CHAPTER 18

Tense, Aspect, and Mood in Formosan Languages

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18.1 Introduction

The goal of the present chapter is to provide a cross-linguistic perspective on tense, aspect, and mood (henceforth TAM) in the Formosan languages by showing how and to what extent such categories are grammaticalized. Specifically, it will be shown that TAM are not grammatically encoded in the same way in these languages, i.e., some languages favor certain TAM categories over others, and that TAM distinctions are expressed morphologically and/or lexically and that this dual possibility accounts for most of the cross-linguistic variations observed.

One major problem when dealing with the Formosan languages is that most elicitations and text translations are made through the medium of another language, viz. Chinese, Japanese, or English, each of these languages exhibiting different TAM systems that force us to analyze the Formosan languages not so much for what they are but for how they are being translated (see Bochnak & Matthewson 2020). It might thus be useful to first reiterate basic definitions of tense, aspect, mood, and modality.

Bhat (1999) classifies languages into three categories: tense-prominent, aspect-prominent, and mood-prominent, based on a number of criteria, which include the degree of grammaticalization, obligatoriness, systemacity (or paradigmization), and pervasiveness. Tense is the "grammaticalized expression of location in time" (Comrie 1985, p. 10). Absolute tense (or deictic tense) on the one hand, refers to time reference (i.e., past, present, and future) construed relative to the moment of speaking, e.g., *I came back two days ago*. Relative tense (or non-deictic tense), on the other hand, refers to a time reference construed relative to a different point in time, the moment being considered in context, e.g., *When I came back, it was raining*. Tense should be distinguished from time, which refers to the non-grammatical perception of the time that goes by, referring to the "past", "present", and "future". Time can be expressed linguistically through time words, adverbials, etc. Unlike tense, (grammatical) aspect is concerned with the internal constituency of an event (Comrie 1976, p. 3). A distinction is made between the perfective aspect, which focuses on the whole event (e.g., *He read a book*) and the imperfective, which focuses on the internal development of the event (e.g., *He is reading a book*). Grammatical aspect is also differentiated from lexical aspect, which has to do with the internal property of a verb (phrase), e.g., *He is happy* vs. *He reads this book every day before going to sleep*. Mood refers to the morphological marking of the verbs that allows the speakers to express their attitude or judgment toward what they are saying. The following moods are usually distinguished: indicative, interrogative, imperative, emphatic, subjunctive, injunctive, and optative,

but languages tend to collapse different moods together, as is the case in Formosan languages. Mood interacts closely with modality, which allows speakers to express their attitude or their position regarding the validation of an event and can be encoded morphologically, e.g., *It might rain later today*, and/or lexically *It will perhaps rain today*.

Tense, aspect, mood, and modality are closely related to voice and have been widely investigated in the Formosan languages, but different conclusions have been reached.

It has been demonstrated in Zeitoun et al.'s (1996) early cross-linguistic study that the Formosan languages have no grammaticalized tense distinctions, as discussed in §18.2. Such a hypothesis has been taken up again and demonstrated as valid for most Formosan languages, including Bunun (Li 2018), Kavalan (Hsieh 2018), Kaxabu (Lim 2022), Paiwan (C. Sung 2006, W. Huang 2012), Rukai (Zeitoun 2007), Nanwang Puyuma (Teng 2008), Saisiyat (Zeitoun et al. 2015), Seediq (L. Sung 2018), Siraya (Adelaar 2011), and Thao and Tsou (Weng 2000, Zeitoun 1992, 1996, H. Huang 2003, Pan 2010, Chang & Pan 2018), which have been treated as mood-prominent (and to a lesser extent aspect-prominent) languages, following Bhat's (1999) classification. Despite this large consensus, some authors, including L. Huang (1993, 1995a–b), S. Chen et al. (2021), Jeng (1999), and S. Chen & Jiang (2020), argue that Atayal and Bunun display absolute, relative, and/or existential tense. In recent years, it has become clear that three languages, Kanakanavu (Zeitoun & Teng 2016), Saaroa, and Katripul Puyuma (Teng 2018), show different properties as far as TAM are concerned, with Kanakanavu having grammaticalized aspect as its most prominent feature. These three languages are treated in a separate section (see §18.4). Aspectual distinctions are discussed in §18.3. In §18.5, it is shown briefly how mood interacts with voice, negation, and modality.

18.2 Mood-Prominent Languages and the Realis/Irrealis Dichotomy

Most Formosan languages exhibit a basic mood dichotomy between realis (§18.2.1) and irrealis (§18.2.2). What is stressed in the realis is the validation of a situation, that is, the actualization of an event. Irrealis, in contrast, expresses unrealized events, that is events that will take place in the future, may occur (hypothetical), or should have happened but did not (counterfactual).

18.2.1 *Realis*

When there is no overt temporal or aspectual marking, the realization of an event is unmarked, as shown in §18.3.1.1. The notion of time is encoded through

overt temporal or aspectual marking, as further demonstrated in §18.3.1.2. Tsou makes an interesting remote/immediate distinction (§18.3.1.3).

18.2.1.1 No Overt Temporal or Aspectual Marking

In the realis, without any further morphological or lexical encoding, informants may give different interpretations.

In Atayal, realis forms can be interpreted as having a progressive meaning over a past or habitual interpretation, as in (1), but other readings are possible depending on the discourse context.

(1) Atayal (Zeitoun et al. 1996, p. 25)
***m-ihiy**=ku' laqi'.*
AV-beat=1SG.NOM child
'I beat/am beating/usually beat a child/children.'

In Paiwan, the realis may get a habitual or past interpretation (2a), the present progressive being marked through reduplication, as in (2b).

(2) Paiwan (Zeitoun et al. 1996, p. 25)
a. ***k⟨em⟩elem** ti Palang tai Kalalu.*
⟨AV⟩beat NOM.PN Palang OBL.PN Kalalu
'Palang (usually) beats/beat Kalalu.'

b. ***k⟨em⟩ele~kelem** ti Palang tai Kalalu.*
⟨AV⟩RED~beat NOM.PN Palang OBL.PN Kalalu
'Palang is beating Kalalu.'

In Kavalan (3a–b) and Thao (4a–b), a past interpretation is usually obtained, though certain contexts lead to a generic/habitual present meaning, as in (3c) and (4c).

(3) Kavalan (Li & Tsuchida 2006)
a. ***m-saRaq** a ti Utay tu zana tama=na.*
AV-make NOM PN Utay OBL 3SG.GEN father=3SG.GEN
'Utay made wine for his father.' (p. 32)

b. ***tutun-an**=na ni Abas rpaw=ku.*
burn-UVP=3PL.GEN GEN Abas house=1SG.GEN
'My house was set on fire by Abas.' (p. 32)

c. ***k⟨m⟩uay***=*iku tu zna.*
⟨AV⟩farm=1SG.NOM OBL paddy
'I cultivate rice.' (p. 134)

(4) Thao (Blust 2003)
a. *yaku* ***m-u-nay,*** *ma-thuaw ihu* ***ma-alah'a,***
1SG.NOM AV-go-here STAT-very 2SG.NOM STAT-hospitable
k⟨m⟩athu *yamin* ***m-un-ruza*** *Kiutsok kilhnaqualh.*
⟨AV⟩bring 1PL.EXCL.OBL AV-go-travel.by.boat Kiutsok relax
'(When) I came, you were very hospitable, (you) took us on a boat ride to Kiutsok (local Taiwanese place name) to play the tourist.' (p. 288)

b. *nak=a hulus* ***pi-suhúy****-i-k*
1SG.GEN=LNK clothes CAUS.LOC-there-UVP-1SG.GEN
sinay-an patilhaz, ***antabal-in*** *sa fari.*
thread-LOC.NMLZ dry.in.sun take.away-UVP CN wind
'I put my clothes on the line to dry, (and) they were blown away by the wind.' (p. 295)

c. *thithu* ***ma-qaibul*** *yakin* ***ananaik-in****.*
3SG.NOM AV-follow.around 1SG.OBL pity-UVP
'He is following me—that is too bad (as a child wanting to be taken along).' (p. 292)

In Saisiyat, a past interpretation is obtained in (5a), a present in (5b), and a generic/habitual present in (5c). These three interpretations are dependent on the context.

(5) Saisiyat
a. *yako* ***rima'*** *k⟨om⟩i-'aewpir t⟨om⟩ay-hal, yako*
1SG.NOM go[AV] ⟨AV⟩gather-sweet.potato ⟨AV⟩do-once 1SG.NOM
kayni'=*ila.*
not.want=COS
'I went to dig up sweet potatoes once. I do not want to go anymore.'

b. *'oya'* (***h***)⟨***om***⟩***awak*** *ka korkoring, tikot ka*
mother ⟨AV⟩hold.by.hand ACC child afraid ACC
k-⟨in⟩ngizo'.
⟨PFV:PAT.NMLZ⟩step.on-fall.down
'Mother holds the child by the hand, in fear that he might fall down.'

c. *sho: 'oeral-en, yako (**h**)⟨**om**⟩**ama'** hi nonak.*
if rain-UVP 1SG.NOM ⟨AV⟩hold.in.hand ACC REFL
'If it rains, I shield myself with an umbrella.'

In Tanan Rukai and Nanwang Puyuma, realis forms usually have a past or present interpretation; the verb is marked as realis in Rukai (6a) and realis/non-progressive in Nanwang Puyuma (6b).

(6) a. Tanan Rukai
***w-a-bakake** 'odalila inia bavaa.*
ACT-REAL-fill.in fill.in.bottle that.OBL wine
'(He/She) fills/filled bottles with wine.'

b. Nanwang Puyuma (Teng 2018, p. 309)
***b⟨en⟩ase**=ku draku kiruwan.*
⟨AV⟩wash=1SG.NOM 1SG.PSR.OBL.INDF clothes
'I wash/washed clothes.'

18.2.1.2 Overt Temporal or Aspectual Marking

Temporal distinctions can be encoded morphologically, through the occurrence of aspectual markers, as in (7a–b), or lexically with the addition of temporal adjuncts or auxiliary verbs (13a–c) that provide a temporal frame.

(7) a. Saisiyat
*yako s⟨om⟩⟨**in**⟩i'ael=**ila** ka tawmo'.*
1SG.NOM ⟨AV⟩⟨PFV⟩eat=COS ACC banana
'I ate a banana.'

b. Budai Rukai
*o-a-apece=**nga** ko lrolay.*
ACT-REAL-sleep=COS NOM child
'The child (has) slept.'

(8) a. Isbukun Bunun
*ma-ludah zaku tina **takna**.*
AV-beat 1SG.OBL mother yesterday
'Mother beat me yesterday.'

b. Saisiyat
korkoring ***remrem*** *shebet-en ni 'oya'.*
child often beat-UVP GEN mother
'Mother often beats the child.'

c. Wulai Atayal (L. Huang 2008, p. 16)
wal *m-aziy Mngka' ngasal yaba'=mu la.*
PFV AV-buy Taipei house father=1SG.GEN SFP
'My father has bought a house in Taipei.'

It is difficult to analyze aspectual markers as "tense" markers, as in Jeng (1999), S. Chen (2017), and S. Chen & Jiang (2020), because their occurrence is not obligatory (see Bhat 1999, p. 107), as shown from this excerpt of a Paiwan text: the occurrence of the change-of-state enclitic *=anga* is dependent on the presence of the perfective proclitic *na=* in (9a), but neither is necessary to refer to a past event, as shown in (9b):

(9) Kuljaljau Paiwan (Ferrell & Tjakisuvung forthcoming)
a. ***na=ma-lum=anga*** *(a)zua vangalj nua vatsinga izua*
PFV=STAT-ripe=COS (NOM.)that banyan.tree GEN fig exist
i sasekezan aya.
LOC resting.place QUOT
'The figs of the banyan tree (located) at the resting place were already ripe.'

b. ***ki-valuniq*** *azua aya* ***ma-peljuq*** *a lubu~lubuk tua*
get-fruit NOM.that QUOT STAT-fill.full NOM RED~pocket OBL
k⟨in⟩i-valuniq aya.
⟨PFV⟩get-fruit QUOT
'(He) picked up the fruit and filled a small bag full of the figs he had picked up.'

If tense had been grammaticalized, we would expect that, regardless of voice marking (10a–b), the occurrence of a temporal adjunct referring to the past would trigger the use of an aspectual marker. However, this is not the case, as shown in (10)–(13).

(10) Kavalan (Li & Tsuchida 2006)
a. ***siRab****=iku* *k⟨m⟩iskis.*
yesterday=1SG.NOM ⟨AV⟩shave
'I shaved yesterday.' (p. 126)

b. *baban=na* ***siRab.***
carry:UVP=3SG.GEN yesterday
'(It) was carried by him yesterday.' (p. 74)

(11) Mantauran Rukai (Zeitoun 2007, p. 415)
o-lriho'o=lrao ***o-kelrakelrange****=mi'=ine*
ACT:REAL-know=1SG.NOM ACT:REAL-beat=2SG.NOM=3SG.OBL
Takanao ***'idha.***
Takanao yesterday
'I know that you beat Takanao yesterday.'

(12) Tungho Saisiyat (Zeitoun et al. forthcoming)
sho'o ***kahia'*** ***til-hoero(:)****=ay* *ka* *'iniabolalas* *kayba.en?*
2SG.NOM yesterday buy-succeed=QST ACC white clothes
'Did you succeed in buying white clothes yesterday?'

(13) Nanwang Puyuma (Teng 2018, p. 309)
b⟨en⟩ase*=ku* *draku* *kiruwan* ***kana***
⟨AV⟩wash=1SG.NOM 1SG.PSR.OBL.INDF clothes OBL.INDF
wawariwari.
every.day
'I wash clothes every day.'

If the verb refers to a past event, a co-occurring temporal adverb can only refer to the past, as shown in (14)–(15), i.e., there seems to be a "tense" concordance between these two sentential components.[1]

(14) Isbukun Bunun (S. Chen & Jiang 2020, p. 3, after Jeng 1999, p. 460)
*m⟨****in****⟩is'av* *naia* ***sangan*** */* ***habas*** */*
AV⟨PFV⟩drink.wine.at.a.festival 3PL.NOM a.while.ago in.the.past
****laupaku*** */* ****sanganin.***
*now *later.on
'They drank wine at a festival a while ago/in the past/*now/*later on.'

1 These distributional constraints are not sufficient to support the "tense" hypothesis. English, for instance, makes uses of two tenses, past and present, which interact closely with aspect and modality. Thus, *will* is a modal auxiliary in the present tense, but refers to a future event, and is inacceptable in co-occurrence with temporal adjuncts referring to the past. Examples

(15) Tungho Saisiyat (Zeitoun et al. forthcoming)
kahakri'al / ****mayhal*** *moyo* *m⟨in⟩osha'=ay* *tʰeufen?*
the.day.before.yesterday *later 2PL.NOM AV⟨PFV⟩go=QST Toufen
'The day before yesterday/*today/*later, did you go to Toufen?'

18.2.1.3 Toward the Grammaticalization of Tense

Tsou is characterized by a complex system of auxiliary verbs (some bound and others free), which not only head verbal clauses but also carry, to some extent, voice (AV vs. UV) and TAM distinctions. In the realis, Tsou makes a distinction between *mo*(*h*)=, *moso*, and *o*(*h*)=, which refer to a "remote" situation (16a), and *mi*= and *i*=, which encode an "immediate" situation (16b–c). Since the same co-occurrence restrictions as mentioned above are found, i.e., there is a correlation between temporal adjuncts or aspectual markers and auxiliary verbs, we may conclude that Tsou can be treated as having grammaticalized the notion of tense.[2] The remote/immediate dichotomy is very pervasive: it is also found in the irrealis and in the case-marking system of this language (Zeitoun 1992, 1993, 1996). In (21a), the auxiliary verb *mo*(*h*)= refers to a remote event, and only *to* 'OBL' (but not *ta*) can occur, because it indicates remoteness in space. The distinction between (16b) and (16c) lies in the use of a different case marker. In (16b), the occurrence of *ta* 'OBL' implies that the object is seen at speech time and the situation is therefore viewed as having started in the immediate past (due to the occurrence of *=cu* 'already (COS)') but is still ongoing (because of the occurrence of *ta* 'OBL'). In (16c), with *to* 'OBL', however, the object is unseen and the event is interpreted as having already happened.

(16) Tsou (Zeitoun 1996)
a. ***moh***=*ta*=*cu* *bonʉ* ***to*** */?*ta* *cnʉmʉ.*
AV.REAL.REM=3SG.NOM=COS AV.eat OBL banana
'He ate a banana (and then …)' (p. 512)

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as in (i), which show the co-occurrence of ⟨*in*⟩ with *suxan* 'tomorrow' in Atayal, also show that aspectual markers should not be confounded with tense markers.

(i) Wulai Atayal (L. Huang 1995b, pp. 275–276)
suxan *ga'* ***m⟨in⟩aniq***=*ku'* *lga'* *m-wah=ku'.*
tomorrow TOP AV⟨PFV⟩eat=1SG.NOM COS:TOP AV-come=1SG.NOM
'Tomorrow, after I have eaten, I will come.'

2 As mentioned by a reviewer, this could also be interpreted as the grammaticalization of aspect.

b. ***mi***=*ta*=*cu* *bonи* ***ta*** *спитн.*
AV.REAL.IMM=3SG.NOM=COS AV.eat OBL banana
'He is already eating a banana.' (p. 517)

c. ***mi***=*ta*=*cu* *bonи* ***to*** *спитн.*
AV.REAL.IMM=3SG.NOM=COS AV.eat OBL banana
'He has already eaten a banana.' (ibid.)

18.2.2 *Irrealis: A Short Overview*

The irrealis encodes an event that is supposed to happen (in a more or less immediate future, i.e., projective), that should take place but will not (hypothetical), or that should have taken place but did not (counterfactual).

The distinction between projective, hypothetical, and counterfactual is that they are grammaticalized differently in the languages that exhibit the irrealis. It may be covert, and such an interpretation is obtained through the discursive context, as in (17), C*a*-reduplication encoding the notion of "irrealis".

(17) Nanwang Puyuma (based on Teng 2018)
a. ***lra~lriputr***=*ku* *dra* *kuraw.*
RED~wrap=1SG.NOM OBL.INDF fish
'I will wrap fish.' (p. 312)

b. *an* *me-na'u*=*ku* *kantaw* *adru i,* *adri*=*ku*
when AV-see=1SG.NOM 3SG.OBL then TOP NEG=1SG.NOM
ra~rengay.
RED~tell
'If I had seen her at that time, I would not have told him.' (p. 113)

Projective, hypothetical, and counterfactual may be marked through distinct though related markers, e.g., Tanan Rukai *ai-* 'IRR (PROJ)' vs. *nai-* 'IRR (CNTFCT)' (18), Tsou *te* 'IRR (PROJ)', *nte* 'IRR (HYP)', and *nto*(*h*) 'IRR (CNTFCT)' (19).

(18) Tanan Rukai
a. ***ai-kane***=*ako* *na* *belebele* *yaini* *na* *marodrang.*
IRR.PROJ=eat=1SG.NOM OBL banana 3SG.POSS OBL old.(wo)man
'I will eat the old (wo)man's banana.'

b. ***nai-kane***=*ako* *na* *belebele* *yaini* *na*
IRR.CNTFCT=eat=1SG.NOM OBL banana 3SG.POSS OBL

marodrang la nako kane.
old.(wo)man CONJ NEG:1SG.NOM eat
'I should have eaten the old (wo)man's banana, but I did not.'

(19) Tsou (Zeitoun 1996)

a. ***te**=ta=cu moyafo.*
AV.IRR.PROJ=1SG.NOM=COS AV:go.out
'He is going to go out.' (p. 515)

b. *honci='u yaa peisu, **nte**='u mihia emoo.*
if=1SG.NOM have money IRR.HYP=1SG.GEN AV.buy house
'If I have money, I will buy a house.' (p. 514)

c. *honci='u yaa peisu, **nto**='u mihia emoo.*
if=1SG.NOM have money IRR.CNTFCT=1SG.GEN AV.buy house
'If I had had money, I would have bought a house.' (p. 514)

As will be shown in the following sections, the irrealis can be marked morphologically (§18.2.2.1) or lexically (§18.2.2.2). Both types of encoding are found, but they are triggered by different factors (§18.2.2.3).

18.2.2.1 Morphological Marking of the Irrealis

The irrealis is marked morphologically in Mayrinax Atayal, Nanwang Puyuma, and Rukai.

In Mayrinax Atayal, the irrealis is encoded through the occurrence of *pa-* on AV-marked verbs (20a) and C*a*-reduplication with UV-marked verbs (20b). Examples from the Puyuma and Rukai languages have been also given above, cf. (17)–(18).

(20) Mayrinax Atayal

a. ***pa**-qilaap ku' nabakis.*
AV.IRR-sleep NOM.REF old.man
'The old man will sleep.'

b. ***na**~niq-**un**=mu ku' iyok.*
RED~eat-UVP=1SG.GEN NOM.REF orange
'I will eat the orange.' (L. Huang 1995a, p. 278)

18.2.2.2 Lexical Marking of the Irrealis

Irrealis is encoded through clitics (i.e., with no modification of the verb form per se) in Paiwan, Bunun, Thao, and Tsou.

Examples in Tsou were given in (19); cf. the occurrence of the auxiliary verbs *ta*/*te*/*tena* 'irrealis (projective)', *nte* 'irrealis (hypothetical)', and *nto*(*h*)- 'irrealis (counterfactual)'.

In Paiwan, Bunun, and Thao, a proclitic indicates the irrealis, irrespective of the voice marking; cf. Paiwan *uri*= (21a–b), Bunun *na*= (22a–b), and Thao *a*= (23a–b).

(21) Pucunug Paiwan (W. Huang 2012)

a. ***uri*=*maka-tjuazungulj*=*aken*** *a* *s⟨em⟩a-pucunug.*
IRR= AV:go.through-Tjuazungulj=1SG.NOM LNK ⟨AV⟩go-Pucunug
'I will go to Pucunug through Tjuazungulj.' (p. 59)

b. ***uri*=*su-sanequma-in*** *aicu?*
IRR=2SG.GEN=clean.up.field-UVP NOM.this
'Are you going to clean up this field?' (p. 154)

(22) Isbukun Bunun (L. Li 2018)

a. ***na*=*ka-buhu*l=*ik.***
IRR=do-rice.cake[AV]=1SG.NOM
'I will make rice cake.' (p. 90)

b. *sain* *hai* ***na*=*haishais-un***=*ku* *tu* *pangkaka* (*mais*)
NOM.SG.PROX TOP IRR=wipe-UVP=1SG.OBL LNK table (when)
sangan=in.
just.now=PRF
'This is the table that I will wipe then.' (p. 148)

(23) Thao (Blust 2003)

a. *kanun=iza* *ya* *k⟨m⟩⟨in⟩an* ***a*=*ma-kashpar*** *tiaz.*
if=COS when ⟨AV⟩⟨PFV⟩eat IRR=STAT-ache belly
'If you ate something bad, you will get a belly ache.' (p. 297)

b. *haya* *qilha* ***a*=*damdam-i-k=uan*** *qaz-i*
that rice.wine IRR-taste-UVP-1SG.GEN=still try-IMP.UVP
a*=*ma-qmin.
IRR=STAT-potent
'I will taste the wine to see if it is strong (enough).'

18.2.2.3 Mixed Marking (Lexical and Morphological) of the Irrealis

Saisiyat exhibits a combination of lexical and morphological marking in correlation with AV and UV voices. It has grammaticalized the verb *'am* 'want' as an irrealis proclitic, which occurs with AV-marked verbs (29a); UV-marked verbs are marked by *ka-* 'IRR', which combines with *-en* 'UVP', as *ka-...-en* 'UVP.IRR', e.g., *ka-si'ael-en* 'will eat (UVP.IRR)' (29b), and *-an* 'UVL', as *ka-...-an* 'UVL.IRR', e.g., *ka-si'ael-an* 'will eat (UVL.IRR)'. In UVC-marked verbs, verbs that take the AV infix ⟨*om*⟩ undergo C*a*-reduplication, e.g., *sa-si'ael* 'will eat (UVC.IRR)' (< *s⟨om⟩i'ael* 'eat (AV)'), and all the others are marked by *ka-*, which then carries a portmanteau function 'UVC.IRR', e.g., *ka-paatol* 'will sing (UVC.IRR)' (< *maatol* 'sing') (Zeitoun 2015 et al.).

(24) Saisiyat (Zeitoun et al. forthcoming)

a. *raamen **'am**=**'⟨oem⟩oral**, 'arash ka raama'!*
perhaps IRR=⟨AV⟩rain bring.IMP.AV ACC umbrella
'It may rain (so) take an umbrella!'

b. *hishon 'aeyam 'ashkan babaw! 'izi'='i 'ashkan ray*
that meat put.IMP.AV above NEG.IMP=LNK put.AV LOC
*rai', 'aewhay noka 'aehoe' **ka-si'ael-en!***
ground otherwise GEN dog IRR-eat-UVP
'Put the meat above! Don't put it on the floor, otherwise, it will be eaten by the dog!'

In Kavalan, AV-marked verbs are prefixed with *qa-*, which may occur with the enclitic *=pa* (25a); *=pa* is found with UVP/UVL-marked verbs and may fuse with the first-person pronoun as *=ka* (25b).

(25) Kavalan (Li & Tsuchida 2006)

a. ***qa-ynep=pa**=iku.*
IRR-sleep=IRR=1SG.NOM
'I am going to sleep.' (p. 219)

b. ***pukun-a=ka**=isu.*
hit-UVP=1SG.GEN:IRR=2SG.NOM
'You will be hit by me.' (p. 32)

Wulai Atayal encodes the irrealis through two different mechanisms, as shown in (26). First, it exhibits an opposition between the UVP suffix *-un*, which refers to a future event (irrealis) as in (26a), as opposed to the suffix *-an*, which encodes the realis (26b). Second, it has grammaticalized the motion verb *musa'* 'go'—it co-occurs with both AV- and UV-marked verbs—to describe an immediate future event, as shown in (26c–d) (L. Huang 1995a, Hsieh, this handbook, Chapter 34).

(26) Wulai Atayal (L. Huang 1995)

a. *niq-**un**=mu qulih.*
eat-UVP=1SG.GEN fish
'I will eat the fish.' (p. 275)

b. *niq-**an**=mu qulih.*
eat-UVP=1SG.GEN fish
'I ate the fish.' (ibid.)

c. ***musa'**=ku' m-tzyaw sa Ulay.*
go=1SG.NOM AV-work LOC Wulai
'I am going to work in Wulai.' (p. 274)

d. ***musa'**=maku' bhiy-un Tali'.*
go=1SG.GEN beat-UVP Tali'
'I am going to beat Tali.' (Zeitoun et al. 1996, p. 40)

18.2.4 *Summary*

Table 18.1 provides a short summary of the realis/irrealis distinction in Mayrinax Atayal, Isbukun Bunun, Thao, Kavalan, Paiwan, Tungho Saisiyat, Nanwang Puyuma, Tsou, and Tanan Rukai.

TABLE 18.1 The realis/irrealis distinction in Atayal, Bunun, Thao, Kavalan, Paiwan, Saisiyat, Puyuma, Tsou, and Rukai

Mayrinax Atayal				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	⟨*um*⟩STEM	STEM-*un*	STEM-*an*	*si*-STEM
Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	pa-STEM	C*a*-STEM-*un*	C*a*-STEM-*an*	C*a*-STEM
Isbukun Bunun				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	ma-STEM	STEM-*un*	STEM-*an*	*is*-STEM
Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	na=*ma*-STEM	*na*=STEM-*un*	*na*=STEM-*an*	*na*=*is*-STEM
Thao				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	⟨*um*⟩STEM	STEM-*un*	STEM-*an*	—
Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	a=STEM	*a*=STEM-*un*	*a*=STEM-*an*	—
Kavalan				
Realis	**AV**	**UVP / UVL**	**UVC**	
	⟨*um*⟩STEM	STEM-*an*	—	
Irrealis	**AV**	**UVP / UVL**	**UVC**	
	qa-STEM(=*pa*)	STEM-*an*=*pa*	—	
Tungho Saisiyat				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	⟨*om*⟩STEM	STEM-*en*	STEM-*an*	*shi*-STEM

TABLE 18.1 The realis-irrealis distinction in Atayal, Bunun, Thao, Kavalan, Paiwan, etc. (*cont.*)

Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	'am=STEM	*ka*-STEM-*en*	*ka*-STEM-*an*	C*a*-STEM
Pucunug Paiwan				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	⟨*em*⟩STEM	STEM⟨*in*⟩	STEM-*an*	*si*-STEM
Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	uri=STEM	*uri*=STEM-*in*	*uri*=STEM-*an*	*uri*=*si*-STEM
Nanwang Puyuma				
Realis	**AV**	**UVP**	**UVL**	**UVC**
	⟨***em***⟩STEM	STEM-*aw*	STEM-*ay*	STEM-*anay*
Irrealis	**AV**	**UVP**	**UVL**	**UVC**
	C**a**-STEM	C*a*-STEM-*i*	C*a*-STEM-*an*	
Tsou				
Realis		**AV**	**UV**	
	Immediate	*mi=, mo*	*i=*	
	Remote	*moso, mo*(*h*)=	*o*(*h*)=	
Irrealis		**AV / UV**		
	Immediate	*te, tena*	*nte*	
	Remote	*ta*	*ntoso, nto*(*h*)-	
Tanan Rukai				
Realis		**Active**	**Passive**	
		o-a-STEM	*ki-a*-STEM	
Irrealis	**Projective**	*ai*-STEM	*ai-ki*-STEM	
	Counterfactual	*nai*-STEM	*nai-ki*-STEM	

18.3 Aspectual Distinctions in Mood-Prominent Languages

Aspectual distinctions, which can be manifested morphologically and/or lexically, are not grammatically encoded the same way in the Formosan languages that are mood-prominent. They may exhibit different aspectual markers that carry the same functions cross-linguistically; one language may lack certain aspectual distinctions that are found in another language or conversely display a number of markers that carry exactly the same functions. One major distinction that is found is the opposition between perfective and imperfective, discussed in turn below.

18.3.1 *The Marking of the Perfective*

There is a large amount of cross-linguistic variety/diversity among Formosan languages with respect to the marking of the perfective, as shown in Table 18.2.

TABLE 18.2 The marking of the perfective in mood-prominent languages

	AV	UVP	UVL	UVC
Mx Atayal	⟨*um*⟩⟨*in*⟩STEM	⟨*in*⟩STEM	⟨*in*⟩STEM-*an*	—
Is Bunun	*ma*-⟨*in*⟩STEM	⟨*in*⟩stem-*un*	⟨*in*⟩STEM-*an*	s⟨*in*⟩*i*-STEM
Tg Saisiyat	⟨*om*⟩⟨*in*⟩STEM	⟨*in*⟩STEM	⟨*in*⟩STEM-*an*	*ka-sh*⟨*in*⟩-STEM
Paiwan	*na*=⟨*em*⟩STEM	⟨*in*⟩STEM	⟨*in*⟩STEM-*an*	s⟨*in*⟩*i*-STEM
	AV	**UVP**	**UVL**	
Thao	⟨*um*⟩⟨*in*⟩STEM	⟨*in*⟩STEM	⟨*in*⟩STEM-*an*	
	AV	**UVP/UVL**		
Kavalan	⟨*um*⟩STEM=*tu*	STEM-*an*=*tu*		
	AV	**UVP**	**UVL**	**UVC**
Ng Puyuma	⟨*em*⟩STEM=*la*	STEM-*aw*=*la*	STEM-*ay*=*la*	STEM-*anay*=*la*
	AV		**UV**	
Tsou	*mo*(*h*)=PRO/*moso la*		—	

TABLE 18.2 The marking of the perfective in mood-prominent languages (*cont.*)

	ACTIVE	PASSIVE
Tn Rukai	*o-a-*STEM=*nga*	*ki-a-*STEM=*nga*

Because of lack of space, only two different aspectual markers are discussed, ⟨*in*⟩, which is found in a number of languages (except Puyuma, Amis, and Rukai), and =*la* /ɗa/ 'PFV', which only occurs in Tsou.[3] The infix ⟨*in*⟩, which can be reconstructed in Proto-Austronesian, is not found in all the Formosan languages, and while it encodes the perfective, as illustrated in (27), cross-linguistically, it displays striking dissimilarities. In Atayal, for instance, ⟨*in*⟩ is never found with the UVC prefix *si-* (L. Huang 1995b). This is not the case in Bunun[4] and Paiwan, both of which exhibit *s*⟨*in*⟩- (28a–b). In Saisiyat, ⟨*in*⟩ is infixed within the stem and must co-occur with *ka-* 'REAL' and *shi-* 'UVC' (29).

(27) Mayrinax Atayal (L. Huang 1995)

a. ***m-⟨in⟩****uwah ki' Watan 'i' Ba'unay cu' hisa'.*
⟨PFV⟩AV-go LOC Watan NOM Ba'unay PART yesterday
'Ba'unay came to Watan's place yesterday.' (p. 272)

b. *b⟨**in**⟩ainay=mu ki' Ba'unay ku' situ'ing ka' hani.*
⟨PFV.UVP⟩buy=1SG.GEN LOC Ba'unay NOM.REF clothes LNK this
'I bought the clothes from Ba'unay.' (ibid.)

(28) a. Isbukun Bunun (Zeitoun 2000)
s⟨in⟩*-baliv=ku Alang tasa tu patasan.*
⟨PFV⟩UVC-buy=1SG.NOM Alang one LNK book
'I bought a book for Alang.' (pp. 82–83)

3 Readers are referred to relevant studies for an account of Kavalan =*tu* (Li & Tsuchida 2006), Nanwang Puyuma =*la* (Teng 2008), and Rukai =*nga* (Li 1973, Zeitoun 2007).

4 In Takivatan Bunun, *sin-* is a completely lexicalized prefix, which functions as a 'resultative object marker' (De Busser 2009, p. 282). The prefix *sin-* can co-occur with ⟨*in*⟩, as in *sin-*⟨*in*⟩*dangaz* [RSL.OBJ⟨PFV⟩help] 'help'.

b. Pucunug Paiwan (W. Huang 2012)
*ku=**s⟨in⟩i**-veli=anga ti Muninung taicu a*
1SG.GEN=⟨PFV⟩UVC-buy=COS NOM.PN Muninung OBL.this LNK
vangavangan.
toy
'I bought Muninung this toy.' (p. 15)

(29) Tungho Saisiyat
*hini laleke: ni 'okay **ka-sh**-ng⟨**in**⟩oip. karim'anan*
this phone GEN Okay REAL-UVC-⟨PFV⟩forget REAL:morning
tihoero(:)-on=ila.
find-UVP=COS
'Okay forgot her cell phone. It was found (this) morning.'

Second, the infix ⟨*in*⟩ occurs only in UV voice in Paiwan (30a) but never in AV voice, where *na=* is found instead (30b).

(30) a. Pucunug Paiwan (W. Huang 2012)
*dj⟨**in**⟩adjas=anga a madrusa a c⟨em⟩akav*
⟨UVP.PFV⟩catch=COS LNK two.persons LNK ⟨AGT.NMLZ⟩steal
nazua a kisac.
GEN.that LNK policeman
'That police officer caught two thieves.' (p. 43)

b. ***na**=macacun=anga tiamadju a madrusa.*
PFV=AV:RED:contact=COS 3PL.NEUT LNK two.persons
'The two of them already contacted each other.' (p. 47)

As shown by the ungrammaticality of (31a), in Saisiyat, ⟨*in*⟩ must attach to AV-marked verbs, which must be bounded (Zeitoun et al. 2015), i.e., there needs to be another constituent/clause in the sentence to anchor telicity: the verb can be cliticized by *=ila* 'COS' (31b), preceded by a temporal adjunct (31c), or co-occur with a verb that subcategorizes an object (31d).

(31) Tungho Saisiyat
a.* *yako s⟨**om**⟩⟨**in**⟩i'ael.*
1SG.NOM ⟨AV⟩⟨PFV⟩eat

b. *yako s⟨**om**⟩⟨**in**⟩i'ael=**ila.***
1SG.NOM ⟨AV⟩⟨PFV⟩eat=COS
'I have already eaten.'

c. *yako* ***baabaaw*** *s⟨**om**⟩⟨**in**⟩i'ael.*
1SG.NOM just ⟨AV⟩⟨PFV⟩eat
'I just ate.'

d. *yako* *s⟨**om**⟩⟨**in**⟩i'ael.* ***ka*** ***tawmo'.***
1SG.NOM ⟨AV⟩⟨PFV⟩eat ACC banana
'I ate a banana.'

I have shown in earlier publications (Zeitoun 1992, 1996) that there are two homophonous aspectual markers *la* 'PFV' in Tsou: the first is a clitic, which always occurs with the remote realis auxiliary verbs *moso* and *mo*(*h*)= as a perfective (32a); the second can function as an auxiliary verb but may co-occur with (realis and irrealis) auxiliary verbs (*moso*, *mo*(*h*)=, *te*, *tena*, and *ta*) and encodes habituality (32b) (§18.4.2) (for a different opinion, see Chang & Pan 2018).

(32) Tsou
a. ***moh****=ta=****la*** *pasunaeno.*
AV.REAL.REM=3SG.NOM=PFV sing[AV]
'He sang.'

b. ***moh****=ta=cu* ***la*** *pasunaeno.*
AV:REAL:REM=3SG.NOM=COS HAB sing[AV]
'(In the past) he was already singing/He used to sing.'

Bunun is one of the few Formosan languages that make a clear distinction between the perfective ⟨*in*⟩ (which refers to a completed event/action) and the perfect =*in* 'perfect' (which indicates that the action is still relevant at speech time). As shown in (33), both can co-occur on the same verb, and =*in* is found in AV and UV voices.

(33) Isbukun Bunun (L. Li 2018)
a. *min-danum=****in*** *pa'av.*
AV.become-water=PRF snow/ice
'The snow/ice has melted.' (p. 292)

b. *hudan-an=****in.***
rain-UVL=PRF
'It has rained.' (p. 84)

c. *h⟨**in**⟩ud=**in*** *saikin* *danum.*
⟨PFV⟩drink[AV]=PRF 1SG.NOM water
'I have drunk water.'

18.3.2 *The Marking of the Imperfective*

In mood-prominent languages, the imperfective includes progressive (§18.4.2.1), iterative/continuative (§18.4.2.2), and habitual aspects (§18.4.2.3); each of these is discussed in turn below, though it is difficult to make clear-cut distinctions, as overlaps are found cross-linguistically.

18.3.2.1 Progressive

The progressive is not grammaticalized in Tsou, i.e., it is morphologically unmarked. A progressive reading is implied in AV clauses, because of the occurrence of the realis/immediate auxiliary verb *mi=*.

(34) Tsou (Zeitoun et al. 1996)
***mi**=ta* *pasunaeno.*
AV.REAL.IMM=3SG.NOM sing[AV]
'He is singing.' (p. 46)

In Saisiyat (35) and Thao (36), the progressive is encoded through reduplication. In Saisiyat, CV-reduplication is only found with AV-marked verbs infixed with ⟨*om*⟩ (and its allomorphs).

(35) Tungho Saisiyat
yako ***so**~s⟨m⟩i'ael.*
1SG.NOM RED~⟨AV⟩eat
'I am eating.'

(36) Thao (Blust 2003)
***ar**~ara-k.*
RED~take:UVL-1SG.GEN
'I am taking it.' (p. 305)

In Bunun, Paiwan, and Rukai, the progressive is also encoded through reduplication, but the latter also entails other interpretations, which are given below.

In Bunun, partial reduplication may express a progressive (37a) or an iterative/continuative and/or habitual reading (37b).

(37) Isbukun Bunun (L. Li 2018)

a. ***'ansasahan*** *Bukun=a* *laupakadau* *haimungsut.*
carry.with.hands:RED Bukun=NOM.DIST now thing
'Bukun is carrying things in his hands now.' (p. 108)

b. ***'ansasahan*** *Bukun=a* *haimungsut*
carry.with.hands:RED Bukun=NOM.DIST thing
ma-pu-lumah.
AV-CAUS.MVT-house
'Bukun keeps on carrying things in his hands back home.'

In Paiwan and Rukai, disyllabic reduplication conveys a progressive/continuous/repetitive meaning (38a–b). Without the occurrence of any temporal adjunct, a past or present interpretation obtains, depending on the context.

(38) a. Paiwan
q⟨em⟩au~qaung *azua* *kakedrian.*
⟨AV⟩RED~cry NOM.that child
'The child is crying/keeps on crying cries.'

b. Budai Rukai (Zeitoun et al. 1996)
w-a-tobi~tobi *ka* *lrolai.*
ACT-REAL-RED~cry NOM child
'The child is crying/keeps on crying.' (p. 46)

In Nanwang Puyuma, the progressive or habitual is expressed by C*a*-reduplication but is never found in negative UV clauses. Compare the grammaticality of (39a–d).

(39) Nanwang Puyuma (Teng 2018)

a. ***b⟨en⟩a~base****=ku* *draku* *kiruwan.*
⟨AV⟩RED~wash=1SG.NOM 1SG.PSR.OBL.INDF clothes
'I am/was washing clothes.' (p. 311)

b. ***adri****=ku* ***b⟨en⟩a~base*** *draku* *kiruwan.*
NEG=1SG.NOM ⟨AV⟩RED~wash 1SG.PSR.OBL.INDF clothes
'I am/was not washing clothes.'

c. *tu=****ba~base-ay*** *ku=kiruwan.*
3.GEN=RED~wash-UVL 1SG.PSR.NOM=clothes
'She is/was washing my clothes.'

d.* ***adri*** *tu=**ba~base-ay*** *ku=kiruwan.*
NEG 3.GEN=RED~wash-UVL 1SG.PSR.NOM=clothes

The progressive is lexically marked in Atayal, Seediq, Kavalan, and Saisiyat. Different sentential elements have been grammaticalized to express the progressive, viz. existential verbs in Atayal and Kavalan, motion verbs in Truku Seediq, and demonstratives in Tgdaya Seediq (see Huang 1993, 1995, 2008, Sung 2018, Hsieh, this handbook, Chapter 34). Because of space limitations, I only provide examples from Wulai Atayal, which displays an immediate/remote distinction. The two auxiliary verbs, *nyux* and *cyux*, encode the progressive, *nyux* marking immediacy (the speaker/speakers is/are talking while acting) and *cyux* remoteness (the car referred to in (40b) is not being seen by the speaker at speech time).

(40) Wulai Atayal (L. Huang 1993)
a. ***nyux=ta'*** *m-lukus.*
PROG.IMM=1PL.INCL.NOM AV-dress.up
'We are putting on clothes.' (p. 72)

b. ***cyux*** *m-hnaw turi=nya'.*
PROG.REM AV-rest car=3SG.GEN
'His car is parked.' (Lit. 'The car is resting.')

Saisiyat exhibits at least five different progressive forms encoded lexically (other than the CV-reduplication pattern reported above), and the distinction between these is still poorly understood (see Zeitoun et al. 2015 for details).

18.3.2.2 Iterative/Continuative

In Kavalan (41) and Saisiyat (42), CVC-reduplication encodes an iterative/continuative reading. I have shown above that such an interpretation can also be found in Bunun (37b) and Paiwan (38a).

(41) Kavalan (P. Li & Tsuchida 2006)
m-Ri-tung~tunguz *a wasu.*
AV-RI-RED~bark NOM dog
'The dog keeps barking.' (p. 25)

(42) Saisiyat (Zeitoun et al. 2015, p. 123)
*sho'o 'ampoa' **k⟨om⟩aa~kaat?***[5]
2SG.NOM why ⟨AV⟩RED~write
'Why do you keep on writing?'

In Mantauran, Budai, Labuan, and Tanan Rukai, the iterative/continuative aspect is rendered by CVV-reduplication.

(43) Mantauran Rukai
o-kae~kae~kaane *dhona'i titina.*
ACT:REAL-RED~RED~eat that middle-aged.woman
'That middle-aged woman keeps on eating.'

In Saisiyat, the continuative is expressed through the cliticization of *kin=* to the verb base (44a–b) or through partial reduplication, as shown in (44) above.

(44) Saisiyat (Zeitoun et al. 2015)
a. *'iaheme' switi'! 'ampoa' sho'o **kin**=t⟨om⟩zo-za:zih?*
quiet.IMP.AV a.little why 2SG.NOM CONT=⟨AV⟩bark-noisy
'Be quiet a little! Why are you so noisy?' (p. 339)

b. *sho'o 'ampoa' **kin**=be'e: 'iniman?*
2SG.NOM why CONT=angry 1SG.DAT
'Why are you always angry with me?'

18.3.2.3 Habitual

The habitual aspect is marked morphologically in Bunun, Paiwan, and Rukai through reduplication, as shown above (see § 18.4.2.1). Paiwan also makes a distinction between the prefix *ru-*, which attaches to AV-verb roots (45a), and *ka-*, which is prefixed to UV-marked verbs (45b).

(45) a. Puljetji Paiwan (W. Huang 2012)
ru-alap *timadju ta paisu.*
HAB-take 3SG.NEUT OBL money
'S/he often takes (i.e., steals) money.' (p. 39)

5 In Saisiyat, CVV- is one of the subpatterns of CVC-reduplication, triggered by stems that do not contain a middle consonant, e.g., *raam* 'know', *k⟨om⟩aat* 'write (AV)', and *k⟨om⟩aas* 'bite (AV)' (see Zeitoun et al. 2015).

b. Stimul Paiwan (Zeitoun et al. 1996, p. 49)
ka-kelrem-in *ni* *Palang* *ti* *Kalalu.*
HAB-beat-UVP GEN.PN Palang NOM.PN Kalalu
'Palang (usually) beats Kalalu.' (p. 49)

The habitual aspect is marked by the clitics *kama*= 'HAB' in Saisiyat (46) and by the auxiliary *la* 'HAB', which can also co-occur with *mo*(*h*)= or *tena* in Tsou (47).

(46) Saisiyat (Zeitoun et al. 2015)
ma'an *t⟨in⟩alek* ***kama****=shimaan.*
1SG.GEN ⟨PFV:PAT.NMLZ⟩cook HAB=greasy
'The food I cook is usually greasy.' (p. 338)

(47) Tsou (Zeitoun 1996)
a. ***la****=ta* *etamaku.*
HAB=3SG.NOM smoke[AV]
'He (usually) smokes.' (p. 527)

b. ***moh****=ta=cu* ***la*** *etamaku.*
AV:REAL:REM=3SG.NOM=COS HAB smoke[AV]
'(In the past) he was already smoking.' (p. 525)

18.3.2.4 Interim Summary on the Imperfective

The progressive, iterative/continuative/repetitive, and habitual aspects, as discussed in the foregoing subsections, are summarized in Table 18.3:

TABLE 18.3 Encoding of the imperfective in some Formosan languages

LANGUAGE	PROGRESSIVE	CONTINUATIVE ITERATIVE REPETITIVE	HABITUAL
Atayal	*nyux/cyux*	—	—
Bunun		partial reduplication =*ang* 'PROG, CONT'	
Kavalan	*yau*	CVC-reduplication	—
Paiwan	CVCV-reduplication	CVCV-reduplication *ru*-(+AV), *ka*- (+UVP)	CVCV-reduplication
Nanwang Puyuma	CV-RED-C*a*RED (only in affirmative)	CVCV-reduplication	CV-RED-C*a*RED (only in affirmative)

TABLE 18.3 Encoding of the imperfective in some Formosan languages (*cont.*)

LANGUAGE	PROGRESSIVE	CONTINUATIVE ITERATIVE REPETITIVE	HABITUAL
Rukai	CVCV-reduplication	CVCV-reduplication CVV-reduplication	CVCV-reduplication
Saisiyat	CV-reduplication	CVC-reduplication *kin=*	CVC-reduplication *kama=*
Thao	partial reduplication	—	—
Tsou	—	—	*la*

18.4 Other Languages

Kanakanavu, Saaroa, and Katripul Puyuma differ from the above-mentioned languages in their grammatical marking of aspect and mood. While there is no doubt that Kanakanavu can be treated as an aspect-prominent language (§18.5.1), it is more difficult to properly define Saaroa (§18.5.2) and Katripul Puyuma (§18.5.3), which exhibit more complex systems.

18.4.1 *Kanakanavu as an Aspect-Prominent Language*

Kanakanavu does not make a distinction between realis and irrealis. Rather, it makes a primary aspectual distinction between the perfective, marked by *ni-* or ⟨*in*⟩ in both AV/UV verbs (48a–b), and the imperfective, marked by C*a*-reduplication in AV clauses and *-un* in UV verbs (49a–b).

TABLE 18.4 The perfective/imperfective distinction in Kanakanavu

	AV	UV
Perfective	*ni*-STEM / ⟨*in*⟩STEM	*ni*-STEM / ⟨*in*⟩STEM
Imperfective	Ca⟨*um*⟩STEM	STEM-*un*

(48) Kanakanavu
a. ***ni-matisa'u*** *manu isi tongingi.*
PFV-AV:catch child this mouse
'The child caught a mouse.'

b. ***ni-patisa'ʉ***=*ke* *tongingi.*
PFV.UV-catch=3GEN.NSA mouse
'He/She/They caught the mouse.'

(49) Kanakanavu
a. ***k⟨um⟩a~kʉrang***=*ku* *tammi.*
⟨AV⟩RED~bake=1SG.NOM sweet.potato
'I am baking sweet potatoes.'

b. ***taniula'-ʉn***=*maku* *tacau.*
mistreat-UV=1SG.GEN.NSA dog
'I mistreat(ed)/am maltreating (my) dog.'

There are two auxiliary verbs in Kanakanavu. The progressive is encoded through the occurrence of *'esi* 'PROG' (50). The imperfective is further marked by *tia* 'IPFV' (or its allomorph *te*, when cliticized to a pronoun). It refers to an ongoing (51a) or habitual (51b) situation according to the co-occurring sentential components; it can also refer to a future event (51c). In other words, what is grammaticalized in Kanakanavu is the perfective and the imperfective, and in the imperfective category, the progressive. Aspectual clitics, which do not represent by themselves a specific grammaticalization of aspect, include =*cu* 'COS' (52a) and =*pa* 'still' (52b) (and their phonological allomorphs).

(50) Kanakanavu
a. *manu* *isi*=*ia* ***'esi*** ***k⟨um⟩a~kaʉn*** *vutukulu* (*makasi:n*).
child this=TOP PROG ⟨AV⟩RED~eat fish (now)
'As for the child, he is eating fish (now).'

b. ***'esi*** ***paratuan-ʉn***=*ke.*
PROG scoop-UV=3GEN.NSA
'He/She/They is/are scooping (water).'

(51) Kanakanavu
a. ***te***=*ku* ***k⟨um⟩a~karákara*** *acip-aku.*
IPFV=1SG.NOM ⟨AV⟩RED~scratch foot-1SG.GEN.PSR
'I am scratching my foot.'

b. *cina*=*ia* ***paera*** ***c⟨ʉm⟩a~cʉ'ʉra*** *manu.*
mother=TOP everyday ⟨AV⟩RED~see child
'As for mother, she sees (her) child everyday.'

c. ***te***=*ku* ***poi'i*** ***nusoni.***
IPFV=1SG.NOM IPFV:return later
'I will be back later.'

(52) Kanakanavu
a. *c⟨in⟩apa=**cu**=maku 'alam.*
⟨UV.PFV⟩roast=COS=1SG.GEN.NSA meat
'I have roasted the meat.'

b. *'esi=**pi**=kim mo:caca*
PROG=still=1PL.EXCL.NOM IPFV:walk
'We are still walking.'/'We are still on the way.'

18.4.2 *Saaroa*

Saaroa differs from Kanakanavu in that its mood and aspectual dichotomy are not clear-cut. Although it has been treated as a mood-prominent language with a realis/irrealis distinction (Pan 2012, p. 189), the situation is much more complicated than it seems. In AV-clauses, Saaroa is better analyzed as an aspect-prominent language, exhibiting a perfective/imperfective distinction. The perfective is marked by *lhi-* (< PAn *ni-) (53a–b), while the imperfective is marked by C*a*-reduplication.

(53) Saaroa (Pan 2012)
a. ***lhi-um-ailhi***=*cu*=*aku kiira valhituku.*
PFV-AV-deposit=COS=1SG.NOM yesterday money
'I deposited money yesterday.' (p. 125)

b. ***lhi-ma-lavai*** *a palii=na kiira.*
PFV-STAT-drunk NOM Palii=DEF yesterday
'Palii was drunk yesterday.'

The imperfective is marked by C*a*-reduplication. It may refer to a future event (the default) or to a habitual situation, as shown in (54a–b).

(54) Saaroa
a. ***t⟨um⟩a~tahliusa*** *a ina=ku=na vanukanuka.*
⟨AV⟩RED~sew NOM mother=1SG.GEN=DEF trousers
'Mother will sew clothes.'

b. ***karʉkʉlhʉ***=*amu* ***lh⟨um⟩a~lhavu*** *tikuru.*
often=1PL.INCL.NOM ⟨AV⟩RED~wash clothes
'We often wash clothes.'

Imperfective distinctions such as progressive, iterative, continuous, and habitual are encoded through CV(V)- or (C)V(C)V-reduplication (see Pan 2012 for details), which co-occurs with C*a*-reduplication, as shown in (55).

(55) Saaroa (Pan 2012)
a. ***t⟨um⟩a~taa~tangi*** *a mamaini alhaina kana'a=na.*
⟨AV⟩RED~RED~cry NOM child woman that=DET
'That girl is crying.' (p. 197)

b. ***t⟨um⟩a~tu~tu~turu*** *a kana pakiaturua=na mamaini=na*
⟨AV⟩RED~RED~RED~teach NOM FILL teacher=DEF child=DEF
um-iapʉ.
AV-read/write
'The teacher keeps on teaching the children to read/write.' (p. 199)

This dichotomy does not apply to negative clauses and UV-marked verbs.

Negative clauses distinguish between realis and irrealis. When the verb is unmarked, as in (56a), a negative realis construction refers to an event that is not happening or did not take place. When the verb is marked by the perfective *lhi-*, as in (56b), it refers to a past event. The irrealis subsumes habitual (56c) and projective (56d) meanings.

(56) Saaroa (Pan 2012)
a. *ku* ***alhava*** *kana'a=na valhituku.*
NEG bring[AV] 3.NOM=DEF money
'He/She does/did not bring money.'

b. *ku=aku* ***lhi-k⟨um⟩ita*** *kani'i sulhatʉ=na.*
NEG=1SG.NOM PFV-⟨AV⟩see this book=DEF
'I did not read this book.'

c. *maaci kana kiariari a ku karʉkʉlhʉ um-au~a~u.*
if FILL in.the.past LNK NEG often AV-RED~RED~IRR-eat
'In the past, (they) did not often eat sticky rice cakes.' (p. 372)

d. *ku=aku* ***um-a-ailhi*** *maataata valhituku.*
NEG=1SG.NOM AV-IRR-deposit tomorrow money
'I will not deposit money tomorrow.'

UV-marked verbs can only be interpreted as realis, as illustrated in (57a–b).

(57) Saaroa (Pan 2012)
a. *cuu=kita-**a**=cu=i* *sulhatʉ?*
2SG.GEN=see-UVP=COS=QST book
'Have you read the book?'

b. *viaru=na maaci avav-**a** alha cap-**a** rianʉ tam=sa'au.*
corn=DEF if boil-UVP CONJ broil-UVP all very=tasty
'The corn is very tasty whether it is boiled or broiled.' (p. 117)

A summary for Saaroa is given in Table 18.5.

TABLE 18.5 The perfective/imperfective and realis/irrealis distinction in Saaroa

			AV	UV	
				UVP	UVC
Indicative	Realis	PFV	*lhi*-STEM	STEM-*a*(*na*)	STEM-*ani*
		IPFV	*M*-(C)*a*~RED~STEM	—	—
	Irrealis		*M*-RED~STEM	—	—
Non-indicative	Imperative		*M*-STEM-*a*	STEM-*u*	STEM-*ani*
	Dependent		*M*-STEM	(STEM-*i*)	
	Negative	IPFV	STEM	—	—
		NEUT	*a*-STEM		

AFTER ZEITOUN & TENG 2016, P. 180

18.4.3 *Katripul Puyuma*

In Katripul, there is also a distinction made with respect to mood/aspect based on the voice system and affirmative/negative polarity (Teng 2018). Because of space limitations, only the situation in affirmative clauses is discussed. While AV-marked verbs exhibit a realis/irrealis distinction, UV-marked verbs display a non-imperfective/imperfective distinction. Without the occurrence of any temporal adverb, AV-marked verbs refer to a non-progressive realis

event, as in (58a); when AV verbs conjointly undergo C*a*-reduplication, they denote a progressive action (58b). When there is no overt marking of voice but the verb undergoes C*a*-reduplication, an irrealis meaning (future) is obtained (58c).

(58) Katripul Puyuma (based on Teng 2018)

a. ***d⟨em⟩eru***=*ku* *za* *kudumu.*
⟨AV⟩cook=1SG.NOM OBL.INDF corn
'I cook/cooked some corn.' (p. 312)

b. ***r⟨em⟩a~rames***=*ku* *harem.*
⟨AV⟩RED~wash=1SG.NOM now
'I am washing clothes now.' (p. 314)

c. ***da~deru***=*ku* *za* *dawa.* *nu* *'emaman.*
RED~cook=1SG.NOM OBL.INDF millet when tomorrow
'I will cook millet tomorrow.' (p. 316)

UV-marked verbs refer to neutral past or present events (that is, non-imperfective/non-progressive) (59a). Imperfective events (progressive and irrealis) are encoded through UV-marked verbs through C*a*-reduplication (59b–c).

(59) Katripul Puyuma (Teng 2018)

a. *tu*=***avak-aw*** *na* *lrumay* *kana* *pawti.*
3.GEN=pack-UVP NOM.DEF rice OBL.DEF sack
'He packs/packed the rice into the sack.' (p. 314)

b. *ku*=***ra~rames-ay*** *harem.*
1SG.GEN=RED~wash-UVL now
'I am washing the clothes now.' (p. 315)

c. *ku*=***ra~rames-ay*** *nu* *'emaman.*
1SG.GEN=RED~wash-UVL when tomorrow
'I will wash the clothes tomorrow.' (p. 315)

A summary is given in Table 18.6.

TABLE 18.6 Katripul AV/UV-verbs forms in realis and imperfective

		AV	UVP	UVL	UVC
REAL	NPROG	*M*-STEM	STEM-*aw*	STEM-*ay*	STEM-*anay*
	PROG	*M*-RED~STEM	—	—	—
IPFV		—	RED~STEM-*aw*	RED~STEM-*ay*	RED~STEM-*anay*
IRR		RED~STEM	—	—	—

BASED ON TENG 2018, P. 316

18.5 Mood and Its Interaction with Voice, Negation, and Modality

The overview that has been presented in the foregoing sections is actually more complex than it seems because tense, aspect, and mood not only interact with voice but also intermingle closely with other grammatical categories such as verb classes (i.e., lexical aspect), negation, and modality, as briefly discussed in this section.

18.5.1 *Mood and Its Interaction with Voice*

The voice systems of the Formosan languages—which basically divide into AV (actor voice) and UV (undergoer voice), which further subsumes UVP (patient undergoer voice) UVL (locative undergoer voice) and UVC (circumstantial undergoer voice), with some variability cross-linguistically—interact closely with mood (see Table 18.7 below), which displays a distinction between the indicative and the non-indicative mood, as shown in (60). The indicative mood is used to make a positive (60a)–(60c) or negative assertion to ask a question. The non-indicative mood serves to make a command (60a')–(60c'), a request, a wish, or a suggestion; it may also encompass the subjunctive and nondependent verb forms.[6]

6 Nanwang Puyuma could stand as a counterexample to this claim, because it exhibits non-indicative voice suffixes in the irrealis (see §17.1.2), but this paradigm can be explained through the changes that have taken place in this dialect (Teng 2018).

TABLE 18.7 Interaction between voice and mood

	AV	UVP	UVL	UVC
Indicative	*⟨um⟩-STEM	*STEM-en	*STEM-an	*Si-STEM
Non-indicative (Projective)	AV *⟨um⟩-STEM-a	UVP *STEM-aw	UVL *STEM-ay	UVC *an-ay + STEM[7] *STEM-an-ay

AFTER ROSS 2002, P. 33

(60) Saisiyat (Zeitoun et al. 2015)

a. *yako* ***s⟨om⟩i'ael*** *ni* *'oya'* *ka* *tinalek.*
1SG.NOM ⟨AV⟩eat GEN mother LNK cooked.food
'I eat/ate the food cooked by mother.' (p. 262) (Indicative AV)

a'. *yako* ***'am=s⟨om⟩i'ael-a*** *ka* *pazay.*
1SG.NOM IRR=⟨AV⟩eat-OPT ACC wine
'I want to eat rice.' (Non-indicative AV)

b. *mita'* *p⟨in⟩'a'apol* *boay* *ma'an* ***s'iael-en=ila.***
1PL.INCL.GEN ⟨PFV:PAT.NMLZ⟩share fruit 1SG.GEN eat-UVP=COS
'The fruit we shared, I have already eaten it/them.' (p. 285) (Indicative UVP)

b'. *nisho'* *raawash* *p⟨in⟩anraan-an,* ***si'ael-i*** *shan-baabaok!*
2SG.GEN far ⟨PFV⟩walk-UVL eat-IMP.UVP eat-full
'(If) you take a long walk, you should be full!' (p. 306) (Non-indicative UVP)

c. *ni* *baki'* *boay-en* *nia'om* *ki* *'okay* ***si-si'ael=ila.***
GEN grandfather give-UVP 1PL.EXCL.GEN COM Okay UVC-eat=COS
'(The candies) that grandfather gave were eaten by me and Okay.' (p. 290) (Indicative UVC)

c'. *hini* *tawmo'* ***si'ael-ani!***
this banana eat-IMP.UVC
'Eat this banana!' (p. 309) (Non-indicative UVC)

7 *an-ay* can appear as a free morpheme in Atayal, but is usually found as a suffix in most Formosan languages that exhibit this reflex (e.g., Saisiyat *-ani*).

18.5.2 *Mood and Its Interaction with Negation*

Mood also interacts closely with negation. Some languages subsume declarative affirmative clauses under the indicative mood and declarative negative clauses under the non-indicative mood, while others do not.

Saisiyat negative verbs are always marked as non-indicative. Examples are given below for this phenomenon in AV and UVP clauses, with AV and UV verbs in the affirmative marked as indicative, cf. AV ⟨*om*⟩ in (61a) and UV *-en* in (61b), and those in the negative flagged as non-indicative, cf. AV *Ø* in (61b) and UV *-i* in (61d). The full paradigm is shown in Table 18.8.

(61) Saisiyat (Zeitoun et al. 2015)

a. *koko'* *moi'* ***s⟨om⟩i'ael*** *ka* *tawmo'.*
grandmother Moi ⟨AV⟩eat ACC banana
'Grandmother Moi eats/ate a banana.' (Indicative AV—Affirmative)

a'. *koko'* *moi'* ***'oka'='i*** ***si'ael*** *ka* *tawmo'.*
grandmother Moi NEG=LNK eat[AV] ACC banana
'Grandmother Moi does/did not eat a banana.' (Non-indicative AV—Negative)

b. *ni* *yaba'* ***pae'rem-en*** *halapaw.*
GEN father sleep-UVP bed
'Father slept on the bed.' (Indicative UVP—Affirmative)

b'. *ni* *yaba'* ***'oka'='i*** ***pae'rem-i*** *halapaw.*
GEN father NEG=LNK sleep-UVP.NEG bed
'Father is not sleeping on the bed.' (Non-indicative UVP—Negative)

TABLE 18.8 Interaction between mood and negation in Saisiyat

Indicative—Realis (Affirmative)	**AV** *M-*STEM	**UVP** STEM-*en*	**UVL** ⟨*in*⟩STEM-*an*	**UVC** *shi-*STEM
Non-indicative (Negative)	STEM	STEM-*i*	STEM-*ani*	

In languages such as Thao (and Bunun as well, see L. Li 2018, p. 456), verbs in the negative are always marked as in the indicative, as shown in (62). This marking is further tabulated in Table 18.9.

(62) Thao

a. *yaku* ***k⟨m⟩an*** *lapat.* (Blust 2003)
1SG.NOM ⟨AV⟩eat guava
'I eat/ate a guava.' (p. 971) (Indicative AV—Affirmative)

a'. ***ani*** *yaku* ***k⟨m⟩an***
NEG 1SG.NOM ⟨AV⟩eat
shawiki. (After Chen 2014, based on Blust 2003, p. 293)
betel.nut
'I do not want to chew betel nut.' (p. 24) (Indicative AV—Negative)

b. *simaq* ***a=qusaz-in*** *painan.* (based on Blust 2003)
tomorrow IRR=rain-UVP probably
'It probably will rain tomorrow.' (p. 816) (Indicative UVP—Affirmative)

b'. ***ani*** *thuini*
NEG now
a=qusaz-in. (After Y. Chen 2014, based on Blust 2003, p. 293)
IRR=rain-UVP
'It is not going to rain now.' (p. 24) (Indicative UVP—Negative)

TABLE 18.9 Interaction between mood and negation in Thao

Indicative—Realis (Affirmative-Negative)	**AV** *M*-STEM	**UVP** STEM-*in*

As shown in (63), Kanakanavu exhibits mixed characteristics. With the negator *ka'an* 'do/did not', the verb is fully reduplicated as in indicative AV-marked clauses (63b). With the negator *kuu* 'do/did not', the verb cannot undergo reduplication and occur in its non-indicative form, infixed with ⟨*um*⟩, as in (63c). This is further summarized in Table 18.10.

(63) Kanakanavu

a. *'esi=cu* ***t⟨um⟩a~tangi*** *manu isi.*
PROG=COS ⟨AV⟩RED~cry child this
'This child is already crying.' (Indicative AV—Affirmative)

b. ***ka'an**=cu* ***t⟨um⟩a~tangi/*t⟨um⟩angi.***
NEG=COS ⟨AV⟩RED~cry/*⟨AV⟩cry
'The child is not crying anymore.' (Indicative AV—Negative)

c. ***ku**=ku* ***t⟨um⟩uturu/*t⟨um⟩a~tuturu*** *kasua.*
NEG=1SG.NOM ⟨AV⟩tell/*⟨AV⟩RED~tell 2SG.OBL
'I did not tell you.' (Non-indicative AV—Negative)

TABLE 18.10 Interaction between mood and negation

Indicative—Imperfective Affirmative—Negative	**AV** RED~*M*-STEM	**UVP** STEM-*un*
Non-indicative Imperative—Negative	*M*-STEM	STEM-*e*

18.5.3 *Mood and Its Interaction with Modality*

Mood also interacts with modality. While Katripul Puyuma marks irrealis through C*a*-reduplication, the deontic clitic *a*=/=*a* never co-occurs with C*a*-reduplication, as shown in (64a) (see §18.4.3). In Puljetji Paiwan (Huang 2012), *ki* marks an irrealis event; the verb is optionally marked as subjunctive (see the occurrence of *-i* 'SBJV.UVL' instead of the expected *-an* 'UVL'), as shown in (64b).

(64) Katripul Puyuma (Teng 2018)

a. *m-ekan=**a**=ku* *za* *patremelr.*
AV-eat=DEON=1SG.NOM OBL.INDF medicine
'I will take some medicine.' (p. 320)

a'.* *m-**a**~ekan=**a**=ku* *za* *patremelr.*
AV-RED~eat=DEON=1SG.NOM OBL.INDF medicine

b. Puljetji Paiwan (W. Huang 2012)
***ki**=sun* *a* *kasulem-**i**=anga*
IRR=2SG.NOM LNK be.caught.by.darkeness-SBJV.UVL=COS
i=djalan.
LOC=road
'You may be overcome by darkness on your way (home).' (p. 72)

Due to limitations of space, I will not deal further with modality in this chapter, but suffice it to say that this is an area that should not be ignored in discussion of TAM.

18.6 Conclusion

This chapter has given a description of tense, aspect, and mood, showing the variation across the Formosan languages. It posits that most Formosan languages exhibit a basic realis/irrealis dychotomy; though a language such as Kanakanavu displays a morphological distinction between perfective and imperfective (which subsumes the progressive, habitual, and irrealis), these distinctions are encoded morphologically (on the verb) or lexically marked (through the occurrence of auxiliary verbs and temporal adjuncts).

Acknowledgments

I am grateful to Paul J. Li, Rik De Busser, Stacy F. Teng, and to the reviewers for constructive comments on earlier versions of this paper and to Jason Lobel for his infallible help. Unless mentioned otherwise, the data presented in this chapter come from my own field notes.

References

Adelaar, Alexander (2011). *Siraya: Retrieving the phonology, grammar and lexicon of a dormant Formosan language*. Berlin: De Gruyter Mouton.

Bhat, D.N.S. (1999). *The prominence of tense, aspect and mood*. Studies in Language Companion Series 49. Amsterdam: John Benjamins Publishing Co.

Blust, Robert (2003). *Thao dictionary*. Language and Linguistics Monograph Series A5. Taipei: Institute of Linguistics (Preparatory Office), Academia Sinica.

Bochnak, M. Ryan and Lisa Matthewson (2020). Techniques in complex semantic fieldwork. *Annual Review of Linguistics* 6, 261–283.

Chang, Henry Y. and Chia-jung Pan 張永利、潘家榮 (2018). *Zouyu yufa gailun* 鄒語語法概論 [*A sketch grammar of Tsou*]. Taiwan nandao yuyan congshu 7 臺灣南島語言叢書 7 [Series on Formosan Languages 7]. Xinbei 新北 [New Taipei]: Yuanzhuminzu weiyuanhui 原住民族委員會 [Council of Indigenous Peoples]. (2nd ed.)

Chen, Cheng-fu (2008). Aspect and tense in Rukai: Interpretation and interaction. PhD dissertation. Austin, TX: University of Texas.

Chen, Sihwei (2017). Bundling perfective and perfect: The Atayal *wal*. In Michael Y. Erlewine (Ed.), *Proceedings of GLOW in Asia XI*, vol.1: *MIT Working Papers in Linguistics* 84, (pp. 65–78).

Chen, Sihwei and Haowen Jiang (2020). Ways of talking about the past: The semantics of *-in-* and *=in* in Bunun. In Henry Y. Chang and Hui-chuan J. Huang (Eds.), *Papers from the Austronesian Formal Linguistics Association 25: AFLA 25*, 1–21. JSEALS Special Publication No. 5. Honolulu, HI: University of Hawai'i Press.

Chen, Sihwei, Jozina Vander Klok, Lisa Matthewson and Hotze Rullman (2020). The 'experiential' as an existential past: Evidence from Javanese and Atayal. *Natural Language and Linguistic Theory* 39, 709–758. (online version: https://doi.org/10.1007/s11049-020-09488-6).

Chen, Yu-chuan David (2014). A study of nominalization in Thao. MA Thesis. Puli, Nantou: National Chi Nan University.

Comrie, Bernard (1976). *Aspect: An introduction to the study of verbal aspect and related problems*. Cambridge Textbooks in Linguistics 2. Cambridge: Cambridge University Press.

Comrie, Bernard (1985). *Tense*. Cambridge Textbooks in Linguistics 17. Cambridge: Cambridge University Press.

De Busser, Rik (2009). Towards a grammar of Takivatan Bunun: Selected topics. PhD dissertation. Bundoora: La Trobe University.

Ferrell, Raleigh and Drungdrung Tjakisuvung (forthcoming). *Paiwan texts*. MS (Edited by Elizabeth Zeitoun).

Hsieh, Fuhui 謝富惠 (2018). *Gemalanyu yufa gailun* 噶瑪蘭語語法概論 [*A sketch grammar of Kavalan*] Taiwan nandao yuyan congshu 11 臺灣南島語言叢書 11 [Series on Formosan Languages 11]. Xinbei 新北 [New Taipei]: Yuanzhuminzu weiyuanhui 原住民族委員會 [Council of Indigenous Peoples]. (2nd ed.)

Hsieh, Fuhui (this handbook). Grammaticalization. In Paul Jen-kuei Li, Elizabeth Zeitoun and Rik De Busser (Eds.), *Handbook of Formosan languages: The Indigenous languages of Taiwan*. Leiden: Brill.

Huang, Huei-ju (2003). Tense, aspect and reality in Tsou and Saisiyat. MA thesis. Taipei: National Taiwan University.

Huang, Lillian M. (1993). *A study of Atayal syntax*. Taipei: The Crane Publishing Co., Ltd.

Huang, Lillian M. (1995a). *A study of Mayrinax syntax*. Taipei: The Crane Publishing Co., Ltd.

Huang, Lillian M. (1995b). The syntactic structure of Wulai and Mayrinax Atayal: A comparison. *Bulletin of the National Taiwan Normal University* 40, 261–294.

Huang, Lillian M. (2008). Grammaticalization in Squliq Atayal. *Concentric: Studies in Linguistics* 34(2), 1–46.

Huang, Wei-chen (a.k.a. Ng, I-sin) (2012). A study of verbal morphology in Puljetji Paiwan. MA thesis. Hsinchu: National Tsing Hua University.

Jeng, Heng-hsiung (1999). Bunun tense and aspect. In Elizabeth Zeitoun and Paul Jen-kuei Li (Eds.), *Selected Papers from the Eighth International Conference on Austronesian Linguistics*, (pp. 455–487). Symposium Series of the Institute of Linguistics (Preparatory Office), No. 1. Taipei: Institute of Linguistics (Preparatory Office), Academia Sinica.

Li, Li-ying Lilian (2018). A grammar of Isbukun Bunun. PhD dissertation. Hsinchu: National Tsing Hua University.

Li, Paul Jen-kuei and Shigeru Tsuchida (2006). *Kavalan dictionary*. Language and Linguistics Monograph Series A-19. Taipei: Institute of Linguistics, Academia Sinica.

Lim, Hong-sui 林鴻瑞 (2022). Gehawuyu cankao yufa: yige jidu binwei de taiwan nandao yu 噶哈巫語參考語法: 一個極度瀕危的臺灣南島語 [A grammar of Kaxabu, a moribund Formosan language]. Boshi lunwen 博士論文 [PhD dissertation]. Nantouxian pulizhen 南投縣埔里鎮 [Puli, Nantou]: Guoli jinan guoji daxue 國立暨南國際大學 [National Chi Nan University].

Pan, Chia-jung (2010). *The grammatical realization of temporal expessions in Tsou*. Muenchen: Lincom Europa.

Pan, Chia-jung (2012). A grammar of Lha'alua, an Austronesian language of Taiwan. PhD dissertation. Cairns: James Cook University.

Ross, Malcolm (2002). The history and transitivity of Western Austronesian voice and voice-marking. In Fay Wouk and Malcolm Ross (Eds.), *The history and typology of Western Austronesian voice systems*, (pp. 17–62). Pacific Linguistics 518. Canberra: The Australian National University.

Sung, Chia-hsing (2006). Temporal expressions in Paiwan. MA thesis. Chiayi: National Chung Cheng University.

Teng, Stacy Fang-ching 鄧芳青 (2018). *Beinanyu yufa gailun* 卑南語語法概論 [*A sketch grammar of Katripul Puyuma*]. Taiwan nandao yuyan congshu 13 臺灣南島語言叢書 13 [Series on Formosan Languages 13]. Xinbei 新北 [New Taipei]: Yuanzhuminzu weiyuanhui 原住民族委員會 [Council of Indigenous Peoples]. (2nd ed.)

Teng, Stacy F. 2018. A reconstruction of the Proto-Puyuma aspectual and modal system. *Oceanic Linguistics* 57(2), 303–334.

Weng, Cui-xia (翁翠霞) (2000). *Zuoyu he shaoyu de shi, tai, mao xitong zhi bijiao yu yanjiu* 鄒語和邵語的時、態、貌系統之比較與研究 [A contrastive study of tense, mood and aspect systems in Tsou and Thao]. Shuoshi lunwen 碩士論文 [MA thesis]. Jiayi 嘉義 [Chiayi]: Guoli zhongzheng daxue 國立國立中正大學 [National Chung Cheng University].

Zeitoun, Elizabeth (1992). A syntactic and semantic study of the Tsou focus system. MA thesis. Hsinchu: National Tsing Hua University.

Zeitoun, Elizabeth (1993). A semantic study of Tsou case markers. *Bulletin of the Institute of History and Philology, Academia Sinica* 64(4), 969–989.

Zeitoun, Elizabeth (1996). The Tsou temporal, aspectual and modal system revisited.

Bulletin of the Institute of History and Philology, Academia Sinica 67(3), 503–532.

Zeitoun, Elizabeth 齊莉莎 (2000). *Bunongyu cankao yufa* 布農語參考語法 [*A reference grammar of Bunun*]. Taiwan nandao yuyan 5 臺灣南島語言 5 [Formosan Languages Series 5]. Taibei 臺北 [Taipei]: Yuanliu chubanshe 遠流出版社 [Yuan-Liou Publishing Co.].

Zeitoun, Elizabeth (2007). *A grammar of Mantauran* (*Rukai*). Language and Linguistics Monograph Series A4–2. Taipei: Institute of Linguistics, Academia Sinica.

Zeitoun, Elizabeth, Tai-hwa Chu and Lalo a Tahesh Kaybaybaw (2015). *A study of Saisiyat morphology*. Oceanic Linguistics Special Publication No. 40. Honolulu, HI: University of Hawai'i Press.

Zeitoun, Elizabeth, Tai-hwa Chu and Lalo a Tahesh Kaybaybaw (forthcoming). *Saisiyat dictionary*. MS.

Zeitoun, Elizabeth, Lillian M. Huang, Marie M. Yeh, Anna H. Chang and Joy J. Wu (1996). The temporal/aspectual and modal systems of the Formosan languages: A typological perspective. *Oceanic Linguistics* 35(1), 21–56.