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Toward a Typology of Tense, Aspect and Modality in Formosan Languages: A Preliminary Study¹

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Abstract

This paper deals with the temporal/aspectual and modal systems of five Formosan languages (Atayal, Bunun, Rukai, Saisiyat and Tsou) which have been selected for their geographic dispersion as well as their syntactic diversity. We show that all these languages exhibit a basic distinction between non-future/realis (in which situations are viewed as having occurred or as actually taking place) and future/irrealis (which refers to conditions or predictions), but display various degrees of complexity. We also argue that in order to understand the temporal/aspectual and modal systems of these languages, all the constituents of the sentence must be taken into consideration. It enables us to account for the possible and impossible co-occurrences of auxiliary verbs with pronominal clitics in Atayal (Wulai) or with case markers in Tsou.

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To avoid any confusion, we use IPA symbols throughout the paper. The following abbreviations are used in the glosses: Act: Active, Adv: Adverb, AF: Agent Focus, Asp: Aspect, BA: Bound Accusative, BF: Benefactive Focus, BG: Bound Genitive, BN: Bound Nominative, Caus: Causative, Comp: Completive aspect, FL: Free Locative, FN: Free Nominative, FO: Free Oblique, Fut: Future, Gen: Genitive, Hab: Habitual, IF: Instrumental Focus, Irr: Irrealis, LF: Locative Focus, Loc: Locative, NAF: Non Agent Focus, Neg: Negation, Nom: Nominative, Obl: Oblique, P: Plural, Pass: Passive, Prf: Perfective, PF: Patient Focus, Real: Realis, Red: Reduplication, S: Singular, Top: Topic.

Introduction

In the past decades, preliminary studies of Formosan languages have mapped their phonologies to a considerable extent. There is still little understanding, however, of the syntax of the vast majority of these languages, not to mention the variations that divide each language family. With the exception of the analyses provided by Ferrell (1972) and Starosta (1974, 1988 and 1992) and more recently by Huang (1994) and Li (1994), there have been virtually no comparative studies based on first-hand data. Such studies are needed to clarify the still-controversial relationships of the Formosan languages with respect to one another and to languages spoken outside Taiwan.

The present paper being part of on-going research on the grammatical typology of the Formosan languages, we do not intend to discuss here the genetic relationships of these languages, nor do we try to reconstruct the proto language from which they are derived. Our aim is to present a typological overview of the temporal/aspectual and modal systems of five of these languages: Atayal, Bunun, Rukai, Saisiyat and Tsou, which were selected for both their geographic dispersion and syntactic diversity.

Geographically, these languages stretch from north to south and east to west. Atayal is the most widely spread language: it is found in northern (Ilan, Taipei, and Taoyuan counties), north-western (Hsinchu, Miaoli and Taichung counties), central (Nantou county) and eastern (Hualien county) areas of the island. Saisiyat is spoken by a small community in the north-west (Hsinchu and Miaoli counties), Bunun in central and southern Taiwan, Tsou in the south-west (Mount Ali area). Rukai stretches throughout the south (Taitung, Pingtung and Kaohsiung counties). All these languages include a number of dialects.² These may differ only

2. Because of limitations of both space and time, we have been obliged to select from each language a representative dialect on which to base our discussion. Atayal consists of two major dialects, Sqliq and C?uli?. We selected Wulai to illus-

phonologically (e.g., Tsou, Saisiyat) or diverge also syntactically (e.g., Rukai, Atayal, Bunun).

Syntactically, all these languages are basically verb-initial.³ The post-verbal order of the NP arguments is more or less fixed and determined by a series of syntactic and semantic factors that will be discussed in forthcoming papers.

With the exception of Rukai,⁴ all these languages pattern alike in that the semantic role of the NP selected as subject is marked morphologically on the verb by means of an affix. Two kinds of constructions can be distinguished: in the first, the agent is the focus of the clause (in so-called A(gent) F(ocus) constructions); in the second, an NP other than the agent can function as subject (in N(on)-A(gent) F(ocus) constructions), the verbal affix determining its semantic role (either theme/patient, source/goal/locative, instrument or beneficiary).⁵ This dichotomy is illustrated in (1a) and (1b) respectively.

trate only the former. Bunun is made up of five dialects, Takituduh, Takibakha, Takbanuað, Takivatan and Isbukun, the last of which will be the object of our study. Finally, Tfuya and Budai were selected as representative of the Tsou and Rukai languages respectively. The data on Saisiyat (Tungho dialect) is based on Yeh (1991).

3. Note that Saisiyat displays SVO word order in elicited sentences, supposedly under the influence of Chinese (Yeh, 1991:34-36), but VSO word order in folkstories and traditional songs.
4. For reasons still ill-understood, the Rukai dialects lack the verbal affixes (e.g., AF *-um-*, LF *-an-*, PF *-ən-*, IF *si-*) found in the other Formosan languages. On the other hand, the Rukai dialects have developed an active/passive voice dichotomy not found in the other Formosan languages. Compare (i) and (ii).

- (i) Budai

w-a-sititi-aku	ki	lampaw
[Act-Real-beat-1S.BN		Lampaw]
'I am beating/beat Lampaw'		
- (ii) Budai

ki-a-sititi	nakuanə	ku	lampaw
[Pass-Real-beat	1S.FO		Lampaw]
'Lampaw is/was beaten by me'			

5. To simplify, we will purposely ignore the morphological variations that divide these languages and will not explain in detail the semantic function of each of the verbal affixes. We may say briefly that in AF constructions, verbs are usually marked with *-um-*, *m-*, *φ*, etc., while in NAF constructions, they may be suffixed with *-un* (PF), *-an* (LF) or prefixed with *s-*, *si-*, *?is-* (IF/BF).

(1) Atayal (Wulai), Huang (1993:10-11)

- a. $t < \underline{m} > tu?$ tali? qhuniq
 [crush < AF > Tali? tree]
 'The tree crushed Tali?'
 b. $t?-\underline{an}$ qhuniq tali?
 [crush-PF tree Tali?]
 'A tree crushed Tali?'

These languages differ, however, in a number of respects: (1) some of these languages/dialects preserve a nominal case marking which has been lost in others (e.g., Mayrinax vs. Wulai in Atayal);⁶ (2) while the nominal case marking of most of these languages (e.g., Atayal and Rukai) is based on the categorial nature of the referent NP, i.e., common nouns are marked differently from personal nouns and kinship terms, Tsou has developed a complex system in which the referent is localized in relation to the universe of discourse;⁷ (3) some languages (e.g., Atayal and Tsou as opposed to Rukai or Bunun) have a system of auxiliary verbs which usually occur in clause-initial position. These auxiliary verbs are not syntactically required for a sentence to be well-formed in Atayal (Wulai), but they cannot be omitted in Tsou.

Before starting, we must make it clear that since we did not want to adopt a taxonomic analysis but because of limitations of both time and space, we will not present in detail the temporal/aspectual and modal systems of each of the languages/dialects being compared. Instead, we will raise some issues that will be discussed in a typological perspective. That is, we will try to show how these languages resemble each other and in what respects they differ from one another, by adopting a semantic/functional approach. More specifically, we will show that all these languages exhibit a basic distinction between non-future/realis and future/irrealis with various degrees of complexity, and argue that in order to under-

stand their temporal/aspectual and modal systems, all the constituents of the sentence must be taken into consideration.

1. The Non-Future/Realis vs. Future/Irrealis Dichotomy

1.1. Against a tripartite dichotomy (Past, present and future)

Following a traditional current in general linguistics, Li (1973:157) analyzes the temporal/aspectual system of Tanan Rukai as based on a tripartite distinction between past, present and future. As illustrated in Table 1, he finds that these tenses are realized respectively by the affixation to the main verb of wa-, ϕ and ay-.

Table 1: Li's (1973:157) classification of tense and aspect in Rukai (Tanan)

Active voice

Aspect Tense	Plain	Compleitive	Continuative
Present	kanə	kanə-ŋa	kanə-kanə
Past	wa-kanə	wa-kanə-ŋa	wa-kanə-kanə
Future	ay-kanə	ay-kanə-ŋa	ay-kanə-kanə

Passive voice

Aspect Tense	Plain	Compleitive	Continuative
Present	ki-kanə	--	kanə-kanə
Past	ki-a-kanə	ki-a-kanə-ŋa	ki-a-kanə-kanə
Future	ay-ki-kanə	ay-ki-kanə-ŋa	ay-ki-kanə-kanə

6. See Li (1994) and Huang (1994 and 1995).

7. See Zeitoun (1993).

Note, however, that his analysis cannot account for the ungrammaticality of (2) and the ambiguity of (3a).

(2) Rukai (Tanan)

*kanə kuani umas sa aga
[eat that man rice]

(3) Rukai (Tanan)

a. wakanə kuani umas sa aga
[eat that man rice]

i. 'The man is eating the rice'

ii. 'The man ate the rice' (Li 1973:158)

b. wakanə kuani umas sa aga kuḏaa
[eat that man rice yesterday]

'The man ate the rice yesterday'

c. wakanə-ana kuani umas sa aga
[eat-still that man rice]

'The man is eating the rice'

The ungrammaticality of (2) shows that the 'plain' form kanə is never used as such; it is a root form. On the other hand, a verb prefixed with wa-⁸ does not refer to the past only, but may refer to either a past or a present event. In that respect, (3a) is ambiguous. The past/present interpretation of an utterance depends on the occurrence of (i) a temporal adverb as in (3b) or (ii) an aspectual affix as in (3c). Note, finally, that the notion of tense (past, present and future) does not account for the dichotomy (past/present vs. future) between (3) and (4).

(4) Rukai (Tanan)

a. (a)y-ua-su inu ?
[Fut-go-2S.BN where]
'Where will you go?'

8. We believe that wa- should be treated as w- + a-, where w- marks the active voice (in contrast with ki- which indicates passive) and a- refers to a past/present situation. Arguments to justify this position are given in Zeitoun (1995).

b. ay-tumawlay-aku kyasa

[Fut-tell tale-1S.BN now]

'I shall tell a story now'

A comparison of these examples clearly shows that Tanan Rukai establishes a basic distinction between future and non-future. Though Tanan and the other Rukai dialects as a whole differ from the other Formosan languages in their voice system, all these languages pattern alike in that respect. In Zeitoun et al. (1996), we show more specifically that the non-future/future distinction may be reflected in some languages/dialects (e.g., Tsou, Atayal (Wulai), Saisiyat) as a realis/irrealis distinction. The term "irrealis" designates the fact that in some languages, future markers function in fact as modals. The main difference between languages exhibiting a non-future/future temporal system and those displaying a realis/irrealis dichotomy lies in the means they employ to mark tense, aspect and modality, either morphological (e.g., use of affixation and reduplication) or lexical (e.g., use of auxiliary verbs).

Below, we will show that (i) not all the Formosan languages exhibit a clear-cut distinction between focus and tense/aspect, and (ii) the non-future/realis vs. future/irrealis dichotomy is supported by a number of evidence. We will discuss these two points in turn.

1.2. Focus and tense/aspect distinctions

The Formosan languages, like the Philippine-type languages (see Reid, 1992), have a complex system of verbal morphology. It includes distinctions of voice (or focus), tense/aspect and modality. An important point to notice is that in the absence of temporal/aspectual or modal affixes/particles or auxiliaries, focus affixes carry temporal/aspectual or modal information. As illustrated in (5), when the temporal frame is left unspecified, the AF m-forms (realized as -um, -m-, m-, ϕ etc.) are found to refer to situations having either occurred or actually taking place (non-future/realis).⁹

9. The same could be said of NAF constructions, see Zeitoun et al. (1996).

(5) a. Atayal (Wulai)

m-qwas qutux knerin
[AF-sing one woman]

'A woman is singing/sang' (Huang 1993:41)

b. Bunun (Isbukun)

ma-6aliv-ik tu tasa tu lumah
[AF-buy-1S.BN one house]

'I am buying/bought a house'

In co-occurrence with temporal/aspectual or modal affixes, temporal adjuncts or auxiliary verbs, focus affixes retain their primary function; they indicate the semantic role of the NP selected as focus. In other words, whether (AF) m-forms are found in the realis as in (6) or in the irrealis as in (7), they do not carry any temporal/aspectual or modal information.

(6) Atayal (Wulai)

a. m-qinah tali? hira?
[AF-run Tali? yesterday]

'Tali? ran yesterday'

b. m-qinah tali? kryax
[AF-run Tali? every day]

'Tali? runs every day'

c. m<in>wah tali?
[AF<Prf>come Tali?]

'Tali? came'

(7) a. Atayal(Wulai)

musa? m-qwas qutux knerin
[Asp AF-sing one woman]

'A woman will sing'

b. Bunun (Isbukun)

na-ma-6aliv-ik tu tasa tu lumah
[Fut-AF-buy-1S.BN one house]

'I want to/will buy a house'

Conversely, in the absence of focus affixes on the verb, a temporal/aspectual affix may carry voice distinctions. In a number of languages (Atayal and Bunun among others), the aspectual infix <in>, which indicates perfectivity, is used as a PF marker. Compare (8) and (9).

(8) Atayal (Wulai)

p < in > aŋa? = maku? laqi? qani
[<PF/Prf>carry = 1S.BG child this]

'I (once) carried the child on my back'

(9) Bunun (Isbukun)

l < in > udah-ku? takna? hay minsum-aŋ
[<PF/Prf>beat-1S.BA yesterday Top come-still]

'The one beaten by me yesterday came again'

1.3. Arguments for a non-future/realis vs future/irrealis dichotomy

1.3.1. Morphological marking

Morphologically, different types of affixes/auxiliary verbs will be used in the realis and in the irrealis. In Atayal (Wulai), verbs occurring in AF constructions are usually prefixed with m- or infix with <m> in the realis. They are marked with p- in the irrealis. This contrast is illustrated in (10a-b).

(10) Atayal (Wulai)

a. m-qwas = saku? (hira?/*suxan)
[AF-sing = 1S.BN (yesterday/*tomorrow)]

'I sang (yesterday)'

b. Huang (1993:11)

p-qwas = saku? (suxan/*hira?)
[AF-sing = 1S.BN (tomorrow/*yesterday)]

'I will sing (tomorrow)'

In Atayal, NAF (and more specifically in PF) constructions, verbs are marked with -an in the realis but with -un in the irrealis.¹⁰ In Atayal (Wulai) and Bunun (Isbukun), the instrumental/benefactive foci (s- in Wulai and ?is- in Isbukun) occur in the realis and the irrealis because the NP selected as focus only involves a peripheral argument. Compare (11a-b).

(11) Atayal (Wulai)

- a. β hiy-an = maku? tali? (hira?/*suxan)
 [beat-PF=1S.BG Tali? (yesterday/*tomorrow)]
 'Tali? was beaten by me (yesterday)'
- b. β hiy-un = maku? tali? (suxan/*hira?)
 [beat-PF=1S.BG Tali? (tomorrow/*yesterday)]
 'Tali? will be beaten by me (tomorrow)'

In Tsou, auxiliary verbs are marked as AF or NAF in the realis (cf. mi- vs. i-; mo(h) vs. o(h)) but are invariable in the irrealis (cf. te, ta, tena, etc.). In both cases, however, the semantic role of the NP selected as subject is marked on the verb by means of an affix. Compare (12)-(13).

(12) Tsou

- a. mo-?u 6-aito to oko nehucma
 [AF-1S.BN AF-see Obl child yesterday]
 'I saw the child yesterday'
- b. o-?u aiti ?o oko nehucma
 [NAF-1S.BG see-LF Nom child yesterday]
 'I saw the child yesterday'

(13) Tsou

- a. te-?o 6-aito to oko hohucma
 [Irr-1S.BN AF-see Obl child tomorrow]
 'I will see the child tomorrow'
- b. te-?o aiti ?o oko hohucma
 [Irr-1S.BN see-LF Nom child tomorrow]
 'I will see the child tomorrow'

1.3.2. Syntactic constraints

Syntactically, NAF constructions may be prohibited in the irrealis. Yeh (1991:71ff) argues quite convincingly that in Saisiyat, ?am 'will' is used in co-occurrence with verbs marked as AF but not with those marked as NAF. A nominalized construction must be used instead in PF constructions to refer to the future. Compare the grammaticality of (14a-c).

(14) Saisiyat (Tungho) (Yeh, 1991:72)

- a. nyaw ?am s<om>i?ael ka ?alaw
 [cat will <AF>eat fish]
 'The cat is going to eat the fish'
- b.* ?alaw ?am si?ael-ən noka? nyaw
 [fish will -PF Gen cat]
 'The fish is going to eat the cat'
- c. ?alaw ka-si?ael-ən noka? nyaw
 [fish Nom-eat-PF Gen cat]
 'The fish is going to be eaten by the cat'
 (Lit: 'The fish will be the cat's eating')

1.3.3. Semantic variations

Semantically, AF constructions are opposed to NAF constructions in the realis in terms of imperfectivity (15)-(16a)/perfectivity (15b)-(16b).¹¹

10. In other languages (e.g., Bunun), -un and -an occur in contrast, both in the realis and in the irrealis depending on the semantics of the verb.

11. This imperfective/perfective dichotomy illustrates the transitivity distinctions examined by Hopper and Thompson (1980).

(15) Atayal(Wulai) (Huang 1993:41)

- a. m < in > qbaq=saku? ke? na? tayan
 [AF < Prf > learn=1S.BN word na? Atayal]
 'I learned Atayal'
 (i.e., I may still be learning it; I still can't speak the language)
- b. q < in > baq-an=maku? ke? na? tayan
 [< Prf > learn-PF=1S.BG word na? Atayal]
 'I learned Atayal' (i.e., I can speak the language)

(16) Tsou

- a. mi-ta m-imo ta emi
 [AF-3S. BN AF-drink Obl wine]
 'He is drinking wine'
- b. i-ta im-a ?o emi
 [NAF-3S.BG drink-PF Nom wine]
 'He has drunk the wine'

If we accept Comrie's (1976) classification of aspectual oppositions (see Table 2), we can easily account for the fact that (in most languages) AF constructions are commonly used to describe habitual or continuous (progressive and nonprogressive) situations.¹²

12. This does not exclude the fact that in NAF constructions the occurrence of aspectual auxiliaries/particles may yield a progressive reading. Compare (i) and (ii).

(i) Tsou

i-ta ima ?e emi
 [NAF-3S.BG drink Nom wine]
 'He has drunk wine'

(ii) Tsou

i-ta -n?a ima ?e emi
 [NAF-3S.BG -still drink Nom wine]
 'He has been drinking wine'

Table 2: Comrie's (1976:25) classification of aspectual oppositions

/	\
Perfective	Imperfective
	/\
Habitual	Continuous
	/\
Nonprogressive	Progressive

A comparison of (17b-c) and (18a-b) shows that (i) in the absence of aspectual auxiliaries/particles, there is no neat distinction between the progressive and the non-progressive and (ii) the situational context will determine whether the event referred to has already happened or is actually taking place.

(17) Atayal (Wulai) (Huang, 1993:61)

- a. k < m > ayan=saku? squ? sunan kryax
 [< AF > say-1S.BN Loc 2S.FL every day]
 'I talk to you every day'
- b. k < m > ayan=saku? squ? sunan ϕ
 [< AF > say-1S.BN Loc 2S.FL ϕ]
 i. 'I talked/was talking to you'
 ii. 'I am talking to you'
- c. nyux=saku? k-m-ayan qu? sunan
 Asp=1S.BN talk-AF-talk Loc 2S.FL
 i.* 'I talked to you'
 ii. 'I am talking to you'

(18) Tsou

- a. mo eobako to oko ?o amo
 [AF beat-AF Obl child Nom father]
 i. 'Father beat the child'
 ii. 'Father is beating the child' (Both unseen at Speech Time)

- b. mo -n?a eoʔako to oko ʔo amo
 [AF -still beat-AF Obl child Nom father]
 i.* 'Father beat the child'
 ii. 'Father is (still) beating the child' (Both unseen at Speech Time)

In the irrealis, no such distinction is found. Compare (16)-(19) and (20a-b).

(19) Tsou

- a. te-ta m-imo ta emi
 [Irr-3S.BN AF-drink Obl wine]
 'He will drink wine'
 b. te-ta ima ʔe emi
 [Irr-3S.BG drink-PF Nom wine]
 'He will drink wine'

(20) Tsou

- a. mi-ta -n?a m-imo ta emi
 [AF-3S.BN -still AF-drink Obl wine]
 'He is (still) drinking wine'
 b. te-ta -n?a m-imo ta emi
 [Irr-3S.BN -still AF-drink Obl wine]
 'He is going to drink wine again'

We have shown that all the Formosan languages under study exhibit a basic distinction between non-future/realis and future/irrealis. Below, we will suggest that they display various degrees of complexity.

2. Degrees of Complexity

2.1. Perfectivity/imperfectivity in Rukai

We have shown that in the realis, AF constructions are distinguished from NAF constructions in terms of perfectivity/imperfectivity. This is

true of most, but not all the Formosan languages. As shown in Li (1973) (cf. Table 1), Rukai expresses these concepts through two morphological means, affixation and reduplication (since it lacks the focus system found in the other Formosan languages). In Budai, the affixation (to the verb) of -ŋa 'already' on the one hand and -ana 'still' on the other hand are used to reflect the concepts of 'perfectivity' (or completive aspect) and 'imperfectivity' (or progressive aspect). As an illustration, consider (21) below. The reduplication of part of the verb stem may either yield a habitual or a progressive interpretation, depending on the constituents occurring in the sentence (e.g., case markers in Budai). This contrast is exemplified in (22a-b).

(21) Rukai (Budai)

- a. w-a-tubi-ŋa ka lulai
 [Act-Real-cry-already child]
 'The child has cried'
 b. w-a-tubi-ana ka lulai
 [Act-Real-cry-still child]
 'The child is crying'

(22) Rukai (Budai)

- a. w-a-kanə-kanə-su ka bələbələ
 [Act-Real-Red-eat-2S.BN banana]
 'You are eating that banana'
 b. w-a-kanə-kanə-su ku bələbələ
 [Act-Real-Red-eat-2S.BN banana]
 'You usually eat bananas'

2.2. Habitual/generic meaning in Tsou

We have argued that in the realis, AF constructions are usually used to describe habitual or continuous situations. In Tsou, habitual and episodic readings are taken over by different auxiliary verbs. Compare the use of da- in (23) to that of mi- in (24). da yields an habitual meaning

while mi- refers to a present situation.

(23) Tsou

- a. da-ta 6-oni to tacimi
[Hab-3S.BN AF-eat Obl banana]

i. 'He (usually) eats bananas'

ii.* 'He is eating a banana/bananas'

- b. da-ta huhucmasi 6-oni to tacimi
[Hab-3S.BN every day-AF AF-eat Obl banana]
'He eats bananas every day'

(24) Tsou

- a. mi-ta 6oni ta tacimi
[AF-3S.BN AF-eat Obl banana]

i. 'He is eating a banana/bananas'

ii.* 'He usually eats bananas'

- b.* mi-ta huhucmasi-AF 6-oni ta tacimi
[AF-3S.BN every day AF-eat Obl banana]

Note that da- refers to an 'habitual present' so that reference to the past or to the future necessitates the use of an other auxiliary verb (e.g., mo(h) and tena) which determine the temporal frame of the utterance. This is exemplified in (25).

(25) Tsou

- a. moh-ta da huhucmasi 6-oni to tacimi
[AF-3S.BN Hab every day-AF AF-eat Obl banana]

'(In the past), he would eat bananas every day'

- b. tena da-ta huhucmasi-AF 6-oni to tacimi
[Irr Hab-3S.BN every day AF-eat Obl banana]

'(In the future), he will eat bananas every day'

In both examples, the habitual interpretation is yielded by the occurrence

of huhucmasi 'every day.' Its absence in (26a) below gives a different meaning from that of (25a) -- the utterance must be given an episodic interpretation -- while it renders the second ungrammatical. Compare (25a)-(26a) and (25b)-(26b) respectively.

(26) Tsou

- a. moh-ta da 6-oni to tacimi
[AF-3S.BN Asp AF-eat Obl banana]

'He ate a banana/bananas'

- b.* tena da-ta 6-oni to tacimi
[Irr Hab-3S.BN AF-eat Obl banana]

2.3. Grammaticalization of tense in Tsou

It was suggested that in the realis, AF constructions refer to present or past events, depending on the context. As illustrated in (27) below, in Atayal (Wulai), a verb marked as AF may appear in co-occurrence (i) with various adverbs (e.g., hira? 'yesterday,' soni 'today,' kriryax 'every day') which determine the temporal frame of the utterance or (ii) with the aspectual infix -in-. Tsou differs from the other Formosan languages in that it has grammaticalized the notion of (absolute) tense. Only mo- but not mi- can co-occur with nehucma 'yesterday.' Compare the grammaticality of (28a-b). In the same vein, the aspectual particle da can co-occur with mo- (or moso, o(h)) but not with mi- (see (29)). A comparison of these examples clearly indicates that AF/NAF auxiliaries in Tsou carry not only aspectual but temporal information as well.

(27) Atayal (Huang 1993)

- a. m < in > ima? sayun tali? soni (p.50)
[< Prf > wash Sayun Tali? today]

'Tali? washed Sayun just now'

- b. m-ulu=sami lomwa hira? (p.58)
[-find=1PE.BN rascal yesterday]

'We found a rascal yesterday' (by accident)'

- c. k < m > ayan = saku? squ? sunan kryax (p. 61)
 [< m > say = 1S.BN Loc 2S.FL every day]

'I talk to you every day'

- d. m < in > wah = saku? (p. 9)

[AF < Prf > come = 1S.BN]

'I came'

(28) Tsou

- a.* mi-?o 6-oni to tacimi nehucma
 [AF-1S.BN AF-eat Obl banana yesterday]

- b. mo-?u 6-oni to tacimi nehucma
 [AF-1S.BN AF-eat Obl banana yesterday]

'I ate a banana yesterday'

- (29) a.* mi-ta da smovei ta oko
 [AF-3S.BN Asp AF-carry Obl child]

- b. moh-ta da smovei ta oko
 [AF-3S.BN Asp AF-carry Obl child]

'(In the past), s/he carried the child'

3. Co-occurrence Restrictions

Below, we argue that in order to understand the temporal/aspectual systems of the Formosan languages, all the constituents of the sentence must be taken into consideration to account for the possible and impossible co-occurrences of auxiliaries with pronominal clitics (e.g., Atayal) or with case markers (e.g., Tsou, Rukai).

3.1. The aspectual auxiliaries *nyux* and *cyux* in Atayal (Wulai) in co-occurrence with different pronouns

Atayal has grammaticalized the verbs of possession/location/ex-

istence *nyux* and *cyux* into aspectual auxiliaries. In that language, imperfectivity is rendered through the use of these two auxiliaries, which can (both) co-occur with verbs marked as AF or NAF. A comparison of (30) - (31) shows, however, that they cannot permute freely. As shown in Huang (1993:71), *nyux* designates "an action taking place close to the speaker," which explains why it can only co-occur with first person pronominal forms (singular or plural), (see (30a-b)). *Cyux*, on the other hand, indicates that the action is "taking place away from the speaker." In co-occurrence with a first person pronoun, the event must be interpreted as occurring before Speech Time. In other words, *nyux* and *cyux* contrasts in terms of time or space. Compare (30a)-(30b) and (31a-b).

(30) Atayal (Wulai)

- a. nyux = saku? m-anig qulih
 [Asp = 1S.BN AF-eat fish]

'I am eating fish (now)'

- b.* nyux m-anig qulih hiya?
 [Asp AF-eat fish 3S.FN]

(33) Atayal (Wulai)

- a. cyux = saku? m-anig qulih
 [Asp = 1S.BN AF-eat fish]

i.* 'I am eating fish (now)'

ii. 'I was eating fish' (when answering the phone)'

- b. cyux m-anig qulih hiya?
 [Asp AF-eat fish 3S.FN]

'He is eating fish (now)'

3.2. Auxiliary verbs and case markers in Tsou

Tsou is characterized by the fact that it has developed a complex system of case markers divided into two classes, nominative and oblique. These do not (as in other Formosan languages) mark an NP according to its categorial nature, marking common nouns differently from person-

al nouns and kinship terms, but localize a referent in relation to the universe of discourse. Briefly, we may say that, on the basis of their syntactic distribution (see Zeitoun, 1993), we must distinguish between referential (?e, si, ta, ?o and to) and non-referential case markers (na and no).¹³ Furthermore, among referential case markers, ?e, si and ta differ from ?o and to in terms of identifiability. A referent marked by ?e, si or ta is identifiable to the addressee because directly related to the universe of discourse, while a referent marked by ?o and to may be either (i) identifiable but absent or invisible at Speech Time, or (ii) unidentifiable because newly introduced in the discourse.

There are some co-occurrence restrictions between case markers and auxiliary verbs. Consider first the following pairs of sentences.

(32) Tsou

- a. da-ta huhucmasi 6-oni to tacimɿ
 [Hab-3S.BN every day-AF AF-eat Obl banana]
 'He eats a banana every day'
- b.* da-ta huhucmasi-AF 6-oni ta tacimɿ
 [Hab-3S.BN every day AF-eat Obl banana]

(33) Tsou

- a. da-ta kaebi 6-oni to huv?o
 [Hab-3S.BN happy-AF AF-eat Obl orange]
 'He likes eating oranges'
- b.* da-ta kaebi 6oni ta huv?o
 [Hab-3S.BN happy-AF AF-eat Obl orange]

13. Givón (1978:293) gives the following definition of referentiality: "It involves, roughly, the speaker's intent to 'refer to' or 'mean' a nominal expression to have non-empty reference -- i.e., to 'exist' -- within a particular universe of discourse. [...] If a nominal is 'non-referential' or 'generic' the speaker does not have a commitment to its existence within the relevant universe of discourse. Rather, in the latter case, the speaker is engaged in discussing the genus or its properties, but does not commit him/herself to the existence of any specific individual number of the genus."

(34) Tsou

- a. o?a moh-ta s?a da ahtu etamaku to tamaku
 [Neg AF-3S.BN Adv Asp never-AF smoke-AF Obl cigarette]
 'He never smoked cigarettes'
- b.* o?a moh-ta s?a da ahtu etamaku ta tamaku
 Neg AF-3S.BN Adv Asp never-AF smoke-AF Obl cigarette

In (32)-(33), da functions as an auxiliary verb, and in (34) as an aspectual marker.¹⁴ Both das indicate a rupture with Speech time; in the two first examples (see (32-33)), da refers to the scanning of a class of occurrences and by implication to the characteristic of the agent of the given sentence. In the latter, da locates an event in the past. As a consequence, in each example, to but not ta can co-occur with da.

Conclusion

In this paper, we have tried to show that the Formosan languages under study:

(i) exhibit a complex system of verbal morphology which includes distinctions of voice, tense/aspect and modality. In the absence of temporal/aspectual affixes/particles determining the temporal frame of the utterance, focus affixes may take over temporal/aspectual information. Conversely, in the absence of focus affixes on the verb, temporal/aspectual affixes/particles may carry voice distinctions,

(ii) have a temporal/aspectual system based on a modal dichotomy between realis and irrealis (where AF and NAF constructions are subject to a number of morpho-syntactic as well as semantic constraints), but display various degrees of complexity.

In the course of the paper, we have also argued that in order to understand the temporal/aspectual and modal systems of these languages, all the constituents of the sentence must be taken into account.

14. See Zeitoun (1992:53-57) for the syntactic distribution of the two da's in Tsou.

This research represents, however, a preliminary study. It involves only five Formosan languages and more data is needed to test the hypotheses proposed and to clarify various problems.¹⁵

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15. Many aspects related to tense, aspect and modality that were not raised here are discussed in detail in Zeitoun et al. (1996).

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