Syntactic Conditions on Accusative to Ergative Alignment Change in Austronesian Languages

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This paper develops the proposal put forth by Aldridge (2015, 2016) for the emergence of ergative alignment in a first-order subgroup of the Austronesian family. I first provide new evidence for reconstructing Proto-Austronesian (PAn) as accusative rather than ergative. I then propose a significantly revised approach to Aldridge's proposed reanalysis. On the basis of evidence from Tsou, I propose that the reanalysis took place in biclausal constructions embedded under motion or locative verbs. Since such biclausal constructions are contexts for restructuring, no accusative case is available for an object. This forced objects which needed structural licensing to value nominative case with T. I additionally show that subjects were assigned inherent non-nominative case in PAn when objects needed to enter into Agree with T, as when valuing nominative case. These conditions yielded a new ergative clause type in a daughter of PAn, which Aldridge (2015, 2016) calls "Proto-Ergative Austronesian". No change took place in clauses lacking an object needing structural licensing. Consequently, subjects in intransitive clauses and transitive clauses with indefinite objects continued to surface with nominative case, yielding the type of ergative alignment prevalent in Formosan and Philippine languages today.

Keywords: Syntactic reconstruction, restructuring, grammaticalization, motion verb, alignment change, Austronesian

1. Introduction

Most of the Austronesian languages of Taiwan, as well as in the Philippines, exhibit a non-accusative type of alignment in their morphological case marking. In these languages, different verbal affixes seem to signal which DP in the clause has nominative case. The following examples exhibit the alignment in the Formosan[1] language Tsou. A bilabial nasal prefix appears when the subject is the nominative argument, regardless of whether the clause is mono-valent (intransitive) (1a) or multi-valent (1b). The suffix *-a* appears on the main verb when a theme or patient in a transitive clause has nominative case, as in (1c). The applicative suffix *-i* is required for a goal or locative argument to be given nominative case (1d).[2] Note further that Tsou finite clauses are all introduced by an auxiliary.

(1) a. **m**i-ta **m**-ongsi 'e pasuya
INTR-3SG INTR-cry NOM PN
'Pasuya is crying.' (Tsou; Chang 2011: 281)

[1] The term 'Formosan languages' refers collectively to Austronesian languages spoken in Taiwan but it does not designate a subgroup, as multiple high-order subgroups of Austronesian are represented in Taiwan.
[2] There is a second applicative that selects instruments, beneficiaries, and transported themes. For simplicity, I use only the locative applicative to illustrate the applicative clause type.

b. **m**o **m**o-si ta pangka to emi ‘o amo
INTR.3SG INTR-put OBL table OBL wine NOM father
‘Father put wine on the table.’ (Tsou; Chang 2011: 285)

c. i-ta teaph-**a** to kexpx ta pasuya *’e* *cxyx*
TR-3SG put.into-TR OBL backpack OBL PN NOM lunch.box
‘Pasuya put the lunch box into his backpack.’ (Tsou; Chang 2011: 282)

d. i-si si-**i** ta amo ta emi *‘e* *pangka*
TR-3SG put-APPL OBL father OBL wine NOM table
‘Father put wine on the table.’ (Tsou; Chang 2011: 285)

It is controversial as to whether Philippine and Formosan languages with the type of alignment shown in (1) should be analyzed as ergative or having a different type of non-accusative alignment, e.g. the split-ergative pattern referred to by Himmelmann (2005) and others as “symmetrical voice”. The controversy hinges on whether constructions like (1b) are transitive or antipassive. In Tsou, a theme or patient object in clauses like (1b) is nearly always indefinite, supporting Chang’s (2011) analysis of this language as fully ergative and possessing an antipassive construction. For the purposes of this paper, it is not important as to whether these languages are analyzed as fully ergative or as split-ergative. I use the term “ergative” in order to simplify the discussion.[3]

This type of ergative alignment is found in nearly all of the languages spoken in Taiwan and the Philippines. Given that Taiwan is the homeland of the Austronesian language family, with several high-order subgroups represented there, it is expected that these languages exhibit archaic characteristics. Unsurprisingly, Wolff (1973) Blust (1999, 2009/2013), and Ross (2009, 2012) reconstruct Proto-Austronesian (PAn) as having this type of alignment. However, there is also one Formosan language which clearly has accusative alignment. As can be seen from the first person pronouns in the following examples, transitive and intransitive subjects (2a and 2c, respectively) take the same form, while the transitive object in (2b) is clearly different. The omission of the final /u/ in (2c) is merely the consequence of deletion in the context of a following vowel-initial word.

(2) a. o-dhaa-dhaace=**lrao** (Mantauran Rukai[4])
DYN-RED-walk=1SG.NOM
‘I am walking.’

b. o-cengele-mi’=**iae**
DYN-see-2SG.NOM=1SG.OBL
‘You see me.’

c. o-cengele-**lra**=imia’e
DYN-see-1SG.NOM=2SG.OBL
‘I see you.’

It is generally agreed that the Rukai dialects collectively form a first order subgroup of Austronesian. But the existence of accusative alignment so high in the Austronesian family tree presents a serious challenge for reconstructing PAn as ergative. Blust (1999, 2009/2013), Ross (2009, 2012), and Blust and Chen (2017) propose that the alignment in Rukai changed from ergative to accusative when the verbal inflection marking ergative clauses was lost. But they

[3] I also gloss examples in these languages according to an ergative alignment, which sometimes means altering the glosses in the source. This is intended only to simplify the exposition and not as a criticism of the original analysis.
[4] Unless otherwise indicated, examples are taken from the author’s fieldnotes.

present no empirical evidence to support this view. In contrast, Aldridge (2015, 2016) proposes that PAn was accusative, and this alignment is retained in Rukai, while ergative alignment was an innovation. I adopt and develop Aldridge's proposal in this paper and present novel evidence against reconstructing PAn as ergative. Specifically, I first show in section 2 the unlikelihood that Rukai could have developed accusative alignment on Ross' (2009) proposal. Following this, I argue in section 3 for a new syntactic environment not considered by Aldridge (2015, 2016) in which ergative alignment was innovated in PEAn. I propose that the reanalysis took place in clauses embedded under motion and locative verbs. Such clause types are restructuring environments in which accusative case is unavailable for the embedded object, forcing this object to value nominative case with T when it needed structural licensing, i.e. when it was definite. Section 4 follows up this discussion with an account of the development of the other relevant morphemes marking ergative clause types in PEAn. I also point out additional problems for Ross (2009) in section 4. The main upshot of these is that my proposal not only provides a plausible account of the development of ergative alignment in Austronesian languages, it also offers an analysis of the synchronic variation between ergative and accusative alignment in high-order Austronesian subgroups in terms of natural change. In contrast, Ross' (2009) reconstructions, in addition to being stipulated on the basis of "majority rule", also entail multiple instances of unmotivated changes.

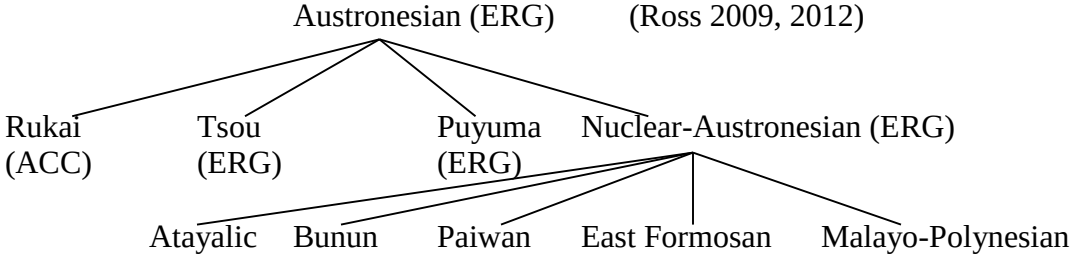
2. The alignment of Proto-Austronesian

In this section, I consider the question of whether PAn had ergative or accusative alignment. In section 2.1, I first introduce Ross' (2009, 2012) proposal that PAn was an ergative language and this alignment was lost in Rukai when the morphemes identifying different types of ergative verbs were lost. In section 2.2, I present evidence in favor of reconstructing accusative alignment for PAn and also argue against Ross (2009, 2012) by showing that even the loss of ergative verbal morphology is unlikely to have triggered an alignment change in Proto-Rukai.

2.1 Was PAn ergative?

Ross (2009, 2012) has proposed that there are four primary subgroups of Austronesian. Aside from Rukai, Tsou, and Puyuma, all other Austronesian languages, including the remaining Formosan languages and all of Malayo-Polynesian, are contained in the fourth subgroup, what Ross dubs "Nuclear Austronesian" (NAn). Adopting an earlier idea posited by Starosta et al. (1982), Ross proposes that the defining innovation of the NAn subgroup is the reanalysis of embedded nominalizations, specifically relative clauses in cleft constructions, as finite root clauses, replacing an existing set of ergative clause types that he assumes were inherited from PAn.

(3)



On the basis of the fact that ergative alignment is found in Puyuma, Tsou, and conservative members of NAn, Ross reconstructs PAn as an ergative language. His reconstructions are based primarily on Puyuma, which has the same type of ergative alignment found in Tsou. When the subject has nominative case, the <*em*> infix appears on the verb, as in (4a, b). Note also that an object is generally indefinite in this clause type, as can be seen in (4b), suggesting that it may be an antipassive. Puyuma also has a mono-transitive ergative clause type with a nominative theme, as in (4c). And the locative applicative clause type can be seen in (4d).

(4) a. t<**em**>a<ka>kesi=ku (Puyuma; Teng 2008: 135)
<INTR><RED>study=1SG.NOM
'I am studying.'

b. tr****akaw dra paisu *i* *isaw* (Puyuma; Teng 2008: 147)
<INTR>steal INDF.OBL money SG.NOM Isaw
'Isaw stole money.'

c. tu=trakaw-**aw** *na* *paisu* kan isaw (Puyuma; Teng 2008: 147)
3.GEN=steal-TR DEF.NOM money SG.OBL Isaw
'Isaw stole the money.'

d. tu=trakaw-**ay**=*ku* dra paisu kan isaw
3.GEN=steal-APPL=1SG.NOM INDF.OBL money SG.OBL Isaw
'Isaw stole money from me.' (Puyuma; Teng 2008: 147)

Ross (2009, 2012) proposes that these affixes and their concommitant alignment patterns be reconstructed to PAn. The realis affixes **-aw* and **-ay* were later replaced by nominalizers **-en* and **-an*, respectively, in Proto-NAn.

(5) **PAn**	INTR	ERG	APPL
Realis	**M*-V	*V-*aw*	*V-*ay*

It is uncontroversial that the intransitive affix was found in PAn, reconstructed by Wolff (1973) as **<um>* and by Ross (2009) as **m-*. This affix is reflected widely across the Austronesian family[5] and even appears in Rukai, reflected as the prefix *w-* marking active dynamic verbs in some dialects. Given that Rukai has accusative alignment, this affix is not limited to intransitive or antipassive contexts but appears on all dynamic verbs. However, its function is still parallel to its cognate in ergative Austronesian languages, since its appearance correlates with a nominative subject.

(6) **w**-a-thenay ki tatay namia (Tona Rukai)
ACT.DYN-REAL-sing NOM.PN father 1PL.EXCL.OBL
'Our father sings.'

However, Rukai has no trace of the ergative and applicative suffixes. Ross proposes that these were lost and as a result the ergative alignment also reverted to accusative. In the following subsection I present evidence against Ross' assumption that Rukai changed from an ergative to an

[5] Reflexes of **<um>* are found in all first-order subgroups of the Austronesian family, regardless of whether the number of these subgroups is proposed to be two (Aldridge 2015, 2016), four (Ross 2009), or ten (Blust 1999). Consequently, it is uncontroversially reconstructed to PAn.

accusative language by showing the unlikelihood that this could have been triggered by the loss of ergative verbal affixes like *-*aw* and *-*ay*. I also empirical evidence in favor of reconstructing PAn with accusative alignment.

2.2 Evidence against reconstructing PAn as ergative

As summarized in the preceding subsection, Ross (2009, 2012) reconstructs PAn with ergative alignment on the basis of majority rule, given that all but one of the languages he compares manifest this type of alignment. However, he offers no independent evidence for this. Nor does he provide an explanation for the accusative alignment found in Rukai other than his speculation that the alignment changed when the morphology marking transitive/ergative verbs found in Puyuma and Tsou was lost without a trace. In this subsection, I show this scenario to be highly unlikely. First, there is no evidence in Rukai for the types of sound change that would lead to such a loss. Secondly, even if these morphemes were lost for some other reason, alignment change would not be a direct consequence. Finally, I also present an empirical argument in favor of reconstructing PAn with accusative alignment.

On Ross' reconstruction, realis clause types in PAn can be schematized as in (7). I show this for clauses containing external argument (e.g. agent) subjects, theme objects, and goal or locative pseudo-arguments in order to show how nominative case appears on these different constituents depending on the verbal morphology. Specifically, in each clause type, the subject, theme, and applied object are assigned nominative case, respectively. The other arguments appear with a non-nominative case, labeled "ergative" for transitive subjects and "oblique" for non-nominative themes. The verb is affixed with **m-* in the antipassive clause in (7a). The theme has oblique marking and the goal/locative constituent is packaged as a PP. The suffix *-*aw* appears when the theme has nominative case and the subject has ergative case, as in (7b). The verb takes the applicative *-*ay* when a goal or locative constituent has nominative case, as in (7c). The non-nominative theme in (7c) has oblique case, as it does in an antipassive like (7a).

			EA	TH	GOAL/LOC
(7)	a.	*m-V	NP_{NOM}	NP_{OBL}	PP
	b.	*V-*aw*	NP_{ERG}	NP_{NOM}	PP
	c.	*V-*ay*	NP_{ERG}	NP_{OBL}	NP_{NOM}

The change that Ross assumes for Rukai is the loss of the verbal affixes marking ergative clause types, i.e. *-aw* and *-ay*. Rukai retains a reflex of **m-*, as I pointed out above, so this affix could not have been lost. First, it should be pointed out that there is no obvious evidence for the loss of these affixes due to sound change. Citing Li (1977), Ross (1992) lists Budai Rukai reflexes of the following PAn words ending in /aw/ and /ay/. These word-final sounds are faithfully preserved in Budai. Li (1977: 36) further states that the PAn glides **w* and **y* are regularly retained in word-final position in Proto-Rukai.

		Budai	Proto-Rukai	PAn	(Ross 1992: 51)
(8)	a.	págay	*págay	*pájay	'rice'
	b.	báay	*báʔay	*beRáy	'give'
	c.	a-La-Láŋaw	*a[La]Láŋaw	*láŋaw	'big fly'

Naturally, it cannot be shown beyond the shadow of a doubt that the affixes in question could not have been lost due to some other influence, but such a hypothesis is difficult to accept in the absence of empirical evidence or plausible explanation. For example, an imaginable explanation might be language contact, but this scenario is also highly unlikely, given that Ross assumes these affixes to have been inherited by all of Proto-Rukai's sisters, and no other Formosan language has undergone the changes which Ross assumes for Rukai. Therefore, any language which Proto-Rukai could have come into contact with would have retained these affixes and therefore could not be a borrowing source for their loss.

Furthermore, even if evidence could be produced in favor of the loss of the *-*aw* and *-*ay* ergative and applicative suffixes in Proto-Rukai, there still is the question of whether this morphological change would result in a switch from ergative to accusative alignment. Ross (2009) assumes this to be the case. But as can be seen in the following schema, that is not the actual outcome predicted to result from the loss of these affixes. It is reasonable to assume that the applicative clause type disappears with the loss of the applicative morpheme, so goal/locative constituents can only be expressed as PPs in the antipassive in (9a) and the transitive clause in (9b). But a distinction still remains between the intransitive/antipassive and ergative clause types, because **m*- was not lost in Rukai, while the ergative verbs are bare. Consequently, the language would have continued to manifest ergative alignment.

			EA	TH	GOAL/LOC
(9)	a.	*m-V	NP_{NOM}	NP_{OBL}	PP
	b.	*V	NP_{ERG}	NP_{NOM}	PP

An anonymous reviewer points out that there is still a logical possibility that the ergative clause type schematized in (9b) could have been lost as an additional step in the development of accusative alignment in Rukai. This is indeed a logical possibility, but pointing out its existence only adds to the burden of proof for Ross (2009). In addition to evidence for loss of the suffixes shown in (7b, c), a motivation would also need to be identified for the loss of the clause type in (9b). However, the fact that there is an Austronesian language exhibiting transitive and intransitive verbal marking which is very similar to the system sketched in (9) makes this possibility even less likely. Unlike NAn languages of Taiwan and the Philippines, Chamorro has no affixes marking transitive or applicative verbs. Rather, the transitive verb stem is bare except for a subject agreement marker, as in (10a). Chamorro also has two intransitive clause types (Cooreman 1982). Chamorro reflects **m*- directly as <*um*>, which marks simple intransitives, as in (10b). The prefix *man-*, which also contains a reflex of **m*-, is used to mark antipassive, as in (10c).

(10) a. **Hu**=li'e' i lepblo.
ISG.ERG=see the book
'I saw the book.'

b. S<**um**>aga yo'.
<INTR>stay ISG.ABS
'I stayed.'

c. **Man**-li'e' yo' lepblo.
AP-see 1SG.ABS book
'I saw the book.' (Chamorro; Topping 1973: 83-85)

Chamorro differs from Rukai in having multiple reflexes of **m-*, but this is unsurprising given that Chamorro is a Malayo-Polynesian language. The *man-* prefix was an innovation in this subgroup (Ross 2002, Blust 2003, and others) and is found ubiquitously in Austronesian languages of the Philippines and Indonesia, as well as some languages outside this region like Chamorro and Malagasy. The relevant point here is that a language like Chamorro, with a dichotomy between bare and *m*-marked verbs, is the expected result if an ergative language like Puyuma were to lose the verbal affixes marking transitivity and applicatives. But this does not lead to a reanalysis of the language as accusative, since there is still a distinction between ergative and intransitive/antipassive verbs. The existence of this type of transitive and intransitive verbal marking in Chamorro is highly suggestive that a system like (9) is not inherently unstable, so independent evidence would be needed to provide a convincing case that one of the clause types shown in (9) failed to be transmitted from one generation to the next.

In addition, Aldridge (in press) provides empirical support for reconstructing PAn with accusative alignment. This support comes from the asymmetry between subject and non-subject relative clause formation. When the gap in a Rukai relative clause is the subject, the embedded clause takes the same form as a finite matrix clause, as evidenced by the appearance of tense morphemes. The future tense marker can be seen in the matrix clause in (11a) and in the subject relative clause in (11b).

(11) a ludha **ay**-kela ku tina=li
tomorrow FUT-come NOM mother=1SG.GEN
'My mom will come tomorrow.'
b [kuadra **ay**-suwasuwaw] ka muka-baru-barua
DEM FUT-clean TOP girl
'The one who will clean is the girl.' (Tanan Rukai)

In contrast, object relatives are nominalized, as evidenced by the nominalizer *-an~~i~~* on the embedded verb. Object relative clauses can contain aspect markers like the imperfective *a-* but not tense.

(12) w-aga=su sa aga sa [**a-kane-ane**=ta ki maum]
PST-cook=2SG INDF food INDF IPFV-eat-NMLZ=1PL.INCL P night
'Did you cook dinner (the food that we will eat tonight)?' (Tanan Rukai)

Aldridge (in press) argues that this asymmetry is a consequence of Rukai's accusative alignment. Like other Philippine and Formosan languages, relativization in Rukai is highly constrained. It is always possible for the NP with nominative case to become the head of a relative clause. Thus, the subject can undergo relativization in a finite clause, since it has nominative case. But an object NP cannot become the head of a relative clause in the presence of another nominative NP. Aldridge proposes that this is why Rukai object relative clauses are nominalized. Since the subject in a nominalization has genitive case, there is no nominative NP to block movement of the object.

Syntactically ergative languages exhibit a similar constraint, as pointed out by Dixon (1994) and many others, but these languages do not necessarily require the embedded clause to be nominalized in object relativization. This is because the object is the NP with nominative case in a transitive clause. Consequently, objects can undergo relativization directly in finite clauses, as shown in (13b) for Tsou. It is clear that the embedded clause in (13b) is finite, due to the presence of the same auxiliary verb and transitive morphology as in the main clause in (13a).

(13) a. **i**-ta teaph-**a** to kexpx ta pasuya ’e cxyx
TR-3SG put.into-TR OBL backpack ERG PN ABS lunch.box
‘Pasuya put the lunch box into his backpack.’ (Tsou; Chang 2011: 282)

b. cuma na [**i**-he papas-**a**]
what ABS TR-3PL cut-TR
Lit. ‘What are the things they are cutting?’
‘What are they cutting?’ (Tsou; Chang 2011: 301)

But Puyuma is like Rukai in having an asymmetry between finite subject and nominalized object relative clauses. Subject relative clauses in Puyuma involve a gap in the nominative NP position in a finite clause. The finiteness of the embedded clause in (14b) is indicated by the presence of the same intransitive infix <*em*> that appears on the matrix verb in (14a).

(14) a. t<**em**>a<ka>kesi=*ku*
<INTR><RED>-study=1SG.NOM
‘I am studying.’

b. [a [$_{CP}$ OP [t<**em**>a<ka>kesi *e*]]]=ku
INDF.NOM <INTR><RED>-study =1SG.NOM
‘I am a student.’ (lit ‘I am one who studies.’) (Puyuma; Teng 2008: 135)

In contrast, when a relative clause is formed on object position, the clause must be nominalized, as shown in (15b). This is clear from the presence of the nominalizing suffix *–an* and the perfective aspect infix <*in*>. Teng (2008) points out that <*in*> can only attach to nominalized verbs. The transitive suffix *-aw* attaching to finite verbs, as in (15a), cannot surface in nominalized clauses.

Puyuma (Teng 2008)

(15) a. tu=trakaw-**aw** *na* *paisu* kan isaw
3.ERG=steal-TR DEF.NOM money SG.OBL Isaw
‘Isaw stole the money.’ (Puyuma; Teng 2008: 147)

b. ala amuna sadru [[tu=tr<**in**>ekelr-**an**] na asi]
maybe because many 3SG.GEN=<PFV>drink-NMLZ DEF.NOM milk
‘Maybe because the milk he drank is a lot.’ (Puyuma; Teng 2008: 105)

Since Puyuma is an ergative language, there is no obvious reason why it should require nominalization in order to relativize on object position, given that transitive verbal clauses afford nominative case to their objects. On the other hand, if accusative alignment is posited for the proto-language, then the nominalization requirement for object relativization receives a straightforward explanation. Nominalization was required in PAn in order to afford non-nominative case to the embedded subject and allow movement of an object. Given that Puyuma retains the nominalizing morphology inherited from PAn (Ross 2009), it also naturally retains the clause types derived from these morphemes. Consequently, nominalized object relative clauses can simply be viewed as a retention.

In contrast, object relativization in Tsou does not require nominalization but rather takes place in finite clauses, as pointed out above. It may be asked at this point why Tsou does not retain nominalized object relative clauses like Puyuma does. I follow Ross (2009) in assuming for the

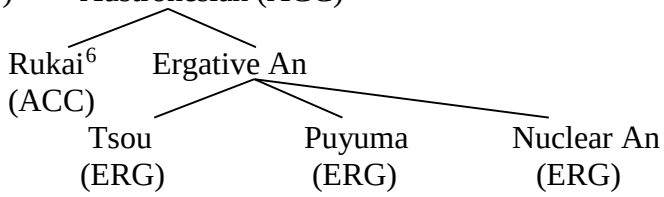
purposes of this paper that Tsou has lost the clausal nominalizations that should be reconstructed to PAn. The motivation for this loss is beyond the scope of the current investigation, but one possibility is that it is related to word order in the language. Tsou is a VOS language, placing the nominative NP in clause-final position. Since this NP must move to the clause-final position of prominence in order to value nominative case in finite clauses, this movement could also serve to form a relative clause in embedded environments. For the purposes of the present discussion, I will only note that positing the loss of clausal nominalizations for Tsou is not problematic in the way that positing the loss of ergative clause types in Rukai is. As Ross (2009) points out, nominalizing morphology survives in some lexical nominalizations in Tsou, establishing the plausibility that this morphology was indeed inherited from PAn by Proto-Tsou.

In this section, I considered and then rejected Ross' (2009) assumption that PAn should be reconstructed as an ergative language by demonstrating the implausibility of his proposal for the loss of ergative alignment in Rukai. I also offered empirical evidence in favour of reconstructing PAn with accusative alignment. In the following section, I propose and argue for the alternative in which PAn is reconstructed with accusative alignment. This proposal receives empirical support from existing Formosan languages. I further argue that the analysis is based on natural synchronic and diachronic syntactic processes rather than relying solely on majority rule and stipulated logical possibilities.

3. Reconstructing PAn with accusative alignment

In this section, I develop the proposal put forth by Aldridge (2015, 2016) that PAn was an accusative language, and this alignment is retained in Rukai. I also propose an analysis of how ergative alignment emerged in Proto-Ergative Austronesian (PEAn).

(16)

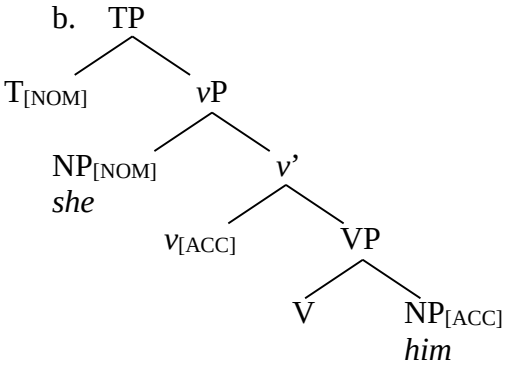


My primary focus is to elucidate the syntactic conditions which could have produced the ergative alignment found in these languages and manifested most clearly in Tsou and Puyuma. The syntactic difference between ergative and accusative alignment is in the distribution of nominative and non-nominative cases in transitive clauses. In an accusative language, nominative case appears on the highest nominal in the argument structure, i.e. the subject, while accusative case appears on an internal argument in VP. This is accounted for in terms of locality of case valuation. Nominative and accusative cases are valued by the functional heads T and *v*, respectively, on the highest nominal argument in their c-command domains. The subject occupies the structurally highest position c-commanded by T, so it values nominative case. The accusative case valuing functional head *v* c-commands the object (but not the subject), so the object receives accusative case from *v*.

6 This proposal is in agreement with Starosta's (1995, 2001) claim that Rukai is a primary subgroup of Austronesian, though there are significant differences between the bases for the two claims. Starosta also assumes that PAn was an ergative language, in stark contrast to the proposal advocated in this paper.

(17) a. She sees him.

b.



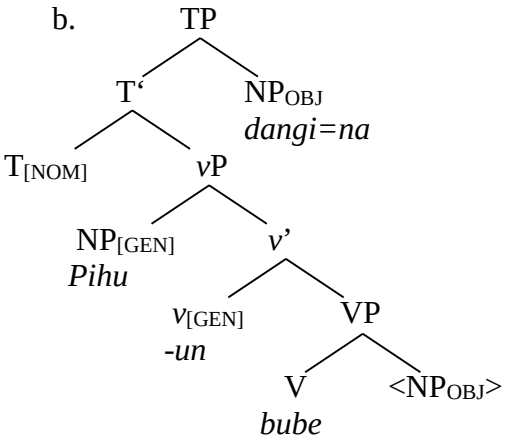
But in an ergative language, nominative (often referred to as "absolutive") case appears on the object rather than the subject, presenting a challenge to the locality condition on case valuation. Consequently, there appears to be a violation of locality resulting from the valuation of nominative case on the object rather than the subject. A common solution to this problem is to propose that, rather than an accusative case feature for an object, transitive *v* has an ergative case feature, which it assigns directly (as inherent case)[7] to the subject before T values nominative case (Murasugi 1992, Ura 2000, Legate 2008, and others). The ergative case is spelled out as genitive in most Formosan languages. This solves the locality issue, because the subject already has case when T looks for a goal to value nominative case with. Consequently, T is able to ignore the subject and value nominative case on the object. But in some ergative languages, the object additionally undergoes movement over the subject in order to be in a local relation to T to value nominative case. This is the analysis that Aldridge (2004) proposes for the Formosan language Seediq. Nominative arguments in this language occupy clause-final position, which is accounted for by the rightward position of [Spec, TP] in (18b).[8] The verb-initial word order in Seediq is derived by movement of the verb to clause-initial position, taking the transitive suffix with it as it traverses through *v*. I argue for this type of analysis for PEAn below.

(18) a. wada bube-**un** na Pihu ka dangi=na (Seediq)
PST hit-TR GEN Pihu NOM friend=3SG.GEN
'Pihu hit his friend.'

[7] An anonymous reviewer asks why I do not entertain other possible approaches to case-marking in ergative languages. The reason is because it is not my purpose to argue for a particular approach to ergative morphology but to develop the syntactic analysis of one existing approach. The current introductory discussion focuses particularly on providing the background for understanding this approach, and one part of it is the assignment of inherent case to the ergative NP.

[8] This is a greatly simplified version of Aldridge's analysis. She follows Kayne (1994) in assuming that specifiers are universally projected on the left, which necessitates both the absolutive NP and the remnant predicate to undergo movement in order to derive the absolutive-final basic word order. But this more complicated derivation is not necessary in order to account for the facts considered in this paper, so I opt instead for the simpler approach first proposed by Guilfoyle (1992) for Malagasy and later adopted by Holmer (1996) and Chang (1997) for Seediq.

b.



In short, there are two distinguishing characteristics of case licensing in ergative languages: 1) the lack of accusative case on *v*; 2) and the presence of an ergative case feature on *v*. Consequently, the change from accusative to ergative alignment must take place in a syntactic environment with these two characteristics. Aldridge (2015, 2016) focuses primarily on the first and proposes that the reanalysis took place in irrealis mood, which she claims is a syntactic environment lacking accusative case for an object. Evidence for the irrealis source of ergative alignment comes first from the striking parallel between realis and irrealis inflection in Puyuma. The realis affixes are repeated below. The ergative and applicative suffixes are both diphthongs, containing a labiovelar offglide in the former and a palatal offglide in the latter.

(19)	**Puyuma**	INTR	ERG	APPL
	Realis	<*em*>V	V-*aw*	V-*ay*

The vowel suffixes in irrealis clauses, particularly in the imperative mood, bear striking similarity to the offglides in the realis paradigm, *-u* and *-i*, respectively.

(20) a. pilang-**u** i temuu
take-TR.IMP SG.NOM your.grandmother
m-uka i drena-drenan
INTR-go LOC RED-mountain
‘Take your grandmother to the mountains.’

b. puka-**i** dra tidrul dra samaya
put-APPL.IMP INDF.OBL wasp INDF.OBL some
‘Put some wasps (in).’ (Puyuma; Teng 2008: 216)

This prompts Aldridge (2015, 2016) to propose that the realis diphthongal suffixes were derived by adding **-u* and **-i* to a stem ending in **-a*.[9] Given that **-u* and **-i* belong to the irrealis paradigm, Aldridge proposes that **-a* was also an irrealis suffix, specifically expressing subjunctive mood. Regarding the change to ergative alignment, she proposes with Hopper & Thompson (1980) that irrealis mood is a detransitivized clause type, and this *v* in PAn was unable to case license an object. But given that a definite or specific object must be structurally licensed, these objects had to value nominative case with T. As for the case of the subject, she suggests that

[9] This pattern was also noticed by Ross (2002), but he proposed no account for it.

the reanalysis was facilitated when the subject was expressed as a clitic pronoun which incorporated to T and consequently did not need to value case. This allowed the nominative case feature on T to be valued with the object, yielding an ergative clause type.

However, this proposal is not without problems. First, structural accusative case is not generally lost in irrealis mood cross linguistically. For example, Turkish uses nominalizations to express subjunctive mood. The subject has genitive case rather than nominative, but the object can still value accusative case, as in (21a). (21b) shows that in addition to a pronominal object, the verb in a Greek subjunctive clause can agree with the subject, indicating that structural licensing is available for both arguments. Consequently, there is no evidence that subjunctive clauses cross linguistically are unable to structurally license an object.

(21) a. [Sen-in sınav-ı geç-me-n]-i isti-yor-um.
you-GEN test-ACC pass-NFIN-2SG-ACC want-PRS.PROG-1SG
'I want that you should pass the exam.' (Turkish; Kornfilt 2007: 317)

b. Afti fenonde [na mas nikun].
they seem.3PL SBJV us defeat.3PL
'They seem to be defeating us.' (Greek; Soames and Perlmutter 1979[10]: 157)

Another problem is the stipulation that clitic pronouns incorporate to T, which is not provided independent support. In this paper, I adopt Aldridge's (2015, 2016) proposal that ergative alignment was innovated in PEAn. But I argue for a different syntactic environment providing the conditions for the change. Specifically, I agree that this was an embedded clause type, but the lack of accusative case has a different explanation. I propose that these embedded clauses were all selected by motion or locative verbs. The unavailability of accusative case for the embedded object is accounted for given that such embedded clauses are all restructuring contexts, specifically lexical restructuring contexts, in the sense of Wurmbrand (2001). Such clauses lack accusative case for an object, so objects needing structural licensing must value nominative case with T. As for the case of the subject, I provide evidence that, not only in PEAn but also in PAn, subjects were assigned non-nominative case when an object needed to undergo movement and/or value nominative case. This discussion is the subject of section 3.2. I first set the scene for the syntactic analysis by identifying the structural environment in which the change took place in section 3.1.

3.1. Origin of the tense/aspect auxiliaries in Tsou

This paper also departs from Aldridge's approach in taking Tsou as its starting point rather than Puyuma. This is because Tsou finite clauses are all introduced by auxiliaries which express tense, aspect, or modality. I argue below that the realis auxiliaries expressing tense and aspect were grammaticalized from motion or locative verbs.[11] Other Ergative Austronesian (EAn) languages have lost these auxiliaries.

The auxiliaries in Tsou are divided into four categories, two used in intransitive/antipassive clauses and two used in ergative clause types. The former are affixed with a reflex of **m-*, while the latter lack this affix. According to Chang and Pan (2018), the auxiliaries express two types of aspect. Those which sometimes contain the vowel /i/ express events which are either in progress

[10] Cited in Ademola-Adeoye (2011).
[11] Tsou also has a series of modal auxiliaries which are not relevant to the discussion in this paper.

or are temporally relatively close to reference time. The examples given earlier in (1) all express this proximal aspectual relationship.

An earlier analysis by Zeitoun (1992) makes a four-way distinction. First, the /i/ class expresses non-past and the /o/ class expresses past, as shown in (22a) and (22b), respectively. Note further the difference in case markers on the objects, *ta* indicating that the object is visible at speech time, and *to* indicating that the object is not visible at speech time, further suggesting the temporal distance of the event relative to speech time.

(22) a. **mi**-ta mimo ta emi
INTR.NPST-3SG INTR.drink OBL wine
'He is drinking wine.'
b. **mox**-ta mimo to emi
INTR.PST-3SG INTR.drink OBL wine
'He drank/was drinking wine.' (Tsou; Zeitoun 1992: 46)

There is a second distinction expressed by the dichotomy between intransitive/antipassive auxiliaries with *m-* and auxiliaries in ergative clause types that lack this prefix. Zeitoun (1992) characterizes this distinction in terms of aspect, *m-* auxiliaries expressing imperfective aspect and auxiliaries lacking *m-* expressing perfective aspect. While the antipassive in (23a) is interpreted as ongoing at reference time, the transitive clause in (23b) is interpreted as completed. She further notes that there is an additional interpretive difference relating to the direct object. In (23a), it is interpreted as only partially affected, while the object in (23b) is more likely to be interpreted as fully affected. Though Zeitoun (1992) does not make this connection, the reduced affectedness of the object in (23a) is fully expected on an ergative analysis of the language in which (23a) is analyzed as an antipassive. In the following discussion, I show how this difference in the interpretation of the object relates to the diachronic development of ergative alignment in PEAn.

(23) a. mi-ta mimo ta emi
INTR.NPST-3SG INTR.drink OBL wine
'He is drinking wine.'
b. i-si ima si emi
TR.NPST-3SG drink NOM wine
'He has drunk the/some wine.' (Tsou; Zeitoun 1992: 50)

The following table summarizes the tense/aspect distinctions expressed by the realis auxiliaries. In most cases, the vowel /i/ occurs in non-past forms, while the vowel /o/ occurs in all of the past forms. Imperfective and perfective are distinguished in terms of the presence or absence of *m-*.

(24)

	Imperfective		Perfective
	+clitic	-clitic	+clitic
Nonpast	*mi*	*mo*	*i*
Past	*mo(x)*	*moso*	*o(x)*[12]

(Tsou; based on Zeitoun 1992: 51)

[12] According to Zeitoun (1992: 39-40), the presence or absence of /x/ is phonologically conditioned, /x/ being added when the auxiliary is followed by a dental obstruent.

The form *mo* containing the vowel /o/ occurs in both the past and non-past imperfective categories, which is unexpected if the non-past tense is expressed by the vowel /i/. However, there is reason to believe that non-past *mo* might not have been part of the original paradigm and instead is the result of a later development. For example, since *mi* can be followed by a clitic, while *mo* cannot (Zeitoun 1992, Chang and Pan 2018), *mo* might have been analogically extended to fill this gap in the paradigm. Given the special nature of *mo*, I tentatively suggest that some future innovation may have led to its spread into the non-past category.

I propose that the Tsou auxiliaries trace their origin to the following motion and locative verbs in PEAn.

(25)

PEAn	Intransitive	Transitive
Locative	**mi*	**i*
Motion	**mu*	**u*

I further propose that these verbs in turn trace their origin to PAn motion and locative verbs **mu* and **mi*, respectively. The basis for this reconstruction comes first from Blust (2003), who attributes a bound motion verb **mu* to PAn. Examples can be found in several Formosan languages like Thao in which a reflex of **mu* incorporates to the noun which expresses a destination, as in Thao. Liao (2011) lists additional examples from Nanwang Puyuma, Siraya, Saaroa, and Isbukun Bunun.

(26) a. mu-taipak
go-Taipei
'go to Taipei'

b. mu-taun
go-house
'go home, enter the house' (Thao; Blust 2003: 451)

But there are also Formosan languages in which a reflex of **mu* attaches to another verbal category. The ability of a reflex of **mu* to attach to verbs adds plausibility to my proposal that it could select VPs in PAn and PEAn.

(27) a. **m-u**-<a>-cekehle a kana'ana maataata.
INTR-MOVE-<IRR>-come NOM 3SG tomorrow
'He/she will come tomorrow.' (Saaroa; Li 2009: 175)

b. **m-u**-<a>-tahlamu=aku m-u-sala-sala.
INTR-MOVE-<A>-try=1SG.NOM INTR-MOVE-RED-road
'I try to walk.' (Saaroa; Li 2009: 203)

c. ***m-u**-kua* 'to go' (*-kua* 'be at, move') (Siraya; Adelaar 2004: 348)

d. ***m-u**-arĭng* 'fall (into)' (*-arĭng* 'throw') (Siraya; Adelaar 2004: 349)

Adelaar (2004) and Li (2009) further provide evidence for the bimorphemic status of *m-u-*. For example, the verbal prefix *m-* is dropped in imperatives like (28a). It is also replaced by the causative prefix *p-*, as in (28b). (28c) shows a transitive verb with the ergative suffix *-ən*, which is clearly incompatible with intransitive *m-*. Establishing *u-* as a morpheme adds to the plausibility of the syntactic analysis I propose below for the development of the Tsou, since the transitive auxiliaries *i* and *o(x)* do not contain a reflex of **m-*.

(28) a. *u-kua!* 'go!' (Siraya; Adelaar 2004: 349)

b. *p-u-alak* ‘produce a child, beget’ (lit., “bring forth a child”)
c. *u-paräx-ən* ‘have sex (woman), [“be gone to by a man”]’

Blust also reconstructs a locative prefix **i*. A reflex of **i* is also widely found in Austronesian languages as a locative preposition.

(29) trekelr **i** **ruma’** na trau
<INTR>drink LOC house DEF.NOM person
‘The person drinks (wine) at home.’ (Puyuma; Kuo 2015: 28)

Reflexes of **i* can also combine with verbal categories like the causative prefix *p-* in some Formosan languages, as in (30b). The following examples are also from Thao. Blust (2003: 454) offers similar examples from Paiwan.

(30) a. i-fafaw
LOC-above
‘above, on top’
b. p-i-fafaw
CAUS-LOC-above
‘put something on top’ (Thao; Blust 2003: 453)

The verbal use of the locative prefix can also be seen in Rukai. The existential verb is inflected with the Mantauran reflex of **m-*, and this can be causativized with the prefix *p-*.

(31) a. om-i-ki
DYN-LOC-DEM
‘exist, be in/at/on’
b. o-p-i-ki
DYN-CAUS-LOC-DEM
‘put’ (Mantauran Rukai)

Zeitoun (2019) reconstructs the Proto-Rukai existential verb as **i-a-kai* ‘LOC-REAL-ROOT’ with the locative prefix *i-*, though she does not assign a meaning to the following *kai*. Given that *kai* is used as a demonstrative in many Rukai dialects, I gloss *ki* in (31) as a demonstrative, with the meaning of *iki* becoming ‘be there/here’. Zeitoun et al. (1999) also show that existential verbs in Amis and Paiwan are formed by affixing the locative prefix *i-* to a demonstrative, in addition to Rukai.

Adelaar (2004) provides similar examples from Siraya in which locative verbs are prefixed with *m-*.

(32) a. *m-i-rung* ‘to sit’
b. *m-i-mala* ‘to be outside’ (*mala* ‘outside’) (Siyara; Adelaar 2004: 349)

Returning to PAn, I follow Blust (2003) in reconstructing a motion verb **mu*, but I further assume that it was bimorphemic, consisting of a verbal prefix **m-* and the vowel *u* expressing the semantics of motion. I also propose that the locative verb be reconstructed with a reflex of **m-*, hence **mi*, which was likewise bimorphemic.[13] This is because in the preceding examples, the locative marker *i* serves as an adpositional element but is not predicative unless it combines with

[13] According to Teng (2014), Puyuma has a possessive verb *m-i-* ‘have’ which incorporates with its possessee (e.g. *m-i-walak* ‘have a child/children’). However, Teng argues that this *m-i-* ‘have’ is not cognate with the locative verb **m-i-* but rather grammaticalized from the PAn verb **Si-* ‘wear’. This is plausible for two reasons. First, the consonant **S* has been lost in Puyuma, so the reflex should be *i-*, to which *m-* is added to derive the verbal form. Secondly, though *m-i-* is used to express possession in Puyuma, it does not express spatial location, making it an unlikely reflex of locative **m-i-*.

a verbal category like *m-*, as in (31a). I next propose that the auxiliaries in Tsou diachronically grammaticalized from these two verbs. The /o/ auxiliaries expressing temporal remoteness have their source in the motion verb **mu*, while the temporally proximate auxiliaries containing /i/ are related to the locative verb **mi*. Bybee et al. (1994), Heine and Kuteva (2002), and many others have also proposed that locative and motion verbs can grammaticalize into auxiliaries expressing tense or aspect. For example, Hook (1991) argues that a set of verbs expressing motion have grammaticalized into perfective aspect markers in Indo-Aryan languages. In (33), it is clear that reflexes of 'went' are functional categories and not lexical verbs because they co-occur with other lexical verbs functioning as the main verb. This is particularly clear in (33a), where the direction of motion is only compatible with the main verb *aa* 'come' and not with the functional verb *gayaa* 'went'.

(33) a. jab tak aap ne mujhe ciTThii dii
when by you ERG me letter give
vo yahAA aa **gayaa** thaa
he here come WENT had
'By the time you gave me the letter he had come here.' (Hind-Urdu; Hook 1991: 63)

b. to purtaats gOndhaLun **glaa**
he completely confuse WENT
'He became completely confused.' (Marathi; Hook 1991: 70)

Watanabe (2008) also proposes that Old Japanese past tense *-ki* grammaticlized from the conjunctive form of the motion verb *kuru* 'come'. It may also bear mentioning that contemporary Japanese progressive aspect is expressed by the existential verb *iru*. (34a) shows this verb expressing existence, while in (34b) it is a progressive auxiliary.

(34) a. inu=ga **iru**.
dog=NOM be
'There is a dog.'

b. inu=ga hasit-te **iru**.
dog=NOM run-CONJ be
'A/the dog is running.' (Japanese)

In this subsection, I proposed that the Tsou realis auxiliaries grammaticalized from motion and locative verbs in biclausal contexts. The following subsection proposes the syntactic analysis for how the accusative alignment of PAn changed to ergative in PEAn in clauses embedded under these motion and locative verbs.

3.2. Restructuring and grammaticalization of motion/locative verbs

In the preceding subsection, I proposed that the motion verb **mu* and the locative verb **mi* in PAn are the origins of the realis tense/aspect auxiliaries in Tsou. In PEAn, this binary opposition is diversified into the following four-way contrast. The key point here is the opposition between the intransitive forms with **m-* and the transitive counterparts lacking this prefix.

(35)

PEAn	Intransitive	Transitive
Locative	**mi*	**i*
Motion	**mu*	**u*

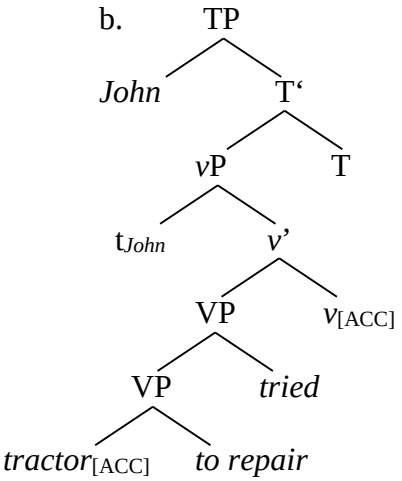
The purpose of this subsection is to account for the development of the transitive (ergative) members of the paradigm and their concomitant ergative case-marking patterns. I argue below that the reflex of **m-* must be dropped when the object needs to value structural case with T. Recall first that objects in antipassive constructions are typically indefinite, while the nominative object in an ergative clause must be definite and is typically fully affected by the event. The event is also generally telic. The examples in (36) illustrate this contrast.

(36) a. mi-'o baito to **tposx**.
INTR-1SG see.INTR OBL book
'I am reading a book.'
b. os-'o ait-i 'o **tposx**.
TR-1SG see-APPL NOM book
'I read the book.' (Tsou; Chang 2011: 300)

Such a correlation between object case-marking and interpretation is extremely common across the Austronesian languages spoken in Taiwan and the Philippines, including Tsou. It is also well known that definite and/or affected objects in telic events require structural case licensing (Runner 1993, Borer 1994, Kiparsky 1998, Ritter and Rosen 2000, among many others). In PAn, these objects would have been able to value accusative case with transitive *v*, but this possibility was lost in clauses embedded under motion and locative verbs. Motion and locative verbs are themselves intransitive and lack the ability to structurally case license an internal argument. Embedding under verbs of this type also induces restructuring, with the result that the embedded clause also loses the ability to value accusative case (Wurmbrand 2001). In Wurmbrand's analysis of lexical restructuring, the embedded clause consists of no more than a VP and lacks any functional categories, including the *v*P layer for valuing accusative case with the embedded object. Consequently, if an object needs accusative case, then it is dependent on matrix *v* to value this case.

(37) a. weil Hans den Traktor zu reparieren versuchte
since John the.ACC tractor to repair tried
'since John tried to repair the tractor' (German; Wurmbrand 2001: 17)

b.



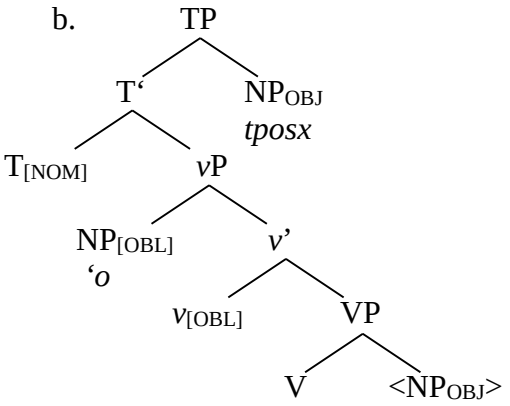
But when the matrix *v* is detransitivized and lacks an accusative case feature, then the embedded object can only value nominative case. Wurmbrand demonstrates this with the phenomenon of "long passive", in which the embedded object becomes the matrix subject and values nominative case.

(38) dass der Traktor zu reparieren versucht wurde
that the.NOM tractor to repair tried was
'that (they) tried to repair the tractor' (German; Wurmbrand 2001: 19)

Positing motion and locative verbs as the diachronic origin of the Tsou auxiliaries explains how the embedded object could not value accusative case in PEAn, since this case is absent in this environment. Consequently, definite objects had to value nominative case with T like embedded objects in long passives. Adopting Aldridge's (2004) analysis of argument licensing in ergative languages also explains the lack of a reflex of **m-* on both the auxiliary and main verb in ergative clauses. As summarized above, Aldridge (2004) proposes that transitive *v* in an ergative language is merged with both a non-nominative case feature for the subject and an EPP feature that forces movement of an object out of the VP so that it is in a structurally local relation to T, facilitating valuation of nominative case. Chang (2017) implements this analysis for Tsou. Nominative arguments in Tsou occupy clause-final position, as they do in Seediq, so the object moves to the rightward [Spec, TP] position. The subject clitic *o'* moves postsyntactically to attach to the auxiliary in clause-initial position.

(39) a. os-'o ait-i 'o **tposx**
TR-1SG see-APPL ABS book
'I read the book.' (Tsou; Chang 2011: 300)

b.



In contrast, a *v* containing a reflex of **m*- is neither able to assign non-nominative case to the subject, nor is able to force movement of an object. Consequently, objects in such clauses can only have non-nominative case and also are typically indefinite.

(40) mi-’o baito to **tposx**.
INTR-1SG see.INTR OBL book
‘I am reading a book.’ (Tsou; Chang 2011: 300)

I build on Aldridge’s (2004) analysis and propose that PAn also had this constraint on the appearance of **m*-. Specifically, only *v* that did not have a reflex of **m*- could carry an EPP feature to attract an internal argument and assign inherent case to its specifier. This proposal is given independent support by movement contexts in Formosan and Philippine languages, as well as the vast majority of Indonesian languages. As shown in (41a), subject extraction in Tsou[14] correlates with the appearance of the reflex of **m*- on the verb. In contrast to subject extraction, neither the auxiliary nor the verb can carry the reflex of **m*- when object extraction takes place, as shown in (41b). Note also that the subject in (41b) has oblique case rather than nominative.

(41) a. (zou) **sia** ‘e [**m**-i-ta eobako ta mo’o]?
EMPH who NOM INTR-3SG.NOM hit.INTR OBL Mo’o
‘Who is the one that hit Mo’o?’
b. (zou) **sia** ’’e [**i**-si eobak-a to pasuya]?
EMPH who NOM TR-3SG.OBL hit-TR OBL Pasuya
‘Who is the one that Pasuya hit?’ (Tsou; Chang 2000: 2)

This constraint is mirrored in the Rukai dialects, which have accusative alignment. A reflex of **m*-, specifically *w*- in (42a), appears when the subject is extracted.[15] As discussed in section 2.2, this is because subjects can undergo relativization directly in finite clauses, when the subject has nominative case, as shown in (42b). But the *w*- prefix disappears when an object is moved, as in (42c). The clause is also nominalized and the subject surfaces with genitive case.

[14] Note that *wh*-questions in which interrogative constituent surfaces in clause-initial position are cleft constructions. The interrogative constituent is in matrix predicate position, while the presupposition constitutes a headless relative clause function as the subject. There is also a nominative case marker selecting the clause. Furthermore, it is possible for a copula *zou* to precede the matrix predicate.
[15] *Wh*-questions in Tona are formed on clefts, as in Tsou.

Tona Rukai

(42) a. nani-ini [kodrai **w**-a-thenay]?
who-3SG.GEN that ACT.DYN-REAL-sing
'Who is it that is singing?'

b. **w**-a-thenay ki tatay namia
ACT.DYN-REAL-sing NOM.PN father 1PL.EXCL.OBL
'Our father sings.'

c. mani [thenay-**su** kosi'a]
what sing-3SG.GEN yesterday
'What did you sing yesterday?' (Tona Rukai)

Being nonfinite, nominalizations are always embedded clauses, but nominalizations cannot be employed in finite matrix environments to allow movement of an object over the subject. I propose that the mechanism employed for licensing definite objects needing to value nominative case in restructuring environments in PEAn was simply the extension of the type of *v* lacking **m-* to finite environments. This accounts for the lack of a reflex of **m-* on verbs in ergative clauses in EAn languages today. It also accounts for the lack of nominative case on an ergative subject, since this *v* assigns non-nominative case to this argument. In the next section, I sketch the subsequent changes which resulted in the creation of the other affixes on ergative verbs in EAn languages.

4. Subsequent changes

In the previous section, I proposed an origin for the ergative clause type in PEAn, as well as an analysis for how it developed syntactically. In this section, I propose an analysis of the origins of the transitive and applicative affixes marking ergative verbs in Tsou. Recall that *–a* marks basic ergative verbs, and *–i* is a locative/dative applicative.

(43)

Tsou	INTR	ERG	APPL
Nonfinite	*m*-V	V-*a*	V-*i*

Examples are shown below. In addition to the suffixes on the ergative verbs in (44b, c), the concord with the auxiliary is also very clear; both the auxiliary and the main verb lack the *m-* prefix.

(44) a. **m**i-ta **m**-ongsi 'e pasuya
INTR-3SG INTR-cry NOM PN
'Pasuya is crying.' (Tsou; Chang 2011: 281)

b. **m**o **m**o-si ta pangka to emi 'o amo
INTR.3SG INTR-put OBL table OBL wine NOM father
'Father put wine on the table.' (Tsou; Chang 2011: 285)

c. i-ta teaph-**a** to kexpx ta pasuya *'e cxyx*
TR-3SG put.into-TR OBL backpack OBL PN NOM lunch.box
'Pasuya put the lunch box into his backpack.' (Tsou; Chang 2011: 282)

d. i-si si-**i** ta amo ta emi *'e pangka*
TR-3SG put-APPL OBL father OBL wine NOM table
'Father put wine on the table.' (Tsou; Chang 2011: 285)

Turning now to the suffixes, I first follow Aldridge (2015, 2016), who adopts the view of Starosta et al. (1982) that the applicative *-i* originates as an incorporated preposition, specifically the locative preposition **i* in PAn and discussed in section 3.1. As for *-a*, I adopt an analysis similar to Aldridge (2015, 2016). Aldridge proposes that this was the subjunctive marker on verbs on PAn. However, positing a subjunctive clause type for PAn is problematic for a couple of reasons. First, Aldridge bases her reconstruction of the subjunctive affix primarily on the realis/irrealis mood distinction in Puyuma. But Teng (2018) has argued that, while Proto-Puyuma had as aspect distinction, the mood distinction is a subsequent development. If Proto-Puyuma did not have the relevant mood distinction, then it becomes unlikely that PAn had such a distinction either. Another problem with assuming that Tsou *-a* reflects an irrealis mood marker is the fact that this affix appears on all basic transitive nonfinite verbs in Tsou regardless of mood. For these reasons, I analyze PAn *-*a* as simply marking nonfiniteness.

Additional evidence for reconstructing *-*a* as nonfiniteness marking in PAn comes from Puyuma, where it attaches to nonfinite embedded verbs in purpose clauses.

(45) drua-drua me-na'u-**a** a trau
RED-come INTR-see-SBJV INDF.NOM person
'Many people came to see.' (Puyuma; Teng 2008:113)

Further indirect evidence for the function of PAn *-*a* as a nonfinite affix can also be found in Puyuma. The basic transitive and applicative affixes on finite verbs in Puyuma begin with /a/. Aldridge (2015, 2016) proposes that this reflects the subjunctive (i.e. nonfinite) *-*a* affix in PAn, to which the transitive and applicative affixes were attached.[16]

(46) a. tu=trakaw-**aw** na paisu kan isaw (Puyuma; Teng 2008: 147)
3.GEN=steal-TR DEF.NOM money SG.OBL Isaw
'Isaw stole the money.'
b. tu=trakaw-**ay**=ku dra paisu kan isaw
3.GEN=steal-APPL=1SG.NOM INDF.OBL money SG.OBL Isaw
'Isaw stole money from me.' (Puyuma; Teng 2008: 147)

Following Starosta et al. (1982) and Ross (2002, 2006), Aldridge (2015, 2016) proposes that the transitive nonfinite clauses in Puyuma were reanalyzed as matrix declarative clauses after loss of the auxiliaries introducing the embedded clauses. Tsou retains these auxiliaries, as discussed at length in section 3, but they are not found in Puyuma. However, evidence can be found Puyuma for an erstwhile role of auxiliary verbs. This evidence comes from clitic placement. Note first that bound pronouns in Tsou all encliticize to the auxiliary.

(47) a. moh-**ta** yuevaho to peisu to oko
INTR-3SG lend.INTR OBL money OBL child
'He is lending money to a child.' (Tsou; Zeitoun 1996: 510)

[16] The applicative affix *–a-y* can easily be analyzed as ending in the reflex of the PAn preposition **i*. I do not currently have an explanation for the origin of the /w/ (/u/) basic transitive suffix, but one possibility is the origin suggested by Starosta et al. (1982) as an object case-marker. See Ross (2006) for a reconstruction of PAn case-markers, one of which is *-*u*.

b. i-**si** si-a ta pangka to amo ‘o emi
TR-3SG put-TR OBL table OBL father NOM wine
‘Father put the wine on the table.’ (Tsou; Zeitoun 2000: 93-4)

In contrast to this, Puyuma exhibits a revealing asymmetry in clitic placement. Nominative clitics are post-verbal, while non-nominative (ergative subject) clitics procliticize to the verb. The procliticization strategy on the ergative verb can be explained as a result of the loss of auxiliary verbs introducing the clause, which left the following main verb as only possible host for the clitic. The fact that proclitics only attach to ergative verbs, i.e. those suffixed by *-a-w* or *-a-y*, lends indirect support to my proposal that **-a* was an affix indicating nonfiniteness on PEAn.

(48) a. bəray=**ku** ɖa kuraw ɖa ŋiaw
give=1SG.NOM OBL.INDF fish OBL.INDF cat
‘I gave a fish to a cat.’ (Puyuma; Tan 1997: 11)
b. **tu**=trakaw-aw na paisu kan isaw
3.GEN=steal-TR DEF.NOM money SG.OBL Isaw
‘Isaw stole the money.’ (Puyuma; Teng 2008: 147)

In this section, I proposed an analysis of the development of ergative alignment in Proto-Ergative Austronesian in nonfinite clauses embedded under motion and locative verbs. The nonfinite clause type was marked by **-a*.

(49) **PAn**
Finite **m*-V
Nonfinite **m*-V-*a*

Ergative alignment appeared when the embedded object was definite and needed to value structural case. Due to the lack of accusative case in either the embedded or matrix clause, such objects could only be licensed by valuing nominative case with matrix T. But in order for T to value case with the object, the reflex of **m-* on the verb had to be dropped and non-nominative case assigned to the subject. This led to the development of a new transitive clause type in which the verb was marked with the nonfinite suffix **-a* but lacked a reflex of **m-*. In this new clause type, the object had nominative case and the subject had non-nominative case, so it was clearly an ergative clause type. An applicative was also innovated when the preposition **i* was incorporated to the verb, producing a second ergative clause type. In PEAn, the ergative clause types appeared only in nonfinite contexts, a situation which persists in Tsou. These embedded clauses were reanalyzed as matrix clause types in Puyuma after loss of the auxiliary verbs.

(50)

PEAn	INTR	ERG	APPL
Realis	**m*-V	---	---
Nonfinite	**m*-V-*a*	*V-*a*	*V-*a*-*i*

Modern Tsou lacks the *-a* suffix on intransitive verbs, though it is clearly retained in several other Formosan languages, like Puyuma, as can be seen in (45). I suggest that this suffix is retained on intransitive verbs in languages where it has a dedicated function, which is nonfinite in Puyuma.

Another change which took place in Tsou was the monophthongization of the applicative verb ending from *-*a*-*i* to -*i* (Tsuchida 1975: 243).

To compare my reconstructions with Ross (2009), the relevant differences can be summarized in the following table. Specifically, he reconstructs ergative alignment for both finite matrix and nonfinite embedded clause types. The matrix (realis) affixes are based on Puyuma, while the nonfinite paradigm is reflected directly in Tsou.

(51)	**PAn**	INTR	ERG	APPL	(Based on Ross 2009)
	Realis	**M*-V	*V-*aw*	*V-*ay*	
	Nonfinite	**M*-V	*V-*a*	*V-*i*	

There are a number of shortcomings with this proposal. In section 2, I argued that a reconstruction like (51) faces numerous problems in accounting for the lack of the ergative and applicative affixes in Rukai. In addition to this, Ross must also assume loss of the realis paradigm in Proto-Nuclear Austronesian (PNAn). These languages retain parts of the nonfinite paradigm in irrealis mood but have innovated new ergative clause types in realis mood. In Seediq, for example, the basic transitive affix in negated clauses is *-i*, while it is *-un* in realis mood. Note that the negator is an auxiliary verb, which is followed by a nonfinite main verb.

(52)	a	ini=mu	burig-**i**	kanna		
		NEG=1SG.GEN	buy-TR.IRR	all		
		'I didn't buy all of them.'				
	b	wada=mu	burig-**un**	ka	patis-ni	
		PST=1SG.GEN	buy-TR.REAL	NOM	book-DEF	
		'I bought the book.'				(Seediq)

As noted in section 2.1, the defining innovation of the Nuclear Austronesian subgroup is the reanalysis of embedded nominalizations as finite matrix clauses. Ross (2009) reconstructs the following set of affixes marking nominalized verbs in PAn. It is verbs with these affixes that became finite realis verbs in PNAn.

(53)	**PAn**	INTR	ERG	APPL
	Realis (NMLZ)	**M*-V	*V-*en*	*V-*an*

However, this presents a problem for Ross, since it forces him to assume yet another unmotivated loss of the set of PAn realis affixes in (51). This problem does not arise on my reconstruction, because PEAn did not ergative and applicative realis affixes. In other words, this was a split-ergative language, in which the ergative clause types surfaced only in embedded environments.

(54)	**PEAn**	INTR	ERG	APPL
	Realis	**m*-V	---	---
	Nonfinite	**m*-V-*a*	*V-*a*	*V-*a*-*i*

When nominalized clauses were reanalyzed as finite in PNAn, the innovated clause types simply filled the missing slots in the paradigm in (54).

(55)

PNAn	INTR	ERG	APPL
Realis	**m*-V	*V-*en*	*V-*an*
Nonfinite	**m*-V-*a*	*V-*a*	*V-*a-i*[17]

This scenario also fits well with the fundamental approach put forth in this paper that ergative alignment originates in embedded clauses and is extended to matrix contexts through reanalysis of these embedded clauses as finite. It is worth noting in passing that this type of process is widely cited as the source of ergative alignment in many languages. The reader is referred to Aldridge (2017) for discussion and references.

5. Conclusion

In this paper, I proposed an account of how ergative alignment first developed in Austronesian languages. I began by arguing that Proto-Austronesian (PAn) should be reconstructed with accusative alignment rather than ergative. In addition to offering empirical evidence for this reconstruction, I also demonstrated the unlikelihood that the alternative reconstruction of PAn as ergative could account for the presence of accusative alignment in Rukai.

In accounting for the emergence of ergative alignment, I concentrated on identifying a plausible syntactic environment which could have produced this change. Such a syntactic environment must meet two conditions: 1) the lack of accusative case for an object; and 2) the availability of inherent case for the subject. Under these two conditions, nominative case will not appear on the subject; nor will accusative case appear on an object. Rather, the object will value nominative case with T when it requires structural licensing, as when it is definite or specific.

The syntactic environment I identified as having these characteristics is restructuring contexts in which the higher verb is an unaccusative motion or locative predicate. In this structural environment, accusative case is unavailable, because restructuring deprives the embedded clause of the *v*P layer which could supply this case. Accusative case is also unavailable in the higher clause, because this verb is unaccusative. Consequently, the object must value nominative case with T in order to be structurally licensed. As for the inherent case on the subject, I provided evidence that subjects were assigned non-nominative case in PAn when an object needed to value case with T and/or undergo movement over the subject. This constraint was inherited by PEAn and can be seen not only in the ergative alignment manifested by these languages but also in the prohibition on object movement in clauses where the verb is affixed with a reflex of **m-* and the subject has nominative case.

The final point I emphasize here is that this analysis allows the reconstruction of PAn alignment and the variation between accusative Rukai and the other ergative Austronesian subgroups to be accounted for in terms of natural synchronic and diachronic processes. Embedded clauses in restructuring environments provide a clear syntactic environment for the emergence of ergative alignment, and the grammaticalization of motion and locative verbs as tense/aspect auxiliaries is also a commonly observed diachronic process. Consequently, this proposal is a marked improvement over alternative approaches relying solely on the notion of "majority rule" but lacking an explanation for the synchronic variation.

[17] Additional innovations have taken place in different NAn languages, as can be seen in Seediq, where the applicative **-i* is now reflected as the irrealis ergative affix. Detailed discussion of these innovations is beyond the scope of this paper. But given the fact that *-a, -i, -ay*, etc. are found widely in irrealis and/or embedded clauses in Formosan NAn languages, it is clear that this proto-language inherited the paradigm.

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