú máazi*
 child HE-PST-throw-ASP book in water
 “The child has thrown the book into the water.”
- b. *úmwáana y-a-taa-ye-mo amáazi igitabo*
 child HE-PST-throw-ASP-APP water book
 “The child has thrown the book into the water.”

Applicative constructions arising from adposition incorporation are also reported in Garrett (1990) for a number of language families. The best typological example of such a system is found in Vedic and Classical Sanskrit, where we can trace the development from adpositions to preverbs diachronically. In Vedic, *á* can function as a postposition, in which case it usually surfaces after the noun (15a). In addition, the Vedic *á* may also surface sentence-initially (15b). In the development from Vedic to Sanskrit, the postpositional *á* continues to surface adjacent to the noun, but sentence-initial uses undergo an innovation: adpositions begin surfacing on the verb instead of sentence-initially (15c).

- (15) VEDIC POSTPOSITION > CLASSICAL SANSKRIT PREVERB
- a. *índavaḥ ágmān ṛtásya yónim á*
 drops came of.order lap-ACC to
 “The drops have come upon the lap of the order.” (Kulikov, 2012, p. 725)
- b. *á yónim ványam asadat*
 to lap-ACC wooden-ACC sat.down
 “He sat down upon the wooden lap.” (Kulikov, 2012, p. 725)

- c. *evam viśvāsam ā-gaccha*
 thus faith.ACC to-go.IMP
 “Thus attain faith!”

We argue that the first stage in the development of the PAN voice system was precisely the change from prepositions to postverbs, as is the common trajectory of grammaticalization described above. This change incorporated prepositions into the verbal domain semantically and syntactically. As in Sanskrit (15c), prepositions are reanalyzed as verbal elements and begin to surface on the verb itself. Moreover, like in Kinyarwanda (14b), the argument previously governed by the preposition assumes the role of the direct object and thus becomes the prominent argument. We assume that something similar operated in Pre-PAN.

Further evidence supporting our reconstruction of the locative voice morpheme as a preposition **an* comes from the non-indicative paradigms of PAN: The instrumental voice optative/hortative marker goes back to **án-ay*, and the dependent marker goes back to **án-i* (Ross, 1995, 2002, 2009). Both are stressed (i. e. prosodically independent) and appear before the verb root (e. g. **án-ay káraw*, **án-i káraw*). Their reordering and prosodic integration with the root (i. e. **karaw-ánay*, **karaw-áni*) is likely reconstructable only for a post-PAN stage (Ross, 2002, p. 33). This suggests that **an* originated as a separate word in Pre-PAN, and became grammaticalized as a suffix only at later stages of the family’s development.

Our analysis requires the reconstruction of a Pre-PAN surface clause structure, which can be seen as a predecessor to the PAN case system reconstructed by Blust (2015) and Ross (2006). Prior to the development of the voice system, we reconstruct a Pre-PAN preposition **en-* marking the direct object. If a sentence contained additional complements or adjuncts as well, they were marked overtly by prepositions, too: the preposition **an-* (‘in, at’) for location and **Si-* (‘with’) for the instrument or related thematic roles. The subject is reconstructed as unmarked at this stage; we discuss this reconstruction further in Section 4.2.2. A schema for a Pre-PAN sentence is provided in (16).

(16) PRE-PAN SENTENCE SCHEMA

VERB *en*-DIR.OBJECT *Si*-INSTRUMENT *an*-LOCATION (NOM-)SUBJECT

The development from preposition to postverb in Pre-PAN can be exemplified using the preposition for location, **an*. As a preposition, it appears adjacent to the location DP (17a); as a postverb, it appears affixed to the verbal head (17b). (We discuss the placement of these affixes in Section 4.2.3.) The argument LOCATION assumes the prominent role as it starts functioning as a direct object.

(17) DEVELOPMENT FROM PREPOSITION TO POSTVERB

- a. PRE-PAN: VERB *en*-DIR.OBJECT *Si*-INSTRUMENT *an*-LOCATION SUBJECT
 b. PAN: VERB-*an* *en*-DIR.OBJECT *Si*-INSTRUMENT LOCATION SUBJECT

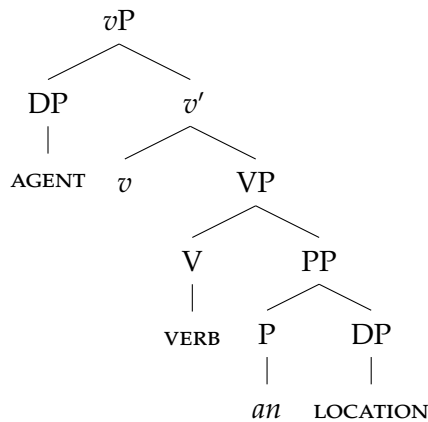
Structurally, we can model the development of postverbs in Pre-PAN as prepositions which are reanalyzed as applicatives (following Peterson, 2007). Let us assume that prepositions in PP start out as complements or adjuncts to VP. The reconstructed surface structure of a basic

sentence, containing only an agent and a location, would be VERB *an*-LOCATION AGENT. In a head-initial language like PAN, the preposition surfaces next to the verbal head. The development from prepositions to postverbs in (17) can theoretically be analyzed as rebracketing, where the preposition *an* is analyzed as forming a constituent with the preceding verb (i. e. a postverb), rather than the following DP. The original *v*P surface structure is shown in (19a). The reanalysis is schematized in (18). The resulting syntactic structure is given in (19b).¹³ Regardless of how we analyze this change structurally, the development from prepositions to postverbs is the assumed step in the history of Pre-PAN.

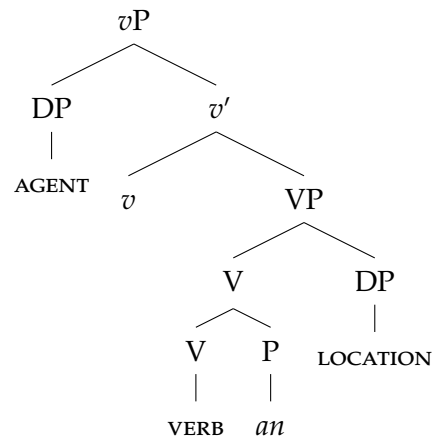
(18) REBRACKETING OF AN

$$[_{VP} [_{V} \text{VERB}] [_{PP} [_{P} \textit{an}] [_{DP} \text{LOCATION}]]] > [_{VP} [_{v} [_{V} \text{VERB}] [_{P} \textit{an}]]] [_{DP} \text{LOCATION}]]$$

(19) a.

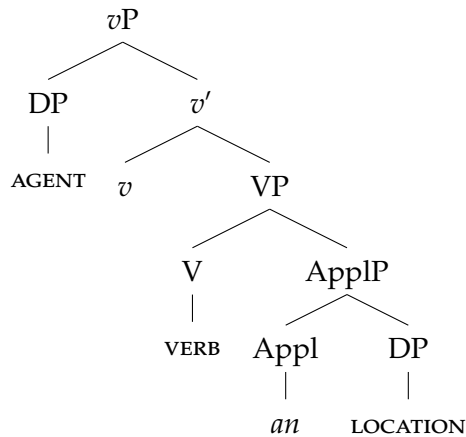


b.



The structure in (19b) is then reanalyzed as an applicative structure (for a general discussion of applicatives, see Pylkkänen, 2000). McGinnis (2001) argues that applicative heads can be low or high (or I- and E-applicatives). Because PAN was a head-initial language and the development from prepositions to postverbs occurs via rebracketing, the Appl head follows the verb, which in turn means that the P in (19b) is reanalyzed as a low applicative (20).

(20) P REANALYZED AS A LOW APPLICATIVE



After it is reanalyzed as a part of the verbal head, P now begins to surface with the verb, even after the verb moves higher in the structure to derive the verb-initial word order of PAN. Moreover, [_{DP} LOCATION] now syntactically functions as a direct object.

We can reconstruct that PAN limited the number of postverbs to one per verb, based on the fact that in PAN only one of the affixes that later developed a voice-marking function can surface on the verb. The restriction against multiple pre-/postverbs is attested cross-linguistically, e. g. in Kryts and English (Authier, 2010; Stifter, 2006). This restriction will be relevant for explaining SOR, which we address in Section 5.

4.2.2 *Reanalysis as subject*

The system that we have reconstructed so far for Pre-PAN, with prepositions developing to postverbs (17), is not yet the voice system of PAN. We turn next to explain why the promoted “prominent” argument surfaces as a subject in AN. The only device we rely on to explain the development of this voice system is reanalysis, the most common process in historical syntax. Based on pressure from unmarked focused and topicalized arguments, as well as pro-drop, arguments governed by postverbs/applicatives were reanalyzed as subjects.

Let us return to our reconstruction of a Pre-PAN matrix clause. We reconstruct the three non-active voice affixes, *-en*, *-an*, and *Si-*, as prepositions that introduce direct objects, locations, and instruments, respectively. The reconstruction of subject marking in Pre-PAN is less clear; Blust (2015) and Ross (2006) reconstruct a nominative case marking category to PAN, e. g. **ka-* or **sa-*, which we can potentially extend to Pre-PAN as well. If Pre-PAN had nominative marking, then all basic arguments in Pre-PAN were overtly marked.

Alternatively, we can also reconstruct that focused and topicalized arguments, which appear in the sentence-final position, were unmarked in Pre-PAN (as is the case in modern-day Saisiyat; Hsieh and Huang, 2006). This follows Ross (2006), who reconstructs such a “neutral” case category in PAN indicated by the null morpheme **∅-*, which marks focused arguments, topics, and various core grammatical functions (presumably as dictated by the voice system). In this way, discourse prominent arguments in Pre-PAN were identifiable by both their position and their lack of case marking.

The development of a preposition into a postverb, as described in the previous section, has two key implications for its corresponding argument: (i) the argument now functions as an object, assuming a prominent role in the clause, and (ii) the argument becomes morphologically unmarked. It is this lack of marking on a newly-promoted argument that can prompt its reanalysis as a subject. Prior to the development of postverbs, null marking was characteristic of discourse prominent arguments like focused arguments, topics, and potentially subjects.

13 Starosta, Pawley, and Reid (1981, 1982) similarly assume that prepositions were reanalyzed as surfacing on the verbal head: the preposition of a complement in verb-initial and head-initial languages surfaces next to the verbal head. However, they assume that such a reanalysis occurs with **-i* and **-aken*, not with voice-marking affixes. Moreover, their analysis requires ergative alignment for PAN. They derive the PAN “focus system” of **-i* and **-aken* through this reinterpretation based on PAN being reconstructed as ergative: “an ergative language is one in which the Patient is always the grammatical subject.” Thus, “when a Locus actant, say, was reinterpreted as Patient and lost its **i* preposition to the verb, it became the grammatical subject of the new verb, and the new **-i* suffix on the verb became a marker indicating that the subject of the sentence was situationally locational.”

As such, the argument previously governed by the preposition is reanalyzed as a discourse-prominent argument, e. g. a topic, precisely *because* it is unmarked. Given the close link between topichood and subjecthood (e. g. Li, 1976), it is then plausible that these unmarked topics were reanalyzed as subjects.

The reanalysis-to-subject was likely reinforced by instances of pro-drop, which is widespread in Austronesian (Polinsky and Potsdam, 2013) and which we reconstruct to Pre-PAN. In (21a), the locative marker *an-* still functions as a preposition. In (21b), the preposition has been reanalyzed as a postverb. Cross-linguistically, subjects often express given information or are contextually recoverable. As such, they are especially likely to be expressed with pronouns and thus dropped (see e. g. Duguine, 2017). The subject is dropped in (21c), facilitating the reanalysis of the other unmarked argument (here, LOCATION) as the new subject. (At each stage, the argument analyzed as subject is underlined.)

- (21) REANALYSIS-TO-SUBJECT REINFORCED BY INSTANCES OF PRO-DROP
- a. VERB *an*-LOCATION SUBJECT
 - b. VERB-*an* LOCATION SUBJECT
 - c. VERB-*an* LOCATION

This latter surface structure was the most likely origin of reanalysis, as at this point focused arguments, topics, or subjects were the only arguments in the clause that were not overtly marked. The development preposition > postverb paired with pro-drop, caused the argument previously governed by a preposition to surface as the only argument not overtly marked/governed by a preposition; speakers reanalyzed this argument as a subject under this strong motivation. After this reanalysis, the PAN voice system arose with all its characteristics stemming from the development described above: an argument with a prominent role gets promoted to subject position and—depending on the thematic role of the argument—different verbal affixes surface. The surface structure in (21c) is in fact the structure that we have in today's voice system; the only difference is that, after the reanalysis, the agent, previously the subject, was reintroduced with oblique preposition/case marking.

The steps reconstructed in the development of the PAN voice system are summarized in (22). This analysis crucially unifies two prominent properties of AVS: the fact that one argument assumes a prominent role and the promotion of that argument to subject. The prominent role is achieved through the reanalysis of preposition > postverb, which also produces the condition that sparks the reanalysis of the newly unmarked argument as a subject.

- (22) DEVELOPMENT OF THE PAN VOICE SYSTEM
- a. Prepositions develop into postverbs.
 - i. Postverbs surface on the verbal head.
 - ii. The argument previously governed by the preposition functions as direct object, hence the prominent role.
 - b. REANALYSIS: The unmarked prominent argument is reanalyzed as a subject. Reanalysis is reinforced by pro-drop, making the prominent argument the only unmarked argument in the clause (main characteristic of subjects in Pre-PAN).
 - i. The PAN voice system emerges as a result.

4.2.3 Voice suffixes vs. prefixal *Si-

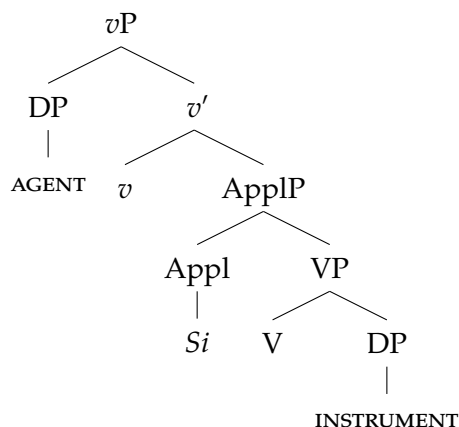
The analysis proposed above holds not only for locative *-an, but also for the other two voice-marking affixes, patient voice *-en and instrumental *Si-. However, the latter is a verbal prefix, and thus does not conform directly to the pattern described above, by which prepositions give rise to suffixal postverbs. In this section, we address this discrepancy.

The difference between the suffixal position of *-an and *-en and the prefixal position of *Si- does not pose a problem for our analysis. It is well-known that one of the standard trajectories of grammaticalization derives adverbials and prepositions from verbs. Peterson (2007, p. 165), following (Ross, 1995, p. 758), argues that *Si- goes back to a verbal element with the meaning ‘have, possess, wear.’ We suggest that this verbal origin is reflected in the fact that *Si- surfaces as a prefix. The only other two prefixes in the voice-marking paradigm, *maj- and *mar-, are also of verbal origin, and also precede the verbal head. In other words, these affixes are reconstructed to go back to (light) verbal heads that incorporate the main (notional) verb. Because PAN is reconstructed to be head-initial, the affixes originating in light verbs precede the verb instead of following it. Later in its development, *Si- joined the other affixes and became a preposition; however, its verbal origins are reflected in its placement as a prefix.

We propose that *Si- preserved aspects of its verbal nature in the fact that it precedes the verbal head, and developed into a preposition only later. It would also be feasible to assume that *Si- at some stage of development functioned as an adverb and was therefore base-generated above V in the structure; this analysis would also explain why *Si- precedes the verb. Note that, when other affixes assume the same function as *Si-, they follow the verbal head (this occurs, for example, in Chamorro; see Blust, 2013, pp. 445, 447; Starosta, 1995).¹⁴ This, again, suggests that *Si- was specially marked for preceding the verbal head; when innovation occurs, new markers follow our predictions and surface after the verbal head.

Structurally, we suggest that the verbal nature of *Si causes it to be reanalyzed as a high applicative, whereas the other voice-marking affixes (which go back to prepositions) are reanalyzed as low applicatives. This analysis assumes that the variation between low and high applicatives is not only found across languages (like English vs. Chaga), but also within languages (cf. McGinnis, 2001). The structure for *Si- we propose is given in (23).

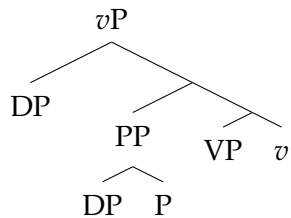
(23) *Si REANALYZED AS A HIGH APPLICATIVE



The syntactic structure of the previous Pre-PAN stages is preserved in the synchronic structure of PAN and later AN languages: Pre-PAN affixes that preceded the verbal head are now base-generated as high applicatives, whereas the ones that followed it — as low applicatives.

In PAN, prepositions (other than **Si-*) are reconstructed to be the source of postverbs that are *suffixed* to the verbal head. On the other hand, we saw that in head-final languages such as Sanskrit, postpositions are the source of preverbs that are *prefixed* to the verbal head. The structural analysis we propose is capable of deriving these facts. In a head-initial language, prepositions follow verbal heads at a stage when prepositions still surface in their base-generated position. In head-final languages, postpositions precede the verbal head (24).

(24) POSTPOSITION PRECEDING VERB



If we adopt the same rebracketing explanation for languages like Sanskrit, the affix placement follows automatically. When rebracketing occurs, the affix placement directly depends on the structure of the preceding stage, i. e. a stage where adpositions still govern the DP and surface where they are base-generated. Because in head-initial languages, prepositions necessarily follow the verbal head, the prepositional head will follow the verb after rebracketing. In head-final languages, on the other hand, the postpositional head precedes the verb and the preverb precedes the verb after rebracketing.

In sum, we propose that the non-active voice markers **-en*, **-an*, and **Si-* originated as prepositions in Pre-PAN, which were then reanalyzed as postverbs. This trajectory is capable of explaining a number of disparate properties of modern voice systems. First, upon reanalysis of the preposition as a verbal element, the argument previously governed by the preposition becomes unmarked and susceptible to reanalysis as a topic. Second, the complementary nature of the voice system can be attributed to a general restriction on having multiple pre-/postverbs, which ensures that the voice affixes could not co-occur. Third, the placement of affixes can be theoretically attributed to a distinction between high and low applicatives. Finally, and most importantly, the origin of voice morphemes as prepositions offers a clear explanation for the subject-only restriction in AN, which we describe in [Section 5](#).

Although our evidence for the prepositional origins of **-en*, **-an*, and **Si-* is strong, it is mostly indirect; direct evidence to the same effect would strengthen our proposal further. Perhaps the most promising piece of direct evidence in favor of the prepositional origins of the affixes comes from the fact that, in some languages, voice-marking affixes are reported to have a case-marking function. Kaufman (2015b) points out that in “Amis, Saisiyat, Seediq, and

14 For example, *-i* was originally a “generic locative marker **i* ‘at, on’ which has been cliticized to the preceding verb stem” (Blust, 2013, pp. 445, 447; Starosta, 1995), as seen in Malay (Blust, 2013, p. 447): *tanam* ‘to plant,’ *mə-nanam-kan* ‘to plant (object),’ and *mə-nanam-i* ‘to plant (in location) with object.’ This example shows that locative markers can become cliticized to the verb and function as a voice morpheme.

Rukai, among others, traces of either **-en* or **-an* (or even both) are found in a case-marking function on pronouns and animate nouns” (see also Kaufman 2015a). The fact that these two affixes govern pronouns (and likely served as case markers at some point) speaks strongly in favor of their prepositional origin. From a grammaticalization perspective, we know that the most common origins of case markers are adpositions.¹⁵ Conversely, these facts are highly problematic for the nominalization hypothesis: if the affixes went back to nominalizers, why would they govern pronouns (a category that clearly does not need nominalization)? More research and new data would have the potential to make the proposal above even stronger.

The only aspect of the voice system that we have not yet explained is the development of active voice affixes. We propose in the next section that active voice markers go back to the reflexive/intransitive **⟨um⟩* and the intransitive/transitive markers **man-* and **mar-*. These affixes, however, most likely did not play any direct role in the development of the voice system; rather, they simply continued to mark intransitivity/transitivity, and once the voice system was established, assumed the role of active voice marking.

4.3 Active voice **⟨um⟩*

With the non-active voice affixes reconstructed as prepositions in Pre-PAN, we are left to find a distinct origin for the active voice affixes. Recall that the only active voice affix that can be reconstructed to PAN is **⟨um⟩*. In this section, following the methodological principle in (12), we propose that **⟨um⟩* originated as a reflexive, while **man-* and **mar-* were formed by combining **⟨um⟩* with the prefixes **pan-* and **par-*. Note that the reconstructions of the active voice affixes are independent of the reconstruction of the non-active voice affixes as prepositions; when the non-active voice system developed, **⟨um⟩* marked intransitivity, which was then reinterpreted as an active voice marker to complete the voice system.

The data across AN languages show that **⟨um⟩* had three different functions in PAN (Blust, 2013): active voice, intransitivity, and inchoative marking. (The inchoative function may actually be a later innovation; nevertheless, it is still informative for the reconstruction.) We suggest that these three functions can be reconciled into a single Pre-PAN **⟨um⟩* that functioned as a reflexive marker. All three contemporary functions of the affix are easily derivable under this analysis; in other words, the most likely origin of all three functions is a reflexive precisely because the reflexive function offers a feasible origin for all three functions of **⟨um⟩*.

First, let us look into the development of reflexive > inchoative. Cross-linguistically, reflexives frequently develop an inchoative-marking function. Consider the following examples from French, Spanish, and Polish, where the reflexes of Proto-Indo-European **swé* function inchoatively (25).

- (25) REFLEXIVE > INCHOATIVE DEVELOPMENT IN FRENCH, SPANISH, AND POLISH
- a. *la porte s' est ouverte*
 the door REFL is open.FEM
 “The door opened.”

- b. *el vaso se rompió*
 the vase REFL broke
 “The vase broke.” (Déchaine and Wiltschko, 2012, p. 14)
- c. *szklanka się rozbiła*
 glass REFL broke.FEM
 “The glass broke.” (Rivero and Sheppard, 2003, p. 100)

Similar functions are also found in Bulgarian, Bosnian/Croatian/Serbian, Czech, Slovenian, Macedonian, and Slovak (Luisa Rivero, 2001, p. 170). The inchoative function of an original reflexive marker, however, is not limited to Romance and Slavic, but is the common pattern cross-linguistically. For example, in Halkomelem Salish, *-θət* marks both reflexives and inchoatives (Gerdt, 1998): *laləm-θət* ‘look after self;’ *θi-θát* ‘get big.’ Examples in (26) illustrate how a reflexive marker on transitive verbs can start functioning as an inchoative.

- (26) REFLEXIVE > INCHOATIVE IN HALKOMELEM SALISH (Gerdt, 1998, p. 152)
- | | | | |
|---------------|-----------|-------------------|------------------|
| <i>ʔajáʔθ</i> | ‘sharp’ | <i>ʔajáʔθ-θət</i> | ‘get sharp’ |
| <i>ʔijəs</i> | ‘happy’ | <i>ʔijəs-θət</i> | ‘get happy’ |
| <i>qaǰ</i> | ‘be lots’ | <i>qaǰ-θət</i> | ‘get to be lots’ |

The development from reflexive marking to intransitive marking is just as straightforward. One function of the reflexive is to remove an internal argument from the predicate; over time, this valency-decreasing function can be reanalyzed as primary, rendering the reflexive a marker of verbal intransitivity. This is a common process and is attested, for example, in Aranda, where the reflexive marker *-lhe* develops into the intransitivizer *-lhe* (Heine and Kuteva, 2002, p. 252). The proposal that **⟨um⟩* developed from a reflexive thus explains two of this morpheme’s functions: intransitivity and inchoative marking.

We propose that reflexive/intransitive **⟨um⟩* was reanalyzed as an active voice marker by analogy with the rest of the developing voice system. At a Pre-PAN stage, where the language lacked an elaborate voice system, **⟨um⟩* simply functioned as an intransitivity marker—a function that developed from the original reflexive marker and is attested still today, albeit not productively. We propose that reflexive/intransitive **⟨um⟩* was reanalyzed as an active voice marker under pressure from other affixes of the new voice-marking paradigm. The fact that, at some point, **⟨um⟩* started marking transitive verbs as well poses no problems for the proposal above. Once the affix was reanalyzed as a voice marker, it could start surfacing on transitive verbs freely by extension.

The reconstructions discussed so far explain the different positions of voice affixes by correlating them with their historical origins. The prepositions **an* and **en* grammaticalize as verbal suffixes. The light verb **Si-* grammaticalizes as a prefix. The infixal reflexive **⟨um⟩* remains an infix. The correspondences between affix positions and sources are given in (27).

15 We reconstruct the Pre-PAN **en*, **an*, and **Si-* as prepositions (i. e. appearing before the noun), while their attested uses with pronouns are suffixal (attaching to the end of the pronoun). This suggests an intermediate stage where the order of the pronoun and the adposition was reversed. For a similar development in Vedic, see (15a-b).

(27) DISTRIBUTION OF AFFIXES ACCORDING TO THEIR ORIGINS

| | | | |
|---------|--------|-------------|-----------|
| ORIGIN: | verbal | preposition | reflexive |
| AFFIX: | prefix | suffix | infix |

We can also explain why the original intransitive marker $*\langle um \rangle$ is restricted to active voice and cannot co-occur with other voice affixes. Verbs that are marked for non-active voice (patient, locative, instrumental) have to be transitive: besides the agent, the verbs need to have a least one other thematic role (patient, location, or instrument, respectively), which, under the voice system, gets promoted to subject. Since verbs with non-active voice morphology are obligatorily transitive, the intransitive marker $*\langle um \rangle$ began to surface, by default, only in active voice.

Any other trajectory of development for $*\langle um \rangle$ is hard to justify. For example, it would be difficult to argue that the active voice marker developed into an intransitive or inchoative marker, or that the inchoative marker developed into an active voice marker—it is not clear what would motivate such a change. To our knowledge, no examples of voice markers developing into inchoatives and intransitives exist; likewise, shifts from intransitive or inchoative markers to voice markers are unattested. The reflexive function is the only function that is common to all three attested functions of the $*\langle um \rangle$ infix, making it the most likely origin.

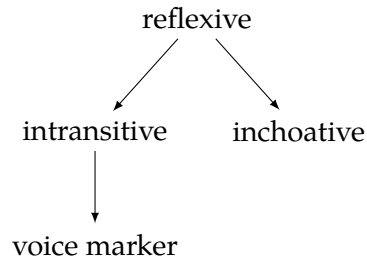
There are two further conceivable origins of $*\langle um \rangle$: (i) as a progressive/incompletive marker or (ii) as a detransitivizer. First, if we posit a progressive/incompletive origin for $*\langle um \rangle$, we should expect verbal forms marked with this marker to be frequently atelic. The atelic function could in turn be extended to an intransitive-marking function: we know that “atelic predicates tend to appear in intransitive structures” and this connection is also experimentally confirmed (Wagner, 2012, p. 467). There are, however, two problems with postulating such a trajectory. First, to our knowledge, there is no evidence for an atelic function of the infix $*\langle um \rangle$, nor is there any typological evidence of such a historical function from atelic markers entering the voice-marking paradigm at later stages in the development of the AN language family. Second, it would be difficult to derive the inchoative function of $*\langle um \rangle$ from the atelic function.¹⁶

The second alternative is that $*\langle um \rangle$ functioned as a detransitivizer, which would explain why the contemporary affix surfaces primarily on intransitive verbs. Under this hypothesis, we speculate that $*\langle um \rangle$ could have been related to the detransitivizing prefix $*u-$. (Chen (2020) reconstructs $*u-$ as ultimately going back to the verb of motion $*u$ ‘go.’) When the putative historical detransitivizing infix $*\langle um \rangle$ combined with transitive verbs, the result was intransitives; when it combined with causatives or ditransitives, a transitive verb remained. However, simple transitives are generally more common than causatives and ditransitives; thus, we should expect that $*\langle um \rangle$ would appear most frequently on intransitives. The reflexive-versus-detransitivizer debate, in this case, is more a question of time depth than of actual origin. Even if $*\langle um \rangle$ at some point functioned as a detransitivizer, its most likely origin would still be a reflexive marker, since detransitivizers themselves ultimately go back to reflexives in many cases. This argument is strengthened by several typological parallels, e. g. in Kannada (Dravidian), $-kollu$ functions as a reflexive, detransitivizer, and inchoative marker (Amritavalli, 2000); in Mizo (Tibeto-Burman), $\langle in \rangle$ functions as reflexive/reciprocal and detransitivizer (Subbarao, 2008); or in Turkish, where reflexive verb-from $-(t)n$ also

¹⁶ The latter problem, however, is less important. As noted above, the inchoative-marking function of $*\langle um \rangle$ may be a secondary innovation.

functions as detransitivizer (Kornfilt, 1997). For this reason, the reconstruction of *⟨um⟩ as a detransitivizer is still compatible with a reflexive reconstruction. The proposed development of *⟨um⟩ is summarized in (28).

(28) PROPOSED DEVELOPMENT OF *⟨um⟩



The two additional active voice affixes, *man- and *mar-, likely developed later in Malayo-Polynesian from a combination of *⟨um⟩, which now marked active voice, and *par- and *par-, which formed instrumental nouns. Given that *⟨um⟩ only appeared in active voice, its derivatives *man- and *mar- also only appeared in active voice, and were reanalyzed as active voice markers themselves. In Malagasy, for example, the reflex of *man- (Malagasy maN-, now reanalyzed as (m-)aN-) functions only as an active voice marker; indeed, this morpheme has almost completely replaced reflexes of *⟨um⟩ (Malagasy ⟨om⟩) in this function, with the latter preserved only in a small subset of verbs, e. g. t⟨om⟩ány ‘to cry’ (Blust, 2013, pp. 383, 446).

4.4 Past/perfective *⟨in⟩

There are other affixes associated with this voice-marking paradigm in AN, including the very commonly attested perfective or past-tense marker *⟨in⟩, e. g. Atayal m-agal ‘to take’ vs. m⟨in⟩agal ‘took’ (Blust, 2013, p. 385). The aspectual (perfective) function of *⟨in⟩ is illustrated in Kelabit (29) and Thao (30).

(29) KELABIT (Blust, 2013, p. 386)

- | | | |
|----|------------------|--------------------------------|
| a. | <i>bulat</i> | ‘open the eyes wide’ |
| | <i>mulat</i> | ‘look at someone or something’ |
| | <i>b⟨in⟩ulat</i> | ‘was looked at’ |
| b. | <i>pətad</i> | ‘separation’ |
| | <i>mətad</i> | ‘separate from something’ |
| | <i>p⟨i⟩tad</i> | ‘was separated from something’ |

(30) THAO (Blust, 2013, p. 386)

- | | | |
|--|-----------------|---------------------------|
| | <i>m-apa</i> | ‘carry on the back’ |
| | <i>m⟨in⟩apa</i> | ‘carried on the back’ |
| | <i>⟨in⟩apa</i> | ‘was carried on the back’ |

In addition to its perfective or past-tense function, the infix *⟨in⟩ had a nominalizing function, forming deverbative (and occasionally denominative) nouns, e. g. Ilokano *mátay* ‘to die’ vs. *m⟨in⟩átay* ‘corpse’ or Hoava *babana* ‘to tow’ vs. *b⟨in⟩abana* ‘towed object’ (Blust, 2013,

p. 387). Two further peculiarities about the infix **⟨in⟩* need to be noted. First, **⟨in⟩* surfaces on verbal forms in combination with voice markers. Curiously, in the patient voice in PAN, **⟨in⟩* surfaces on the verb without the patient voice marker **-en* (10). Second, Starosta, Pawley, and Reid (1981, 1982) assume the nominalizing function to be the original one, with a meaning reconstructed as “affected by” or “result” of verbal action.

We suggest that the nominalizing function is secondary, derived from a perfect marker in Pre-PAN that ultimately goes back to a resultative marker (31).

- (31) *RESUTATIVE > *PERFECT > PAST TENSE, PERFECTIVE
 The infix **⟨in⟩* goes back to a perfect marker in Pre-PAN that developed past-tense and perfective marking functions in PAN.

Both verbal functions of **⟨in⟩*, past tense and perfective aspect, are the common results of perfect markers according to the grammaticalization theory. Heine and Kuteva (2002, pp. 231–2) identify both perfect > perfective and perfect > past tense as common grammaticalization trajectories. The development from perfect to past-tense marker and perfective is well motivated. Bybee, Perkins, and Pagliuca (1994) analyze this trajectory as a usual case of semantic generalization: “On the semantic level, the change is clearly a generalization of meaning, or the loss of a specific component of meaning: the anterior [i. e. perfect, added by author] signals a past action that is relevant to the current moment, while the past and perfective signal only a past action” (p. 86; also cited in Heine and Kuteva, 2002, p. 231).

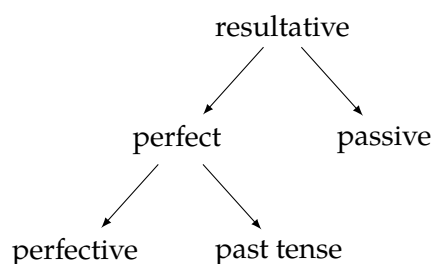
We can take an even further step in the reconstruction of Pre-PAN **⟨in⟩*. We know that the most common source of perfects is resultative markers (Bybee, Perkins, and Pagliuca, 1994). We also know that the PAN patient voice marker **-en* does not surface if the verb is marked with **⟨in⟩* (10). In fact, as Blust (2013) argues, “when **-en* was realized as zero, **⟨in⟩* inevitably took on both aspectual and ‘voice-marking’ functions” (p. 388). Moreover, as Starosta, Pawley, and Reid (1982) reconstruct, **⟨in⟩* in its nominalizing function had a resultative meaning component (see above). Based on these facts, we can reconstruct that the origin of the Pre-PAN perfect marker **⟨in⟩* was a resultative marker. If we assume that **⟨in⟩* goes back to a Pre-PAN resultative marker (as is the common trajectory of grammaticalization), we can explain this double function of **⟨in⟩* and the gap in the past/perfective paradigm, whereby **-en* does not surface in the presence of *⟨in⟩*. To our knowledge, this fact has so far been unexplained.

Resultatives are frequently the source of passive marking (Nedjalkov and Jaxontov, 1988, 45ff). As Bybee, Perkins, and Pagliuca (1994) point out, resultatives and passives are very close in meaning—the difference being that “only resultative consistently signals that the state persists at reference time” (p. 63). If this meaning component is lost over the course of a language’s development and the agent gets overtly expressed, we get a passive construction. Consider the resultative in (32a) and the passive in (32b).

- (32) RESULTATIVE > PASSIVE (Bybee, Perkins, and Pagliuca, 1994, p. 63)
 a. *the door is closed*
 b. *the door is closed by the doorman*

If the resultative Pre-PAN *⟨in⟩ developed a passive-marking function, in addition to its perfect and then perfective/past-tense marking, we can explain why the later PAN *-en patient voice marker does not surface in the presence of *⟨in⟩: there is no need to additionally mark the passive voice. In other words, *⟨in⟩ developed passive- and perfective-marking functions, both according to common grammaticalization trajectories. At that point, PAN voice-marking affixes still functioned as prepositions. When the voice system arose according to the proposal above (22), *-en started functioning as a passive voice marker. However, because *⟨in⟩ already developed the passive and perfective function from a resultative marker, there was no need to additionally mark the passive voice in with *-en in the past/perfective paradigm. The proposed development of Pre-PAN *⟨in⟩ is illustrated in (33).

(33) DEVELOPMENT OF PRE-PAN *⟨IN⟩



Finally, there is a third, non-verbal function of *⟨in⟩ as a nominalizer. This function can be explained if *⟨in⟩ as a perfect marker was used to form adjectives/participles. The English suffix -en provides an almost exact parallel to PAN *⟨in⟩ in this capacity: *stolen* can function as perfective, passive, or even as a participle, e. g. *stolen bag* (Yeh, 2011, p. 579). From this point, nominalization to ‘the stolen one’ is trivial. This is directly exemplified by *mátay* ‘to die’ vs. *m⟨in⟩átay* ‘corpse.’ At first, *m⟨in⟩átay* had simply the participial meaning ‘the dead (one)’ (like *b⟨in⟩abana* ‘towed object’), and then nominalized to ‘corpse.’¹⁷

4.5 Non-indicative paradigms

Finally, we comment briefly on the three non-indicative PAN paradigms: the imperative, dependent, and optative (34). Unlike the affixes discussed above, the non-indicative morphemes do not show multiple side functions, rendering their prehistory even more obscure. Nonetheless, there is evidence suggesting that their trajectory might have followed along similar lines.

(34) PAN NON-INDICATIVE VOICE AFFIXES

(based on Ross, 2009, p. 296)

| | ACTOR | PATIENT | LOCATIVE | INSTRUMENTAL |
|---------------|-------------|----------|----------|--------------|
| a. IMPERATIVE | *stem | *stem-u | *stem-i | *an-i stem |
| b. DEPENDENT | *stem | *stem-a | *stem-i | *an-i stem |
| c. OPTATIVE | *⟨um⟩stem-a | *stem-aw | *stem-ay | *an-ay stem |

¹⁷ Yeh (2011) proposes a different account of the development from the perfective to the nominalizing function of *⟨in⟩ through relative clauses: “as a grammaticalization of headless relative clause by the metonymic extension using the property of an entity to refer to the entity.” However, no such complications are necessary under our

Specifically, we speculate that the locative and instrumental affixes originated in prepositions, and that they underwent a similar development to the one described for their independent voice-marking counterparts. This stance is essentially argued for in Starosta, Pawley, and Reid (1981, 1982). The suffix **-i* (including in **-ay < *-a-i*) seen across the three paradigms can be reconstructed back to a generic locative adposition **i* ‘at, on’ (Blust, 2013; Blust, Trussel, and Smith, 2023; Starosta, 1995). We suggest it underwent the same reanalysis as the indicative paradigm **an > *-an* and **en > *-en*.

We propose that the instrumental **an-* (likewise seen in the imperative, dependent, and optative) has the same origin as locative voice **-an < *an* of the indicative paradigm. The semantic shift from locative to instrumental has been previously described in Indo-European, Finno-Ugric, and Bantu (Blake, 2001; Grünthal, 2003; Kouteva et al., 2019; Luraghi, 1998). For example, Narrog (2014, p. 75) proposes that that original meaning of the English *by* was ‘at the side or edge of’ (Kouteva et al., 2019, p. 270).

Finally, we note that active and passive marking is cross-linguistically common, and not exclusive to the Austronesian voice system. We speculate that the **-a* and **-u* (as well as **-aw < *-a-u*) seen in the actor and patient cells may be archaic and predate the development of the AVS (Ross, 2009). As such, there is no need to postulate adpositional origin for them. Alternatively, **-u* (and **-w*) may be come from **u* ‘go,’ also grammaticalized as the detransitivizing prefix **u-* (Chen, 2020), and possibly as part of the active voice **⟨um⟩* (see Section 4.3).

5 DERIVING THE SUBJECT-ONLY RESTRICTION

Besides the Philippine-type voice system, Austronesian languages often show another typologically unusual syntactic property—the so-called subject-only restriction (SOR). As discussed in Chung and Polinsky (2009) and Gärtner, Law, and Sabel (2006), SOR is a restriction that permits only subjects (or the sentence’s most prominent argument) to extract. “Extraction” in this context encompasses *wh*-movement, topicalization, relativization, and focus constructions. The subject-only restriction was first described on the basis of Malagasy by Keenan (1972) but it is widespread in the AN family, attested in Formosan, Philippine, Indonesian, and in many Polynesian languages (Pearson, 2005; Polinsky and Potsdam, 2013). The robustness of the phenomenon, and especially its presence in both Formosan and Malayo-Polynesian, allows us to posit with some certainty that SOR was already present in PAN.

The subject-only restriction is exemplified by the data from Tagalog in (35). For extraction or *wh*-movement of a location (in this case, recipient) DP to take place, the verb has to be in the locative voice. This change in voice causes the location to surface as a subject. Extraction of the location under other voices is ungrammatical.

- (35) SUBJECT-ONLY RESTRICTION IS TAGALOG (Rackowski and Richards, 2005, p. 566)
- a. *sino ay b(in)igy-an nay lalaki nay bulaklak?*
 who NOM ASP-give-LV GEN man GEN flower
 “Who did the man give the flower to?”

proposal: the derivation of adjectives/participials from a perfective marker with subsequent nominalization of participles is a common phenomenon.

- b. **sino aŋ i-b(in)igay naŋ lalaki aŋ bulaklak?*
 who NOM BV-ASP-give GEN man NOM flower
 “Who did the man give the flower to?”
- c. **sino aŋ n-agbigay aŋ lalaki naŋ bulaklak?*
 who NOM AV-ASP-give NOM man GEN flower
 “Who did the man give the flower to?”

As with AVS, theoretical accounts of SOR are heterogeneous and range from invoking the Phase Impenetrability Condition (in combination with the claim that vP is a phase) (Aldridge, 2004; Rackowski and Richards, 2005) to positing a restriction against “promotion-to-trigger” and *wh*-movement occupying the same \bar{A} -position (Pearson, 2005). For a detailed overview of proposals, see surveys in Chung and Polinsky (2009) and Gärtner, Law, and Sabel (2006). Within the nominalization hypothesis, Kaufman (2009b) proposes that the subject-only restriction results from a ban on extraction from NPs. This is, in essence, similar to our proposal but differs in the details, as we will propose that SOR goes back directly to a restriction against extraction from PP.

Most theoretical accounts agree on one point—that AVS and SOR are interrelated. The main argument for this relationship comes from the fact that a change in voice morphology that elevates an argument to subject position necessarily allows that argument to be extracted. In other words, for a patient, location, or instrument to be extracted, the verb must take on the passive, locative, or instrumental voice, respectively. An adequate explanation of the historical development of these two systems should thus ideally derive both typologically unusual phenomena from a single explanatory device.

If we assume, as the proposal laid out in the previous section does, that non-active voice-marking affixes go back to prepositions, the subject-only restriction follows quite naturally from a restriction against extracting from PP (i. e. against preposition stranding) (36).¹⁸ We propose that the subject-only restriction develops from the ban on preposition stranding:

- (36) *P-STRANDING BAN > SUBJECT-ONLY RESTRICTION
 The subject-only restriction goes back to a restriction against extracting from PPs,
 i. e. against preposition stranding.

In particular, Polinsky (2016) derives \bar{A} -movement restrictions (e. g. syntactic ergativity) from restrictions on PP extraction that ban both adposition stranding and pied-piping. We extend this account to the SOR in Philippine-type systems and explain how SOR follows from our proposal for the development of the PAN voice system. It is this consequence, we believe, that makes a prepositional origin for the voice system an attractive hypothesis. The proposed origin of SOR makes use of the same machinery as that used by Polinsky (2016) to derive syntactic ergativity, which unites the two extraction restriction phenomena (without necessarily claiming that AVS is an ergative system, cf. Aldridge, 2004, 2008, 2012, 2016, 2017).

¹⁸ The consensus view is that non-pivot agents in contemporary Philippine-type languages satisfy various syntactic tests for core objects and are non-demoted core arguments. We do not challenge this position, as our proposal pertains only to SOR’s diachronic origin.

Restrictions against extraction from prepositional phrases are typologically common. If \bar{A} -movement targets a PP argument, there are two possibilities for grammatical extraction: either the DP is moved, leaving the P head in the lower position (i. e. preposition-stranding), or the P head is moved alongside the DP (i. e. pied-piping). Austronesian languages in particular exhibit a robust restriction against preposition stranding, as illustrated in Tagalog in (37a). The preposition must be pied-piped with the DP argument, as shown in (37b).

- (37) TAGALOG BAN ON PREPOSITION STRANDING (Sabbagh, 2008)
- a. **kanino b(um)ili si Pedro nan pagkain para?*
 who(OBL) AV.buy NOM Pedro GEN food for
 “For who(m) did Pedro buy food?”
- b. *para kanino b(um)ili si Pedro nan pagkain?*
 for who(OBL) AV.buy NOM Pedro GEN food
 “For who(m) did Pedro buy food?”

Pied-piping is often viewed as a last-resort operation. If stranding is unavailable, as is the case in many languages, pied-piping is an alternative strategy that allows for movement of DPs governed by a preposition (Polinsky, 2016, p. 41). Furthermore, there are cross-linguistic restrictions on pied-piping, which are often phonological in nature. For instance, pied-piping has been shown to be sensitive to the phonological content of the preposition itself. When a P head is null or phonologically reduced, pied-piping is often unavailable because the pied-piped DP would be indistinguishable from an extracted DP (Klein, 1993; Polinsky, 2016). This suggests that pied-piping is not universally-available, but rather conditioned by the available alternatives as well as the preposition’s phonology.

It is possible, then, in cases where an argument is governed by a null or prosodically light adposition, that extraction of this argument would be completely ungrammatical. This is the line of reasoning that Polinsky (2016) pursues to explain \bar{A} -movement restrictions on ergative subjects. She argues that in syntactically ergative languages, ergative arguments are PPs generated in external argument position, i. e. the specifier of v P. If pied-piping and P-stranding are both unavailable, the result is a ban on ergative extraction. In order to circumvent this ban, the argument in question must be base-generated without a governing preposition, often through the use of valence-changing morphology like the antipassive.

We use a similar line of reasoning to explain the development of SOR in Proto-Austronesian, which can be directly tied to our proposed prepositional origin for AVS. In Section 4.2.1, we reconstructed a surface structure for a Pre-PAN sentence where all arguments except for the subject are marked and governed by a preposition. We assume that Pre-PAN, like modern Austronesian languages, followed the typologically common path of restricting preposition stranding. Since all non-subject arguments were governed by prepositions, pied-piping was presumably allowed as a last-resort operation to allow \bar{A} -extraction of non-subject arguments. However, when the reanalysis of prepositions to postverbs took place, the prominent argument ceased to be governed by a preposition. In other words, once the voice system developed, there was another way to extract arguments without stranding or pied-piping—namely, by using voice morphology to promote the desired DP to subject position. We propose that with this mechanism available, the pied-piping of these prosodically light functional elements becomes

dispreferred, following general PF constraints. Over time, this dispreference develops into a full-blown subject-only restriction. Because only one postverb is allowed to surface on the verbal head in PAN, only one argument can be unmarked on the surface—not governed by P—and therefore be available for extraction.

Once agents become secondarily marked by P, the same logic applies to ban \bar{A} -movement of the subject in non-active voice. Earlier, we reconstructed a surface sentence structure for PAN whereby only subjects (at that point, agents) were not governed by a P. However, when the reanalysis of an unmarked prominent argument to subjects occurs, agents no longer surface in subject position. As such, they have to be marked with P under the requirement that all non-subject arguments be marked. The example below shows such marking in Saisiyat.

- (38) P-MARKED NON-SUBJECT ARGUMENTS IN SAISIYAT (Hsieh and Huang, 2006, p. 94)
- korkoring si-Sebet ni 'oya' hi Kizaw*
 child IV-beat GEN mother ACC Kizaw
 “Mother beat Kizaw for the child.”

The agent of the sentence in (38) is *'oya'* ‘mother.’ However, because the verb is in the instrumental (benefactive) voice and all non-subject arguments must be marked in Saisiyat, the agent is no longer the subject and receives a preposition/case marker *ni* ‘GEN.’ As such, the restriction on pied-piping applies to the agent in these constructions, producing a restriction against the extraction of agents in non-active voices. The result is that subjects are only able to be extracted in active voice.¹⁹

In sum, the new explanation of the origins of the PAN voice system is capable of deriving two unusual morphosyntactic and syntactic phenomena through the same common historical syntactic device: reanalysis. The subject-only restriction can be explained using the same mechanisms as syntactic ergativity if we assume voice markers go back to prepositions (28): the subject-only restriction developed from a restriction against extraction from PP, following reanalysis of the prominent argument as the subject of the clause.

6 A PARALLEL IN DINKA

Ideally, an adequate historical explanation of a phenomenon in one language will find parallels in the developments of other languages and language families. We saw that AVS is a typologically highly unusual morphosyntactic system; the purpose of this section is to show that our analysis of the PAN voice system and subject-only restriction receives external support. Recent work by Erlewine, T. Levin, and van Urk (2017) and van Urk (2015) on Dinka, a Western Nilotic language (Andersen, 1991), has described a morphosyntactic

¹⁹ This analysis holds regardless of whether we analyze PAN/AN languages as accusative or ergative. Traditionally, the AN case system has been analyzed as accusative and we adopt that standpoint for Pre-PAN. However, some scholars analyze PAN and AN as essentially ergative, claiming that the external argument of active verbs patterns together with the internal argument of non-active verbs (see Aldridge, 2004, 2012, 2016 and Erlewine, T. Levin, and van Urk, 2017 for opposing views). The putative rise of ergativity in AN is also sometimes offered as an argument in favor of the nominalization hypothesis. The proposal developed here (22) derives PAN descriptive generalizations regardless of whether we analyze the synchronic PAN voice system as ergative or accusative: the only requirement is that we reconstruct Pre-PAN as having an accusative alignment.

system highly reminiscent of AVS. In the following paragraphs, we show that most of the crucial morphosyntactic properties are identical between the two voice systems. Crucially, the Dinka voice system shows a synchronic relationship between prepositions and voice markers, suggesting that the pathway we propose for PAN is tenable and attested elsewhere.

Synchronically, the Dinka voice system functions much like the PAN voice system. Erlewine, T. Levin, and van Urk (2017) and van Urk (2015) identify three voices for Dinka: actor (AV), patient (PV), and oblique voice (OV). When the agent surfaces in subject position, the verb is marked for actor voice (39a). When the patient is in subject position, the verb is marked for patient voice (39b). If an argument with an instrumental semantic role surfaces in subject position, we get the oblique voice (39c).

(39) DINKA VOICE SYSTEM (van Urk, 2015, p. 69)

- a. *Áyén à-cé cuïin câam nè paäl*
 Ayen 3SG-PERF.AV food eat.NF PREP knife
 “Ayen has eaten food with a knife.”
- b. *cuïin à-cïi Áyèn câam nè paäl*
 food 3SG-PRF.PV Ayen.GEN eat.NF PREP knife
 “Food, Ayen has eaten with a knife.”
- c. *paäl à-cénè Áyèn cuïin câam*
 knife 3SG-PRF.OV Ayen.GEN food eat.NF
 “With a knife, Ayen has eaten food.”

Oblique voice forms encode not only instrumental semantic relations, but also directional, temporal, possessive, and “aboutness” relations, among others (van Urk, 2015, p. 75). The directional (40) and temporal (41) functions are illustrated with two sentences each: one with the verb in the active voice (40-41a) and one with the verb in the oblique voice (40-41b). Under active voice, the directional or temporal argument has to be marked by a preposition.

(40) DIRECTIONAL (van Urk, 2015, p. 75)

- a. *uḡk áa-kàt è jḡ*
 COWS 3PL-RUN.AV PREP dog
 “The cows are running from the dog.”
- b. *jḡ à-kéet-è uḡk*
 dog 3SG-RUN.OV COWS.GEN
 “The dog, the cows are running from.”

(41) TEMPORAL (van Urk, 2015, p. 75)

- a. *Bòl à-cé Áyén tḡḡ nè ákól-ic*
 Bol 3SG-PRF.AV Ayen see.NF PREP afternoon-inside
 “Bol has seen Ayen at noon.”
- b. *ákól-ic à-cé-nè Bòl Áyén tḡḡ*
 afternoon-inside 3S-PRF.OV Bol.GEN Ayen see.NF
 “At noon, Bol has seen Ayen.”

Properties common to both systems were identified in van Urk (2015) and Erlewine, T. Levin, and van Urk (2017). First, in both Dinka and AN we have one prominent argument that surfaces in subject position. In Dinka's case, this is the initial position. Depending on the thematic role of that argument, its special (prominent) status is marked on the verb or in the non-present tense case on the auxiliary. Just like in AN, the agent under non-active voice receives genitive marking, which can be analyzed as equivalent to a *by*-phrase in asymmetrical voice systems. The genitive marking of the agent under non-active voice is illustrated in (39) above, where the agent in the nominative under active voice, *Áyèn*, turns into the genitive, *Áyèn*, under non-active patient and oblique voices.

Just like in AN, Dinka exhibits a subject-only restriction—or, more precisely, a restriction against \bar{A} -movement of non-subject arguments. The voice marker on the verb has to agree with the thematic role of the extracted argument (42).

- (42) NON-SUBJECT \bar{A} -MOVEMENT BAN IN DINKA (Erlewine, T. Levin, and van Urk, 2017, p. 5)
- a. *yehà cé cuïn câam nè pâl?*
 who PRF.AV food eat.NF PREP knife
 “Who has eaten food with a knife?”
 - b. *yehú cîi Áyèn câam nè pâl*
 what PRF.PV Ayen.NOM eat.NF PREP knife
 “What has Ayen eaten with a knife?”
 - c. *yehú cènnè Áyèn cuïn câam*
 what PRF.OV Ayen.NOM food eat.NF
 “What has Ayen eaten food with?”

DPs in Dinka cannot be extracted out of a PP unless the extraction is overtly marked on the verb. In (43a), the preposition is in situ. In (43b), the whole PP is extracted. (As such, Dinka differs from Pre-PAN, which—we propose—wholesale banned PP-extraction at a certain stage of development.) In (43c), the DP is extracted, which has to be marked on the verb by a non-subject extraction marker (‘NS’), and the preposition does not surface.

- (43) P-STRANDING BAN IN DINKA (Erlewine, T. Levin, and van Urk, 2017, p. 5; van Urk, 2015)
- a. *wðak cé cuïn cáam ne pâl*
 we PRF food eat PREP knife
 “We ate food with a knife.”
 - b. *ne pâl, wðak cé cuïn cáam*
 PREP knife we PRF food eat
 “With a knife, we ate food.”
 - c. *pâl a-cîi wðak cuïn cáam*
 knife DCL.SG-PRF.NS we food eat
 “With a knife, we ate food.”

There exists another similarity between the AN and Dinka voice systems. Our reconstructed Pre-PAN system allowed only one preposition per sentence to become a postverb. Dinka also

allows only one postverb per verbal head. Complex prepositions in Dinka, such as *kènɛ̃* ‘with’ (likely composed of *kɛ̃* and *nɛ̃*), cannot enter the voice-marking paradigm (44b). Instead, they have to surface next to the DP that they govern (44a).

- (44) COMPLEX PREPOSITION SURFACING WITH DP IN DINKA (van Urk, 2015, p. 76)
- a. *Bòl à-thàt kènɛ̃ Àyén*
 Bol 3S-COOK.AV with Ayen
 “Bol is cooking with Ayen.”
- b. **Àyén à-thɛ̃ɛr-ɛ̃ Bòl*
 Ayen 3SG-COOK.OV Bol.GEN
 “Ayen, Bol is cooking with.”

However, the most striking parallel between Dinka and PAN is the fact that the Dinka oblique voice marker is actually identical to the preposition. Both the preposition and the oblique voice marker in Dinka surface as *ɛ̃* or *nɛ̃*—the only difference is that the voice marker surfaces as a suffix on the verbal head or the auxiliary, while the preposition governs a DP and surfaces next to it. Thus, the voice system in Dinka appears to be almost identical to what we have reconstructed for Pre-PAN (13). In both cases, prepositions turn into postverbs to mark one argument in a clause as prominent. The only difference between the two is that, in Dinka, the prepositions can still surface as such, whereas in PAN, they cease to function as prepositions. In other words, the origin of the oblique voice marker is still preserved as a preposition in contemporary Dinka.

A very similar historical development as the one proposed for Pre-PAN (22) is capable of deriving the facts of Dinka. In Dinka, too, reanalysis probably occurred that led from a system of preposition-postverb marking to a voice-marking system. The locus of reanalysis in Dinka might have been slightly different from that of PAN. In Dinka, arguments, previously governed by a preposition, probably got focused and moved to the left periphery together with the reanalysis preposition > postverb to additionally mark semantic prominence. Note that Dinka, too, allows pro-drop in initial position—the characteristic subject position in this language. The locus of reanalysis is easy to see, especially because Dinka, just like PAN, allows pro-drop in initial position (see van Urk, 2015, p. 113). After pro-drop, the argument previously governed by a preposition becomes the only argument that surfaces in a position associated with subjects in Dinka. Based on surface structure and argument placement, the prominent argument gets reanalyzed as a subject, at which point the agent gets marked by a structural case—the genitive.

Dinka also conforms to the synchronic syntactic structures we proposed to account for the development of AVS. Recall that we proposed that the preposition in AN is base-generated in PP as a complement to V and develops into a postverb. As a head-initial language, Dinka also conforms to the generalization that prepositions in head-initial languages turn into postverbs that follow the verb and surface as suffixes.

Finally, the two typologically rare voice systems both have another rare morphosyntactic feature: the subject-only restriction. The proposal that voice-marking affixes go back to prepositions derives the connection between unusual voice systems and SORs automatically. A SOR is simply a result of the restriction against preposition stranding after reanalysis to a voice system occurs (see Section 5).

The properties in (45) are common to both typologically rare voice systems, Dinka and PAN. The fact that the only other voice system that is highly reminiscent of that of PAN shares so many properties with PAN considerably strengthens the case for the proposed reconstruction.

(45) PAN AND DINKA VOICE SYSTEMS

- a. A prominent argument surfaces in subject position.
- b. Depending on the thematic role, different affixes surface on the verb.
- c. Only subjects are allowed to extract (SOR).
- d. P-stranding is disallowed.
- e. The agent in non-active voice receives the genitive case.
- f. Only one postverb can surface on the verbal head.
- g. Voice affixes go back to prepositions.

7 CONCLUSION AND IMPLICATIONS

In this paper, we propose a new explanation for the origins and development of the voice system in Austronesian. We show that this typologically highly unusual morphosyntactic system may find quite typical origins in a transitive-marking system and a series of prepositions, which develop into non-active voice-marking affixes. This development crucially passed through an intermediate phase, during which prepositions were reanalyzed as markers on the verb (a similar process was proposed, in a different context and for different suffixes, in Starosta, Pawley, and Reid, 1981, 1982) and the argument, previously governed by the preposition, became analyzed as a direct object and thus assumed a prominent role. Once the DP that was originally governed by the preposition-come-postverb becomes morphologically unmarked, reanalysis occurs and the DP starts functioning as a subject to the verb. The development from preposition to nominalizing affix is even more straightforward: we argue that this transition took place via an intermediate stage at which prepositions formed compounds. The active voice markers developed from reflexives and intransitivity/transitivity markers. The infix **⟨in⟩* is argued to go back to a resultative and perfect marker and its nominalizing function can easily be derived from there.

Several aspects of AVS that were previously difficult to explain follow straightforwardly from our suggested analysis. First, our analysis accounts for the asymmetries between the active voice and other voices in the paradigm, in both form and function. Second, the promotion of arguments to the subject position is understood as the result of reanalysis of the argument as a direct object (hence the prominent role) followed by reanalysis of that argument as a subject on the basis of case marking. Third, our analysis unifies two of the most prominent aspects of the PAN voice system: promotion to subject and the prominent role that the argument receives. Fourth, other less prominent functions of the affixes are easily explained by this analysis: for example, the inchoative- and intransitive-marking functions of **⟨um⟩* follow from the affix's earlier origin as a reflexive marker. Fifth, we show that subject-only restriction follows easily from our proposal: SOR goes back to a restriction against extraction from PP, i. e. restriction against preposition stranding. Finally, we show that one of the rare voice systems similar to that of PAN, the voice system of Dinka, features almost identical morphosyntactic properties as the reconstructed Pre-PAN. Most of the crucial generalizations and reconstructions of the

two systems agree and are easily derivable under our explanation. This new, parallel evidence from an unrelated language significantly strengthens our proposal.

Finally, we discussed the methodology of internal reconstruction as it is applied to the reconstruction of typologically unusual morphosyntactic phenomena (the *function of origin* principle). We described how all attested functions of a given morpheme should be examined, and potential origins for each function established based on grammaticalization theory. All functions of a single affix can then be taken together to determine the most likely origin, i. e. the one that is common to all attested functions.

BIBLIOGRAPHY

- Aldridge, Edith (2004). "Ergativity and word order in Austronesian languages." PhD thesis. Ithaca, NY: Cornell University.
- Aldridge, Edith (2008). "Generative approaches to ergativity." In: *Language and Linguistics Compass* 2.5, pp. 966–995.
- Aldridge, Edith (2012). "Event existentials in Tagalog." In: *Proceedings of the 18th Annual Meeting of the Austronesian Formal Linguistics Society*. Ed. by Lauren Eby Clemens, G. Scontras, and Maria Polinsky. Online publication hosted by the University of Western Ontario, pp. 16–30.
- Aldridge, Edith (2016). "Ergativity from subjunctive in Austronesian languages." In: *Language and Linguistics* 17.1, pp. 27–62.
- Aldridge, Edith (2017). "Intransitivity and the development of ergative alignment." In: *The Oxford Handbook of Ergativity*. Ed. by Jessica Coon, Diane Massam, and Lisa deMena Travis. Oxford: Oxford University Press, pp. 501–529.
- Aldridge, Edith (2021). "Syntactic conditions on accusative to ergative alignment change in Austronesian languages." In: *Journal of Historical Linguistics* 11.2, pp. 214–247.
- Alexiadou, Artemis and Elena Anagnostopoulou (2004). "Voice Morphology in the Causative-Inchoative Alternation: Evidence for a Non-Unified Structural Analysis of Unaccusatives." In: *The Unaccusativity Puzzle: Explorations of the Syntax-Lexicon Interface*. Ed. by Artemis Alexiadou, Elena Anagnostopoulou, and Martin Everaert. Oxford: Oxford University Press, pp. 114–136.
- Amritavalli, Raghavachari (2000). "Lexical anaphors and pronouns in Kannada." In: *Lexical anaphors and pronouns in selected South Asian languages: A principled typology*, pp. 49–112.
- Andersen, Torben (1991). "Subject and topic in Dinka." In: *Studies in Language* 15.2, pp. 265–294.
- Authier, Gilles (2010). "Finite and non-finite: Prosodic distinctions of Budugh verb stems." In: *Clause Linking and Clause Hierarchy: Syntax and Pragmatics*. Ed. by Isabelle Bril. Amsterdam, Philadelphia: John Benjamins, pp. 143–164.
- Blake, Barry J. (2001). *Case*. Cambridge University Press.
- Blust, Robert (2002). "Notes on the history of 'focus' in Austronesian." In: *The History and Typology of Western Austronesian Voice Systems*. Ed. by Fay Wouk and Malcolm Ross. Pacific Linguistics, pp. 63–80.
- Blust, Robert (2013). *The Austronesian Languages*. Canberra: Pacific Linguistics.
- Blust, Robert (2015). "The case-markers of Proto-Austronesian." In: *Oceanic Linguistics* 54.2, pp. 436–491.

- Blust, Robert and Victoria Chen (2017). "The pitfalls of negative evidence: 'Nuclear Austronesian', 'Ergative Austronesian', and their progeny." In: *Language and Linguistics* 18.4, pp. 577–621.
- Blust, Robert, Stephen Trussel, and Alexander D. Smith (2023). *CLDF dataset derived from Blust's "Austronesian Comparative Dictionary" (v1.2)* [Data set]. Zenodo. doi: [10.5281/zenodo.7741197](https://doi.org/10.5281/zenodo.7741197).
- Booij, Geert and Ans van Kemenade (2003). "Preverbs: An introduction." In: *Yearbook of Morphology 2003*. Ed. by Geert Booij and Jaap van Marle. Dordrecht: Kluwer, pp. 1–11.
- Bybee, Joan L, Revere Dale Perkins, and William Pagliuca (1994). *The evolution of grammar: Tense, aspect, and modality in the languages of the world*. Vol. 196. University of Chicago Press Chicago.
- Chen, Victoria (2017). "A reexamination of the Philippine-type voice system and its implications for Austronesian primary-level subgrouping." PhD thesis. University of Hawai'i at Mānoa.
- Chen, Victoria (2020). "The derived intransitive in Formosan and its implications for the nature of Proto-Austronesian Actor Voice." In: *Oceanic Linguistics* 59.1/2, pp. 59–90.
- Chung, Sandra and Maria Polinsky (2009). "Introduction." In: *Natural Language and Linguistic Theory* 27.4, pp. 659–673.
- Dahl, Östen (1973). "On so-called Sloppy Identity." In: *Synthese* 26, pp. 81–112.
- Déchaine, Rose-Marie and Martina Wiltschko (2012). "The heterogeneity of reflexives." Manuscript. UBC.
- Duguine, Maia (2017). "Reversing the Approach to Null Subjects: A Perspective from Language Acquisition." In: *Frontiers in Psychology* 8. ISSN: 1664-1078. doi: [10.3389/fpsyg.2017.00027](https://doi.org/10.3389/fpsyg.2017.00027). URL: <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00027>.
- Erlewine, Michael Yoshitaka (2018). "Extraction and licensing in Toba Batak." In: *Language* 94.3, pp. 662–697.
- Erlewine, Michael Yoshitaka, Theodore Levin, and Coppe van Urk (2017). "Ergativity and Austronesian-type voice systems." In: *The Oxford Handbook of Ergativity*. Ed. by Jessica Coon, Diane Massam, and Lisa deMena Travis. Oxford University Press, pp. 373–396.
- Ferrell, Raleigh (1979). "Construction markers and subgrouping of Formosan languages." In: *Southeast Asian Linguistic Studies*. Ed. by Nguyen Dang Liem. Vol. 3. Canberra: Pacific Linguistics, pp. 199–212.
- Garrett, Andrew (1990). "Applicatives and preposition incorporation." In: *Grammatical Relations: A Cross-Theoretical Perspective*. Ed. by Katarzyna Dziwirek, Patrick Farrell, and Errapel Mejías-Bikandi. Stanford: CSLI Publications, pp. 183–198.
- Gärtner, Hans-Martin, Paul Law, and Joachim Sabel (2006). "Clause structure and adjuncts in Austronesian languages: A critical introductory survey." In: *Clause Structure and Adjuncts in Austronesian Languages*. Ed. by Hans-Martin Gärtner, Paul Law, and Joachim Sabel. Mouton de Gruyter, pp. 1–42.
- Gerds, Donna B. (1998). "The double life of Halkomelem reflexive suffixes." In: *Proceedings of the First Workshop in American Indigenous Languages, Santa Barbara WPL* 8, pp. 70–83.
- Grünthal, Riho Manivald Villem (2003). *Finnic adpositions and cases in change*. Societe finno-ougrienne.

- Guilfoyle, Eithne, Henrietta Hung, and Lisa Travis (1992). "Spec of IP and Spec of VP: Two Subjects in Austronesian Languages." In: *Natural Language and Linguistic Theory* 10.3, pp. 375–414.
- Guzman, Videia P. De (1976). "Syntactic Derivation of Tagalog Verbs." PhD thesis. University of Hawai'i at Mānoa.
- Haspelmath, Martin (2004). "On directionality in language change with particular reference to grammaticalization." In: *Up and Down the Cline: The Nature of Grammaticalization*. Ed. by Olga Fischer, Muriel Norde, and Harry Perridon. Typological Studies in Language 59. Amsterdam: John Benjamins, pp. 17–44.
- Heine, Bernd and Tania Kuteva (2002). *World Lexicon of Grammaticalization*. Cambridge: Cambridge University Press.
- Helmbrecht, Johannes (2008). "Decay and loss of applicatives in Siouan languages: A grammaticalization perspective." In: *Studies on Grammaticalization*. Ed. by Elisabeth Verhoeven, Stavros Skopeteas, Yong-Min Shin, Yoko Nishina, and Johannes Helmbrecht. Berlin: Mouton de Gruyter, pp. 135–156.
- Himmelmuth, Nikolaus P. (2005). "Tagalog." In: *The Austronesian Languages of Asia and Madagascar*. Ed. by K. Alexander Adelaar and Nikolaus P. Himmelmann. London: Routledge, pp. 350–376.
- Hsieh, Fuhui and Xuanfan Huang (2006). "The pragmatics of case marking in Saisiyat." In: *Oceanic Linguistics* 45.1, pp. 91–109.
- Hsieh, Henrison (2020). "Beyond Nominative: A broader view of A'-dependencies in Tagalog." PhD thesis. Montreal: McGill University.
- Kaufman, Daniel (2009a). "Austronesian Nominalism and its consequences: A Tagalog case study." In: *Theoretical Linguistics* 35.1, pp. 1–49.
- Kaufman, Daniel (2009b). "Austronesian typology and the nominalist hypothesis." In: *Austronesian historical linguistics and culture history: A festschrift for Bob Blust*. Ed. by Alexander Adelaar and Andrew Pawley. Pacific Linguistics, pp. 187–215.
- Kaufman, Daniel (2009c). *On *pa-, *pa(R)- and *pa(ŋ)-*. Handout at the 9th *International Conference on Austronesian Linguistics*, Aussois.
- Kaufman, Daniel (2015a). *Case and Nominalization in Early Austronesian*. Handout. URL: <https://bahasawan.com/wp-content/uploads/2020/01/Kaufman-ICAL-PAn-case-REV.pdf>.
- Kaufman, Daniel (2015b). "Case and nominalization in Early Austronesian." Handout at the 9th *International Conference on Austronesian Linguistics*.
- Kaufman, Daniel (2017). "Lexical category and alignment in Austronesian." In: *The Oxford Handbook of Ergativity*. Ed. by Jessica Coon, Diane Massam, and Lisa deMena Travis. Oxford University Press, pp. 589–628.
- Keenan, Edward L. (1972). "Relative clause formation in Malagasy." In: *The Chicago Which Hunt: Papers from the Relative Clause Festival*. Ed. by Paul M. Peranteau, Judith N. Levi, and Gloria C. Pharees. Chicago: Chicago Linguistic Society, pp. 169–189.
- Keenan, Edward L. (1976). "Towards a universal definition of "subject"." In: *Subject and Topic*. Ed. by Charles N. Li. New York: Academic Press, pp. 303–334.
- Kikusawa, Ritsuko (2012). "On the development of applicative constructions in Austronesian languages." In: *Bulletin of the National Museum of Ethnology* 36.4, pp. 413–455.

- Klein, Thomas B. (1993). "On the Status of Structure Preservation in German." In: *Proceedings of the North East Linguistic Society* 23. Ed. by Amy J. Schafer. University of Ottawa, pp. 239–253.
- Kornfilt, Jaklin (1997). *Turkish*. London: Routledge.
- Kouteva, Tania, Bernd Heine, Bo Hong, Haiping Long, Heiko Narrog, and Seongha Rhee (2019). *World Lexicon of Grammaticalization*. Second, extensively revised and updated edition. Cambridge University Press.
- Kroeger, Paul (1993). *Phrase structure and grammatical relations in Tagalog*. Stanford: CSLI Publications.
- Kulikov, Leonid (2012). "Vedic preverbs as markers of valency-changing derivations." In: *Studies in Language* 36.4, pp. 721–746.
- Levin, Beth and Malka Rappaport Hovav (1995). *Unaccusativity*. Cambridge, Massachusetts: MIT Press, p. 336.
- Li, Charles N. (1976). Ed. by Subject and Topic. New York: Academic Press, p. 594.
- Luisa Rivero, María (2001). "Last Resort and V movement in Balkan Languages." In: *Comparative Syntax of Balkan Languages*. Ed. by María Luisa Rivero and Angela Ralli. Oxford: Oxford University Press, pp. 200–223.
- Luraghi, Silvia (1998). "The grammaticalization of the left sentece boundary in Hittite." In: *Typological Studies in Language* 37, pp. 189–210.
- McGinnis, Martha (2001). "Phases and the syntax of applicatives." In: *NELS* 31, pp. 333–349.
- Mithun, Marianne (1994). "The implications of ergativity for a Philippine voice system." In: *Voice: Form and Function*. Ed. by Barbara J. Fox and Paul J. Hopper. Amsterdam: John Benjamins, pp. 247–277.
- Narrog, Heiko (2014). "The grammaticalization chain of case functions: Extension and re-analysis of case marking vs. universals of grammaticalization." In: *Perspectives on Semantic Roles*. Ed. by Luraghi and Narrog. John Benjamins, pp. 69–97.
- Nedjalkov, Vladimir P. and Sergej Je. Jaxontov (1988). "The Typology of Resultative Constructions." In: *Typology of Resultative Constructions: Translated from the original Russian edition (1983)*. Ed. by Vladimir P. Nedjalkov. Vol. 12. Typological Studies in Language. Amsterdam: Benjamins. doi: [10.1075/tsl.12.06ned](https://doi.org/10.1075/tsl.12.06ned).
- Pawley, Andrew and Lawrence A. Reid (1979). "The evolution of transitive constructions in Austronesian." In: *Austronesian Studies: Papers from the Second Eastern Conference on Austronesian Languages*. Ed. by Paz Buenaventura Naylor. Ann Arbor: Center for South and Southeast Asian Studies, University of Michigan, pp. 103–130.
- Payne, Thomas (1982). "Role and reference related subject properties and ergativity in Yup'ik Eskimo and Tagalog." In: *Studies in Language* 6.1, pp. 75–106.
- Pearson, Matthew (2001). "The Clause Structure of Malagasy: A Minimalist Approach." PhD thesis. Los Angeles, CA: University of California, Los Angeles.
- Pearson, Matthew (2005). "The Malagasy subject/topic as an A'-element." In: *Natural Language and Linguistic Theory* 23.2, pp. 381–457.
- Peterson, David A. (1997). "The evolution of applicative constructions and Proto-Austronesian morphosyntax." In: *Proceedings of the 23rd Annual Meeting of the Berkeley Linguistics Society*. Ed. by Matthew L. Juge and Jeri L. Moxley. Berkeley Linguistics Society, pp. 278–289.
- Peterson, David A. (2007). *Applicative Constructions*. New York: Oxford University Press.

- Polinsky, Maria (2016). *Deconstructing ergativity: Two types of ergative languages and their features*. Oxford: Oxford University Press.
- Polinsky, Maria and Eric Potsdam (2013). "Austronesian syntax." In: *Oceania*. Ed. by Bill Palmer. Berlin: Mouton de Gruyter.
- Pylkkänen, Liina (2000). "What Applicative Heads Apply To." In: *Proceedings of the 24th Annual Penn Linguistics Colloquium*. Vol. 6. 4. U. Penn Working Papers in Linguistics.
- Rackowski, Andrea (2002). "Subject and specificity: the case of Tagalog." In: *Proceedings of North East Linguistic Society* 32. Ed. by Masako Hirotani. Vol. 2, pp. 471–486.
- Rackowski, Andrea and Norvin Richards (2005). "Phase Edge and Extraction: A Tagalog Case Study." In: *Linguistic Inquiry* 36.4, pp. 565–599.
- Richards, Norvin (2000). "Another Look at Tagalog Subjects." In: *Formal Issues in Austronesian Linguistics*. Ed. by Ileana Paul, Vivianne Phillips, and Lisa Travis. Dordrecht, The Netherlands: Kluwer Academic Publishers, pp. 105–116.
- Rivero, María Luisa and Milena Milojevic Sheppard (2003). "Indefinite reflexive clitics in Slavic: Polish and Slovenian." In: *Natural Language and Linguistic Theory* 21.1, pp. 89–155.
- Ross, Malcolm D. (1995). "Reconstructing Proto-Austronesian verbal morphology: Evidence from Taiwan." In: *Austronesian Studies Relating to Taiwan*. Ed. by Jen-Kuei Li, Cheng-Hwa Tsang, Ying-Kuei Huang, Dah-An Ho, and Chiu-Yu Tseng. Taipei: Academia Sinica, pp. 727–791.
- Ross, Malcolm D. (2002). "The history and transitivity of Western Austronesian voice and voice-marking." In: *The History and Typology of Western Austronesian Voice Systems*. Ed. by Fay Wouk and Malcolm D. Ross. Canberra: Pacific Linguistics, pp. 17–62.
- Ross, Malcolm D. (2006). "Reconstructing the case-marking and personal pronoun systems of Proto-Austronesian." In: *Streams Converging into an Ocean: Festschrift in Honor of Professor Paul Jen-Kuei Li on his 70th Birthday*. Ed. by Henry Y. Chang, Lillian M. Huang, and Dah-An Ho. Taipei: Academia Sinica, pp. 521–564.
- Ross, Malcolm D. (2009). "Proto Austronesian verbal morphology: A reappraisal." In: *Austronesian Historical Linguistics and Culture History: A Festschrift for Robert Blust*. Ed. by K. Alexander Adelaar and Andrew Pawley. Canberra: Australian National University, pp. 295–326.
- Ross, Malcolm D. (2012). "In defense of nuclear Austronesian (and against Tsouic)." In: *Language and Linguistics* 13.6, pp. 1253–1330.
- Ross, Malcolm D. and Stacy Fang-ching Teng (2005). "Formosan languages and linguistic typology." In: *Language and Linguistics* 6.4, pp. 739–781.
- Rubino, Carl (2005). "Iloko." In: *The Austronesian Languages of Asia and Madagascar*. Ed. by Nikolaus P. Himmelmann and K. Alexander Adelaar. London: Routledge, pp. 326–349.
- Sabbagh, Joseph (2008). "Right Node Raising and Extraction in Tagalog." In: *Linguistic Inquiry* 39.3, pp. 502–511.
- Schachter, Paul (1976). "A nontransformational account of gerundive nominals in English." In: *Linguistic Inquiry* 7.2, pp. 205–242.
- Shibatani, Masayoshi (1988). "Voice in Philippine languages." In: *Passive and Voice*. Ed. by Masayoshi Shibatani. Amsterdam: John Benjamins, pp. 85–142.
- Starosta, Stanley (1995). "A grammatical subgrouping of Formosan languages." In: *Austronesian Studies Relating to Taiwan*. Ed. by Jen-Kuei Li, Cheng-Hwa Tsang, Ying-Kuei Huang, Dah-An Ho, and Chiu-Yu Tseng. Taipei: Academia Sinica, pp. 727–791.

- Starosta, Stanley, Andrew Pawley, and Lawrence A. Reid (1981). "The evolution of focus in Austronesian." Paper presented at the Third International Conference on Austronesian Linguistics, Bali.
- Starosta, Stanley, Andrew Pawley, and Lawrence A. Reid (1982). "The evolution of focus in Austronesian." In: *Papers from the Third International Conference on Austronesian Linguistics*. Ed. by Halim Amran, Lois Carrington, and S. A. Wurm. Canberra: Pacific Linguistics, pp. 145–170.
- Stifter, David (2006). *Sengoidelc: Old Irish for beginners*. Syracuse University Press.
- Subbarao, Karumuri V (2008). "Typological characteristics of South Asian languages." In: *Language in South Asia*, pp. 49–78.
- Teng, Stacy Fang-ching (2008). *A reference grammar of Puyuma, an Austronesian language of Taiwan*. Canberra: Pacific Linguistics.
- van Urk, Coppe (2015). "A uniform syntax for phrasal movement: A case study of Dinka Bor." PhD thesis. Cambridge, MA: Massachusetts Institute of Technology.
- Wagner, Laura (2012). "Primary language acquisition." In: *The Oxford Handbook of Tense and Aspect*. Ed. by Robert I. Binnick. Oxford & New York: Oxford University Press, pp. 458–480.
- Wolff, John U. (1973). "Verbal inflection in Proto-Austronesian." In: *Parangal Kay Cecilio Lopez (Essays in Honor of Cecilio Lopez on his Seventy-Fifth Birthday)*. Ed. by Andrew Gonzalez. Quezon City: Linguistic Society of the Philippines, pp. 71–94.
- Wolff, John U. (2018). *Proto-Austronesian phonology with glossary*. Cornell University Press. ISBN: 9781501735998. URL: <https://books.google.com/books?id=KSZzDwAAQBAJ>.
- Wouk, Fay and Malcolm D. Ross, eds. (2002). *The History and Typology of Western Austronesian Voice Systems*. Canberra: Pacific Linguistics.
- Yeh, Marie Meili (2011). "Nominalization in Saisiyat." In: *Nominalization in Asian Languages*. Ed. by Foong Ha Yap, Karen Grunow-Hårsta, and Janick Wrona. Amsterdam: John Benjamins, pp. 561–588.
- Zeitoun, Elizabeth and Stacy Fang-ching Teng (2016). "Reassessing the position of Kanakanavu and Saaroa among the Formosan languages." In: *Oceanic Linguistics* 55.1, pp. 163–198.

ACKNOWLEDGMENTS We would like to wholeheartedly thank Emily Drummond for her invaluable contributions to the paper.