

出國報告（出國類別：參加國際學術研討會）

第十七屆南島語形式語言學會議
Annual Meeting of Austronesian Formal
Linguistics Association (AFLA-17)
出國報告書

服務機關：國立清華大學語言學研究所

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摘要

2010年5月初，學生貝彩麗與戴佳豪有幸參加在美國紐約大學石溪分校(Stony Brook University, New York)舉辦的『第十七屆南島語言形式語言學會議』(The 17th Annual Meeting of Austronesian Formal Linguistic Association, AFLA-17)。此次會議主要目的旨在促進國際南島語研究發展，及提供南島語研究學者相互交流的學術平台，此年會在學界享有盛名。於2010年5月7日至9日前後共計三天，與會學者多來自美國及台灣各著名大學教授及學生。學生貝彩麗、戴佳豪將發表之文章篇名為"On Modals in Mayrinax Atayal"，將於會議第二天5月8日上午進行報告。

南島語形式語言學會議是語言學界裡唯一以南島語(Austronesian languages)為研究焦點且每年舉行的常態性會議，此會議對促進南島語的研究貢獻不少努力，過去曾在加拿大、美國、德國等地舉行。內容涵蓋相當廣泛，從南島語常見的焦點(focus)或語態(voice)、及物性、代詞、關係句、名物化等。今年第十七屆南島語形式語言學會議由美國紐約大學石溪分校(Stony Brook)舉辦。今年會議的主題以及報告篇數含：句法(syntax)，語意(semantics)，音韻(phonology)。共計二十五篇論文接受發表，其中三篇包含專題演講。這三天的會議，主辦單位極用心的安排了幾位語言學界著名的學者來當特邀演講者(invited speaker)，這些學者都頗負盛名，如華盛頓大學(Washington university)的Edith Aldridge(李琦)教授，他所研究的語言包含漢語、日語以及台灣南島語等。除了現代漢語和日語外，他還對古漢語、古日語進行比較研究，而研究的主題也包含很多面向，充分展現了語言學家的天賦。第二天的特邀演講者為康乃爾大學(Cornell university)的Abigail Cohn教授，以及自夏洛特皇后大學(Queen's university)的Anastasia Riehl教授，第三天則是請了來自美國最高水準的一流學術教育機構德拉瓦大學(Delaware university)的Peter Cole教授、Gabriella Hermon教授，以及德國馬克斯普朗克人類學研究所(max plank institute for evolutionary anthropology) Timothy McKinnon教授當特邀演講者。

相關會議之重點有：1.發表會議文章集結成冊 2.下一屆主辦地點：哈佛大學

關鍵字：南島語、形式語言學、AFLA

本文

目的

此次出國之目的主要是前往美國紐約大學石溪分校(Stony Brook university, NY)參與第十七屆南島語形式語言學會議，並且發表所撰寫之文章"On Modals in Mayrinax Atayal"，所發表之文章由貝彩麗(Tsai-Li Pei)，戴佳豪(Chia-Hao Tai)及吳俊明(Chun-Ming Wu)共同合寫。對我們來說這次是第一次出國參與國際會議，也是第一次要在各國學者面前進行報告，除了興奮之情外仍不免帶點緊張。這是一次難得的機會，除了可以透過發表的方式與各國來的學者一起討論文章需改進的地方外，也能夠聽取專家學者們在相關研究上所累積的經驗。也為自己打開國際的視野，感染國外學者的研究風氣，以求繼續對台灣南島語持續進行研究。

過程

AFLA 會議由 5 月 7 日至 5 月 9 日假紐約大學石溪分校進行。前兩天會議都進行至下午 6 點結束，第三天會議結束後，公布第十八屆南島語形式語言學會議地點於：哈佛大學。本次會議接受報告之文章共計 25 篇，而我國出席本次會議並發表人數共達 7 名，比率高達三成，其中包含兩名學者以及五名研究生，名單分述如下：中央研究院語言學研究所張永利教授、中央研究院語言學研究所助理陳思瑋，文藻外語學陳怡婷助理教授，清華大學語言所葉詩綺(博士班)、貝彩麗(碩士班)、戴佳豪(碩士班)以及在佛羅里達大學(Florida University)攻讀博士學位的林東毅。

如上述，第十七屆南島語言形式語言學會議於今年(2010)5 月 7 日至 9 日，假美國紐約大學石溪分校舉行。本次會議是由石溪分校語言學系(Stony Brook University Linguistics Department)主辦，參與這次會議的各國語言學者及研究生共計有四十人，此次會議亦邀請了多位知名的國際南島語研究學者，如 Edith Aldridge, Abigail Cohn, Peter Cole 及 Gabriella Hermon 等人。

本次會議中共有二十五篇論文接受發表，其中三篇包括專題演講。專題演講主講人姓名及主題分別如下所示：

(1) Edith Aldridge. 'Predicate, Subject, and Cleft in Austronesian Languages'

- (2) Abigail Cohn. ‘NCs in Austronesian: clusters, prenasalized stops, or postploded nasals?’
- (3) Peter Cole, Gabriella Hermon, & Timothy Mckinnon. ‘Is a Unified Syntactic Analysis Possible for Kerinci Ablaut?’

除了上述三位專題演講人之外，其他在南島語學界中也享有盛名的多位學者也出席了本次會議。這些學者及演講論文題目分別是：

- (1) Daniel Kaufman. ‘The constituency and command paradox in Philippine type languages’
- (2) Joachim Sabel. ‘Long Dependencies and Verbal Object Marking in Fijian and Kiribati’
- (3) Julie Anne Legate. ‘Not-so-Implicit Agents’

當然，其中也包括了台灣的南島語言學者：

- (4) Henry Y. Chang. ‘Does Tsou display high-low applicative distinction?’

此次為期三天的會議，除了三場特邀演講外，另有二十二篇學術論文發表。其中三篇是有關於語音音韻方面的研究，涵蓋的語言包括台灣的排灣語(Piuma Paiwan)、印尼巽他語(Sundanese)及馬紹爾語(Marshallese)，關注的議題研究內容除了音韻學中的重音配置還有元音與輔音的語音體現。其他論文則多數為語法論文，內容涵蓋相當廣泛，從常見的疑問、分裂句到施用結構。另外還有三篇關於語意方面的論文，如情態句等。

本次我國與會者所發表的論文共計六篇，論文及發表者名單，如下所示：

- (1) Henry Y. Chang (張永利). ‘Does Tsou display high-low applicative distinction?’
- (2) Yi-Ting Chen (陳怡婷). ‘Alternating Control in Amis’
- (3) Shih-chi Stelly Yeh (葉詩琦). ‘Quality-sensitive stress and opacity in Piuma Paiwan’
- (4) Dong-Yi Lin (林東毅). ‘Interrogative Verbs in Kavalan: Implications for Syntactic Categories’

- (5) Sih-Wei Chen (陳思瑋). 'On affected arguments in Atayal'
- (6) Tsai-Li Pei, Chia-Hao Tai, and Chun-Ming Wu (貝彩麗,戴佳豪,吳俊明). 'On Modals in Mayrinax Atayal' (活動相關議程, 敬請參閱附錄。)

心得

本次會議主辦單位非常用心,除了規劃方式具有主題性討論外,其他諸多的安排,往往令與會者倍感重視及貼心。舉例來說,在開會之前不斷地與發表者連絡確認事項,並且也對住宿、交通及校園周邊環境提供了非常完整的資訊。會議第一天安排了歡迎晚會,邀請與會者參加,藉此讓學者能有彼此交流的機會。會議第二天則是安排了晚宴,一切免費,並且有現場演奏樂團,讓氣氛非常舒適。總體來說,整個會議的安排雖然有些緊湊,但也可以說幾乎沒有冷場,並且接待的學生也都非常親切和善,主辦單位的態度和詳細規畫實在值得我們學習。另外特別感謝來自台灣目前在紐約大學石溪分校攻讀博士學位的盧郁安學姊以及舒志翔學長,讓我們一行人即便身處美國也能感受到台灣的溫暖。而本會議今年發表的論文篇數比往年多,也看見會議中母語使用者作為一個研究者時,對語言的掌握度以及精確度,這影響了我們希望能把自己的母語研究的更透徹,也希望行有餘能繼續對其他的台灣南島語方言進行研究,而不只侷限在自己使用的語言,這也顯現出國外很積極培養母語使用者來研究自己的語言。在會議的最後一個晚上,主辦單位安排了晚宴,晚宴中與中研院張永利教授談了不少台灣南島語的研究概況以及培育母語使用者的意義與難度,也和出國繼續升學的學長姐們討教在國外升學的經驗以及生活樂趣。

會議結束後,我們和紐約大學的學生會面用餐,認識了一位Ilokano的母語使用者,他本身也是語言學領域的研究者,同時也雙修音樂之博士學位。可見,國外針對南島語言及南島語言學之重視,以及這幾年來南島語言學界努力的成果漸漸的啟發了不少母語使用者進入語言學的領域來研究。身為南島語族起源與擴散地的台灣更該掌握台灣南島語的優勢,多與其他國家的學者母語使用者保持聯

繫。這是個好現象，值得我們繼續去學習，也給了學生戴佳豪(排灣族)以及貝彩麗(泰雅族)發自內心的感動，希望能對原住民族有所貢獻，貢獻一己之力。另外，紐約市立大學(CUNY)Daniel Kaufman教授知道我們遠從台灣來，且為台灣原住民族，便很熱情的邀請我們到他住處聚餐並相談甚歡。Daniel Kaufman教授於康乃爾大學(Cornell University)取得博士學位，本身亦是一名優秀的語言學者。

建議

至今 AFLA 已舉辦 17 屆，而台灣今年被接受並邀請發表篇數共計有 6 篇，受邀學者及博碩士研究生共計 8 人，再再顯示國內重視南島語言及南島語言學，以及近年來開設南島語言學課程的努力。但，由原住民族人自己來研究自己的語言上仍須付出更多的努力。以台灣的部分為例，今年為第一次有原住民籍研究生參與 AFLA 會議並進行發表，而我們知道從事原住民語言的研究好比一段搶救語言的過程，是跟時間進行賽跑，是不能等的。

2010 年 5 月，聯合國依「聯合國瀕危語言圖冊」列出 199 種「處境危及」的語言，其中「極度瀕臨危急」的語言，會說的都不到十個人。聯合國所列 18 種極度瀕危語言如下： 1.阿皮亞卡語(Apiaka) 2.比基亞語(Bikya) 3.查納語(Chana) 4.丹帕爾語(Dam pal) 5.迪亞霍伊語(Diahoi) 6.凱薩那語(Kaixana) 7.拉瓦語(Laua) 8.帕特溫語(Patw in) 9.巴宰語(Pazeh) 10.佩莫諾語(Pem ono) 11.塔赫語(Taje) 12.陶什羅語(Taushiro) 13.蒂尼瓜語(Tinigua) 14.托洛瓦語(Tolow a) 15.瓦洛語(Volow) 16.溫圖—諾姆拉基語(Wintu-Nom laki) 17.亞格漢語(Yaghan) 18.亞拉維語(Yalaw i) 。

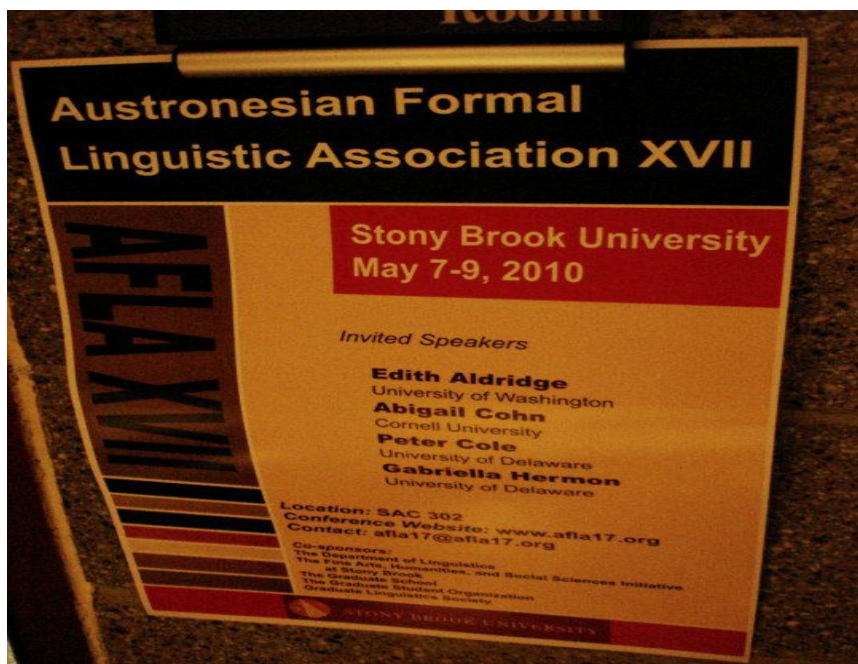
巴西北部一種土著說的語言「阿皮亞卡語」(Apiaka)，目前只剩一個使用者。而西非喀麥隆西北地區有一種「比基亞語」(Bikya)，有關這種語言的最後記錄是在 1986 年，這代表著這種語言現在很可能已經滅絕了。更令人哀傷 18 種極度瀕臨危急的語言裡，台灣南島語也占了一個名額，即巴宰族使用的語言。2008 年時，94 歲的潘金玉女士是已知唯一說這種語言的人。

本次會議所撰寫之文章，主要以苗栗縣泰安鄉的汶水泰雅語為主。汶水泰雅

語是現今存古現象最豐富的泰雅語方言，目前能夠流利的進行對話並且能了解豐富詞彙的族人更是少數。一個語言的消失不只單單失去說的權利，我們也很可能失去了瞭解語言背後蘊含的知識體系以及文化內涵的部分。在文化急速回朔的年代裡，我們不能只一味爭取拿的到看的到部分，也更該低頭看看那腳底下那漸漸消失的「根」。從東華大學民族語言傳播學系畢業之後，選擇清華大學語言學研究所繼續升學，所上紮實的訓練使我們獲益良多，所上老師及同學的關懷也讓我們備感溫馨，也使我们很珍惜在這裡求學日子，而培育的過程是緩慢的，希望日後能夠鼓勵更多原住民族人來從事原住民語言的相關研究，提高台灣南島語言學研究的風氣，也提昇我國南島語在國際之地位。

會議剪影

圖一：第十七屆南島語言形式語言學會議海報



圖二: 特邀講員 Edith Aldridge 教授(左一)



圖三: 特邀講員 Peter Cole 及 Gabriella Hermon 教授



圖四: Chair, Richard Larson 教授



圖五: Joachim Sabel 教授



圖六: Daniel Kaufman 教授



圖七: 會場一隅



圖八：本國與會者



圖九：晚宴



(由左而右，由後往前依序為：舒志翔、戴佳豪、張永利教授、Joachim Sabel教授、葉詩綺、林東毅、貝彩麗、陳思瑋、盧郁安)

On Modals in Mayrinax Atayal

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1. Introduction

Mayrinax Atayal is a Formosan language spoken in the mountain area of Central Taiwan (Huang 1995). The purpose of this paper is two-fold. First, it aims to investigate a variety of Mayrinax modals and to analyze their syntactic behaviors. Second, a hierarchical structure of modals in Mayrinax Atayal is proposed. In this study, we adopt the Cartographic Approach to examine the syntactic behaviors of modals in Mayrinax Atayal while providing an explanation for the correspondence between their distributions and interpretations along the line of Rizzi (1997), Cinque (1999) and Tsai (2009, 2010).

2. The Cartographic Approach

2.1. Tsai (2009, 2010)

In line with Rizzi (1997) and Cinque (1999), Tsai (2010) proposes that there also exists a three-layered analysis of Chinese modals, i.e., epistemic, deontic, and dynamic, each corresponding to the complementizer layer, the inflectional layer, and the lexical layer, respectively. In addition, the distribution of Chinese modals is subject to their orientation, more specifically, knowledge- or addressee-oriented at the complementizer layer, subject-oriented at the inflectional layer, and agent-oriented at the lexical layer, as given in the following diagram:

3. The Modals in Mayrinax Atayal

3.1 Modal verbs versus modal auxiliaries

3.1.1 Modal verbs

3.1.1.1 Dynamic modals inflected for TAM

In part 3 we will show the different between Modal verbs and modal auxiliaries in Mayrinax Atayal. And, we observe that Dynamic modals inflected for TAM. In 3.1.1.1 Huang (1995) mentioned that Mayrinax has an affix *pa-* designating a future event and we also observe that the affix *pa-* designates a future event in modal sentences, as illustrated in (1a). *qabaq* ‘can’ is modal verb, affix *pa-* designates a future event in modal sentences, so, the meaning is ‘Yumin will hunt boars’. Besides, Huang (1995) mentioned that Mayrinax employs an infix *-in-* marking

perfect event, as shown in (1b). the meaning is ‘Yumin used to know how to hunt boars before’. In example (2), *balayiq* ‘can’ Dynamic modal . The meanin in (2) is ‘You may swim.’ is permission.

- (1) a. *pa-qabaq*^{Dyn} $\square i \square$ ^{low} *ts<um>bu* *tsu* *bauwak* $\square i \square$
 yumin
 FUT.AV-can^{Dyn} LNK^{low} hunt<AV> ACC boar NOM yumin
 ‘Yumin will hunt boars’
- b. *m<in>abaq*^{Dyn} $\square i \square$ ^{low} *ts<um>bu* *tsu* *bauwak* $\square i \square$
 yumin
 AV<PAST>can^{Dyn} LNK^{low} hunt<AV> ACC boar NOM Yumin
 ‘Yumin used to know how to hunt boars before.’ (ability)
- (2) *pa-k-balayiq*^{Dyn=si} ($\square i \square$ ^{Dyn}) *r<um>anguy*
 FUT.AV-INCHO-can^{Dyn=2S.NOM} (LNK^{Dyn}) swim<AV>
 ‘You may swim.’ (permission) (*si* \square =*su* \square + $\square i \square$)

Here the -in-marked verbs in the AV form denotes a perfective/past action, which roughly corresponds to the verbs in simple past tense in English. On the contrary, the *pa-* marked AV verbs denote a future or irrealis action. Just like we have seen, the dynamic modals in Mayrinax Atayal can be inflected for TAM.

3.1.1.2 Voice Inflection

The dynamic modals in Mayrinax Atayal can be inflected for voice, as shown below: In (3a) *baq* is modal verb can be inflected for PV. The meaning is ‘I can hunt boars with the gun.’ In (3b) *baq* can be inflected for BV The meaning is ‘I can hunt boars with the gun.’ In (4) *pa-* is causative marking, modal verb *balayq* can t be inflected for PV. the meaning is ‘I can enable Watan to swim.’

- (3) a. *baq-un*^{Dyn=mu} $\square i \square$ ^{low} *ts<um>bu* *ku* *bauwak*
 can-PV^{Dyn=1S.GEN} LNK^{low} hunt <AV> NOM boar
 ‘I can hunt boars’ (ability)
- b. *si-qabaq*^{Dyn} $\square i \square$ ^{low} *ts<um>bu* *tsu?* *bauwak* *ni* *watan* *ku*
 patus
 BV-can^{Dyn} LNK^{low} hunt <AV> ACC boar GEN Watan NOM gun
 ‘I can hunt boars with the gun.’ (ability)

- (4) pa-k-balayq-un^{Dyn} m<in>pa-ranguy □i□ watan
 CAUS-INCHO-can-PV^{Dyn} AV<PAST>CAUS-swim NOM Watan
 ‘I can enable Watan to swim.’ (ability)

As seen above, the modal verbs *baq* ‘can’ in (3a-b) and the causative *pa-ka-balayq* ‘can’ in (4) can take PV or BV form.

3.1.1.3 Attracting clitics

In 3.1.1.3 Attracting clitics .Huang (1995) observed that the personal pronouns in Mayrinax Atayal can cliticize either to the modal verbs or to the lexical verbs. The same phenomenon can also be found in our data, as in (5a) and (5b)

- (5) a. baq^{Dyn}=tsi□ □i□^{low} k<um>aal tsu□ ego
 can^{Dyn}=1S.NOM LNK^{low} speak<AV> ACC English
 ‘I can speak English.’
 b. baq^{Dyn} □i□^{low} k<um>aal=tsu□ tsu□ ego
 can^{Dyn} LNK^{low} speak<AV>=1S.NOM ACC English
 ‘I can/am able to speak English.’ (ability)

Note that *tsi*□ instead of *tsu*□ is preferred before the linker □i□, as in (5a).

3.1.1.4 The dynamic modals as argument-taking predicates

The dynamic modals in Mayrinax Atayal behave as two-place-predicates, as below:

- (6) a. si-qabaq^{Dyn}=mu ku□ patus
 RV-can^{Dyn}=1S. GEN NOM gun
 ‘I can use the gun’

Dynamic modals in Mayrinax Atayal have their own argument structures. As shown in the example (6) the Dynamic Modal verb *qabaq* may directly take NP argument as its subject. The BV dynamic modal *qabaq* may select a nominative instrument and the AV dynamic modal *baq* a nominative theme.

3.1.2 Modal auxiliaries

That’s move on to 3.1.2 1, when Mayrinax modals are categorized as auxiliaries, as show in (7)-(10). Unlike lexical verbs, the modal auxiliaries can’t take TAM as in (7b), (8b), (9b) and (10b). in (7b) and (8b) show that DEO modal □asi^{Deo} and EPI modal □asi^{Epi} can’t take FUT marking pa-. in (9b) and (10b) show EPI modal ki□i^{Epi} Can’t take FUT marking pa- and <PERF> infix -in-.

3.1.2.1 No TAM

Auxiliaries modal can't take TAM.

- (7) a. \square asi^{Deo} **ki** \square pa-sayug tsu \square pila \square \square i \square
abisang
should^{Deo} LNK FUT.AV-pay.back ACC money NOM Abisang
- b. *pa- \square asi^{Deo} **ki** \square sayug tsu \square pila \square \square i \square abisang
FUT-should^{Deo} LNK pay back ACC money NOM Abisang
‘Abisang should pay back the money’

- (8) a. \square asi^{Epi} **ga** pa-tsbu \square tsu \square bauwak \square i \square watan
likely^{Epi} LNK FUT.AV-hunt ACC boar NOM Watan
- b. *pa- \square asi^{Epi} **ga** tsbu \square tsu \square bauwak \square i \square watan
FUT.AV-likely^{Epi} LNK hunt ACC boar NOM Watan
‘It is likely that Watan will hunt boars’

- (9) a. ki \square i^{Epi} \square i \square ^{high} m<in>usa \square i \square thaipak \square i \square
watan
probably^{Epi} **LNK** ^{high} AV<PERF>go LOC Taipei NOM Watan
‘Probably Watan has gone to Taipei’
- b. *m<in>ki \square i^{Epi} \square i \square ^{high} \square usa \square i \square thaipak \square i \square
watan
AV<PERF>probably^{Epi} LNK ^{high} go LOC Taipei NOM watan
‘Probably Watan has gone to Taipei’

- (10)a. ki \square i^{Epi} \square i \square ^{high} m-a-usa \square i \square thaipak \square i \square watan
probably^{Epi} **LNK** ^{high} AV-IRR-go LOC Taipei NOM Watan
‘Probably Watan will go to Taipei’
- b. *pa-ki \square i^{Epi} \square i \square ^{high} \square usa \square i \square thaipak \square i \square
watan
FUT-probably^{Epi} LNK ^{high} go LOC Taipei NOM watan
‘Probably Watan will go to Taipei’

3.1.2.2 No voice alternation

In 3.1.2.2 Modal Auxiliaries can't have voice variation. as in (11)-(13). For example

In (11b), DEO modal . \square asi^{Deo} can't have voice variation. As we seen, (11b) is ungrammatical. (12b) is example for EPI modal \square asi, (13b) is EPI modal ki \square i^{Epi}.

(11) a. \square asi^{Deo} **ki** \square si-pa-sayug \square ni \square abisang \square ku \square pila \square
 should^{Deo} **LNK** RV-FUT-pay.back GEN Abisang NOM money
 ‘I should have paid back the money to Abisang’

b. *si- \square asi^{Deo} **ki** \square pa-sayug \square ni \square abisang \square ku \square
 pila \square
 RV-should^{Deo} **LNK** FUT-pay back GEN Abisang NOM money

(12) a. \square asi^{Epi} **ga** \square si-tsu \square bu \square ni \square watan \square tsu \square bauwak \square ku \square
 patus

likely^{Epi} **LNK** RV-hunt GEN Watan ACC boar NOM gun
 ‘It is likely that Watan hunted the boar with the gun’

b. *si- \square asi^{Epi} **ga** \square tsu \square bu \square ni \square watan \square tsu \square bauwak \square ku \square
 patus

RV-likely **LNK** hunt GEN Wata ACC boar NOM gun

(13) a. \square ki \square i^{Epi} \square **i**^{high} \square baiq-an \square ni \square watan \square tsu \square pila \square \square i \square
 tapas

probably **LNK**^{high} give-LV GEN Watan ACC money NOM Tapas
 ‘Watan probably has given Tapas money’

b. * \square ki \square i-an \square **i**^{high} \square baiq \square ni \square watan \square tsu \square pila \square
 \square i \square tapas

probably-LV **LNK**^{high} give GEN Watan ACC money NOM Tapas

3.1.2.3 Attracting clitics

In 3.1.2.3 Attracting clitics, As we have mentioned in 3.1.1.3 clitic pronoun may immediately follow either the modal or the lexical verb. The same phenomenon may be found in epistemic and deontic constructions as well, as shown below: in (14a) (14b), they have same meaning. these setance are gramatical. (15) \square as is EPI modal, in (16) \square ki \square i is Epi modal.

(14) a. \square asi^{Deo} **ki** \square m-a-usa \square =tsi \square \square i \square matgahitay
 should^{Deo} **LNK** AV-IRR-go=1S.NOM LNK military service
 ‘I should take military service.’ (tsi \square = tsu \square + \square i \square)

b. \square asi^{Deo=}tsu \square **ki** \square m-a-usa \square \square i \square matgahitay
 should^{Deo=}1S.NOM **LNK** AV-IRR-go LNK military service

- (15) a. \square asi^{Epi} **ga** ts<um>inbu \square =tsi \square tsu \square bauwak
likely^{Epi} **LNK** hunt<AV>=1S.NOM ACCboar
‘It is likely that I hunted a boar’
- b. \square asi^{Epi}=tsu **ga** ts<um>inbu tsu \square bauwak
likely^{Epi}=1S.NOM **LNK** hunt<AV> ACC boar
- (16) a. ki \square i^{Epi} \square i \square ^{high} m-a-usa \square =tsi \square i \square thaypak
likely^{Epi} **LNK^{high}** AV-IRR-go=1S.NOM LOC Taipei
‘I will probably go to Taipei.’
- b. ki \square i^{Epi}=tsi \square \square i \square ^{high} m-a-usa \square i \square thaypak
likely^{Epi} **LNK^{high}** AV-IRR-go LOC Taipei

3.2 Finiteness

That’s move on to 3.2 Finiteness . Mayrinax modals can co-occur with several linkers, such as \square i \square ^{low}, ki \square , ga and \square i \square ^{high}, those of which may introduce either a finite or a non-finite clause.

3.2.1 Non-finite

In 3.2.1 , Dynamic modals will select a non-finite clause introduced by a low linker \square i \square ^{low}. Tense/Aspect/Modal, pronominal and Non-Actor Voice (NAV) markings are all disallowed in the \square i \square ^{low} –complement, as in examples (18).

- (18) a. baq^{Dyn} \square i \square ^{low} k<um>aal tsu \square ego \square i \square yumin.
can^{Dyn} **LNK^{low}** speak<AV> ACC English NOM Yumin
‘Yumin can speak English.’ (can^A = ability)
- b. *baq^{Dyn} \square i \square ^{low} kal-un/ pa-kalun/kum<in>al tsu \square
can^{Dyn} **LNK^{low}** speak -PV/FU- speak/speak<PERF> ACC
ego \square i \square yumin
English NOM Yumin

3.2.2 Finite

And 3.2.2 Finite, Linkers ki \square , ga, and \square i \square ^{high} are complementizers and introduce either a finite clause. Deontic modals select a finite clause introduced by a high linker ki as in (14), (19). Similar to deontic modals, epistemic modals select a high linker, ga and \square i \square ^{high} to introduce a finite clause and can take TAM, as in (9), (10), (14). By contrast, tense/Aspect/Modal, pronominal and Non-Actor Voice (NAV) markings are allowed in complements headed by ki , ga and \square i \square ^{high} linkers.

- (19) a. asi^{Deo} **ki** <m>-a-usa=tsi i matgahitay
 should LNK <AV>-IRR-go=1S.NOM NOM military service
 ‘I should take military service.’ ($ci = cu + i$)
- (20) i asi^{Deo} **ki** i usal-an i matgahitay i yumin
 should^{Deo} LNK go-LF LNK be a soldier NOM Yumin
 ‘Yumin should have take military service.’
- (21) a. i asi^{Epi} **ga** pa-tsbu tsu bauwaq i watan
 likely LNK FUT-hunt ACC wild hog NOM watan
 ‘It is likely that Watan will hunt a boar.’
- (22) a. ki i^{Epi} i i^{high} m-in-usa i thaipak i watan
 probably LNK AV-PERF-go LOC Taipei NOM Watan
 ‘Probably Watan has gone to Taipei.’
- b. ki i^{Epi} i i^{high} m-a-usa i thaipak i watan
 probably LNK AV-IRR-go LOC Taipei NOM Watan
 ‘Probably Watan will go to Taipei’
- (23) a. ki i^{Epi} i i^{high} baiq-an ni watan tsu pila i
 tapas
 probably LNK give-LV GEN Watan ACC money NOM Tapas
 ‘Watan probably has given money to Tapas.’

Follow above data we can have table 1 to sum up the Finiteness on modal in Mayrinax Atayal. We have mention that modals can co-occur with several linkers, such as i i^{low} , ki , ga , i i^{high} and introduce either a finite or a non-finite clause. Modal verb *baq* ‘can’ co-occur with linker i i^{lo} and introduce a non-finite clause and can’t take Tense. the verb in Complement only can take AV form. Modal auxiliaries as *asi* ‘must/should’, *asi* ‘likely’, ki i ‘probably’ can co-occur with linker ki , ga , i i^{high} respectively and introduce a finite clause. Finally we have table 1 as below

Table 1

Modals		Linkers	finiteness	AV-only	Tense
baq^{Dyn}	Verb	i i^{low}	non-finite	Yes	NO

□asi ^{Deo}	Auxiliaries	ki□ / ga	finite	NO	Yes
ki□i ^{Epi}	Auxiliaries	□i□ ^{high}	finite	NO	Yes

3.3 A'-movement: interaction with interrogatives

Move on to 3.3 A'-movement . Let's see the data in Mayrinax Atayal.

We can see the examples in (22-25). First, we can 'cleave' the A'-element across the □i□^{low} liker to derive the *wh*-question, as in (22b). Nevertheless, *wh*-elements can't scope over the linker *ki*□, *ga*, □i□^{high}.as in (23c)(24c)(25c). We claim that the epistemic modal *ki*□*i* and linker □i□^{high} occupy a higher position of syntactic structure, and it may block the A'-movement of the *wh*-operator as in (24c)(25c). On the other hand, the epistemic modals *ki*□*i*'probably', □*asi*'likely' and deontic modals *asi* 'must' should be separated in terms of their syntactic distribution. As we see Only in (22b) operator can cross the linker □i□^{low}. to derive the *wh*-question.

(22) a. si-qabaq^{Dyn} □i□^{low} ts<um>bu□ tsu□ bauwak ni□ watan ku□ patus

RV-can^{Dyn} LNK^{low} hunt<AV> ACC boar GEN Watan NOM gun
 'Watan can hunt boars with the gun'

b. nanuwan ku□ si-qabaq^{Dyn} □i□^{low} ts<um>bu□ tsu□ bauwuk ni□ watan

what NOM RV-can^{Dyn} LNK^{low} hunt<AV> ACC boar GEN Watan
 'With what can Watan hunt boars'

b'. nanuwan_i [ku□ OP_i [si-qabaq^{Dyn} □i□^{low} ts<um>bu□ tsu□ bauwuk t_i ni□ watan]]

(23) a. □asi^{Deo} ki□ si-baiq ni□ watan □i□ abisang ku□ pila□ mus^{Deo} LNK RV-give GEN watan DAT Abisang NOM money
 'Watan must give money to Abisang'

b. □asi^{Deo} ki□ nanuwan ku□ si-bayq ni□ watan □i□ abisang

must^{Deo} LNK what NOM RV-give GEN Watan DAT Abisang
 'what must be give to Abisang by Watan?'

c.*nanuwan ku□ □asi ki□ si-baiq ni□ watan □i□ abisang ?

what NOM must LNK BV-give GEN Watan DAT Abisang

c'.* nanuwan_i [ku□ OP_i [□asi ki□ si-baiq ni□ watan t_i □i□ abison]] ?

- (24) a. \square asi^{Epi} **ga** tsubu-tsubu ni \square watan ku \square bauwak
likely^{Epi} **LNK** hunt-RED GEN Watan NOM boar
‘It is likely that Watan often hunts the boar’
- b. \square asi^{Epi} **ga** nanuwan ku \square bu \square -un ni \square watan
likely^{Epi} **LNK** what NOM hunt-PV GEN Watan
‘What was likely to be hunted by watan?’
- c. *nanuwan ku \square \square asi^{Epi} **ga** bu \square -un ni \square watan
what NOM likely^{Epi} **LNK** hunt-PV GEN Watan
- c'. *nanuwan [ku \square OP_i[\square asi^{Epi} **ga** bu \square -un ni \square watan t]]
- (25) a. ki \square i^{Epi} \square i \square ^{high} m-usa \square i \square thaipak \square i \square watan
probably^{Epi} **LNK**^{high} AV-go LOC Taipei NOM Watan
‘Probably Watan has gone to Taipei’
- b. ki \square i^{Epi} \square i \square ^{high} ima \square ku \square m-a-usa \square i \square
thaipak
probably^{Epi} **LNK**^{high} who NOM AV-IRR-go LOC Taipei
‘Probably who will go to Taipei’
- c. *ima \square ku \square ki \square i^{Epi} \square i \square ^{high} m-a-usa \square i \square
thaipak
who NOM probably^{Epi} **LNK**^{high} AV-IRR-go LOC Taipei
- c'. *ima \square [ku \square [OP_i ki \square i^{Epi} \square i \square ^{high} m-a-usa \square t i \square thaipak]]

3.4 Scope of Negation

In Mayrinax negator *ini* is merged TP-internally, as in not a few languages. Since the dynamic modals is generated in the lexical layer whereas the epistemic and deontic modals in CP-layer, the negator is predicted to be merged higher than the dynamic modals rather than the epistemic and deontic modals. We can Compare examples from(26) to (29).

- (26) ini \square qabaq^{Dyn} \square i \square ^{low} r<um>anguy \square i \square yumin
NEG can^{Dyn} **LNK**^{low} swim<AV> NOM Yumin
‘Yumin can’t swim’
- (27) a. \square asi^{Deo} ki \square ini biaoq-ani ni \square watan \square i \square abisang ku \square
pila \square
Should^{Deo} LNK NEG give-RV GEN Watan DAT Abisang NOM money
‘Watan should not have given money to Abisang’
- b. *ini ka- \square asi^{Deo} ki \square biaoq-ani ni \square watan
NEG INCHO-should^{Deo} LNK give-RV GEN Watan

□i□ abisang ku□ pila□¹
 DAT Abisang NOM money

(28) a. □asi^{Epi} ga ini bu□i ni□ watan ku bauwak
 Likely^{Epi} LNK NEG shoot GEN Watan NOM boar
 ‘It is likely that Watan didn’t hunt the boar’

b. * ini□ ka-□asi^{Epi} ga balayq na□ □i□
 hiya□
 NEG INCHO-likely^{Epi} LNK good GEN NOM he
 ‘*It is likely that he is not nice’
 ‘He is the best’

(29) a. ki□i^{Epi} □i□^{high} ini□ □usa□ i□ thaypak
 □i□ yumin
 probably^{Epi} LNK^{high} NEG go LNK Taipei NOM Yumin
 ‘Yumin probably won’t go to Taipei’

b. * ini□ ki□i^{Epi} □i□^{high} □usa□ i□ thaipak □i□
 yumin

NEG probably^{Epi} LNK^{high} go LOC Taipei NOM Yumin

c. * ini□ ka-ki□i^{Epi} □i□^{high} □usa□ i□ thaipak □i□
 yumin
 NEG INCHO-probably^{Epi} LNK^{high} go LNK Taipei NOM Yumin
 According to the data above, we claim that linker *ki□*, *ga* and *□i□^{high}* are in higher position of syntactics structure.

4. Modal Cartography in Mayrinax Atayal

4. Modal Cartography in Mayrinax Atayal

4.1 Multiple occurrence of modals

To begin with, we find that the epistemic possibility modal *ki’i* and *‘asi ga* occurs before the dynamic ability modal *baq*, but not the other way round, as in (30-31)

(30) a. ki□i^{Epi} □i□^{high} baq^{Dyn} □i□^{low} m-usa i□ thaypak □i□
 watan
 probably^{Epi} LNK^{high} can^{Dyn} LNK^{low} AV-go LOC Taipei NOM Watan

¹ (i). * ini□ ka-□asi^{Deo} ki□ ini□=su□ pa-ptauwau
 NEG INCHO-should^{Deo} LNK NEG=2S.NOM FU.<AV>work.
 ‘*You should not work.’
 ‘You had better not work’

- b. *baq^{Dyn} □i□^{low} ki□^{Epi} □i□^{high} m-usa i□ thaypak □i□
 Watan
 can^{Dyn} LNK^{low} probably^{Epi} LNK^{high} AV-go LOC Taipei NOM Watan
 ‘Yumin will probably go to Taipei’
- (31) a. □asi^{Epi} ga baq^{Dyn} □i□^{low} r<um>anguy □i□ watan
 likely^{Epi} LNK can^{Dyn} LNK^{low} swin<AV> NOM Watan
- b. *baq^{Dyn} □i□^{low} asi^{Epi} ga r<um>anguy □i□ watan
 can^{Dyn} LNK^{low} likely^{Epi} LNK swin<AV> NOM Watan
 ‘It is likely that Watan can swim’

(32) EPISTEMIC > DYNAMIC but *DYNAMIC > EPISTEMIC

Next, since epistemic modals stand in the CP periphery, they should be followed by the deontic and dynamic modals, which lie in the vP domain. As shown in (33-34), this is indeed the case:

- (33) a. □asi^{Epi} ga □asi^{Deo} ki□ tuangan cu□ nanuwan ku□
 probably^{Epi} LNK must^{Deo} LNK put OBL something NOM
 raramat ga shahiya □i□ niq-un
 vegetables LNK he LNK eat-PV
- b. *□asi^{Deo} ki□ □asi^{Epi} ga□ tuangan cu□ nanuwan ku□
 must^{Deo} LNK probably^{Epi} LNK put OBL something NOM
 raramat ga shahiya □i□ niq-un
 vegetables LNK he NOM eat-PV
 ‘It is probably to add something, the dish will taste good’ (Indefinite)

- (34) a. □asi^{Deo} ki□ baq^{Dyn} □i□^{low} m-usa□ □i□ thaypak □i□ yuming
 should^{Deo} LNK can^{Dyn} LNK^{low} AV-go LNK Taipei NOM Yumin
- b. *baq^{Dyn} □i□^{low} □asi^{Deo} ki m-usa□ □i□ thaypak □i□ yuming
 can^{Dyn} LNK^{low} should^{Deo} LNK AV-go LNK Taipei NOM Yumin
 ‘Yuming should be able to go to Taipei.’ (ability)

(35) EPISTEMIC > DEONTIC but *DEONTIC > EPISTEMIC
 DEONTIC > DYNAMIC but *DEONTIC > DYNAMIC
 EPISTEMIC > DEONTIC > DYNAMIC²

² In addition, we notice that the epistemic modal *ki'i* and *asi ga* they can mutually occur in either

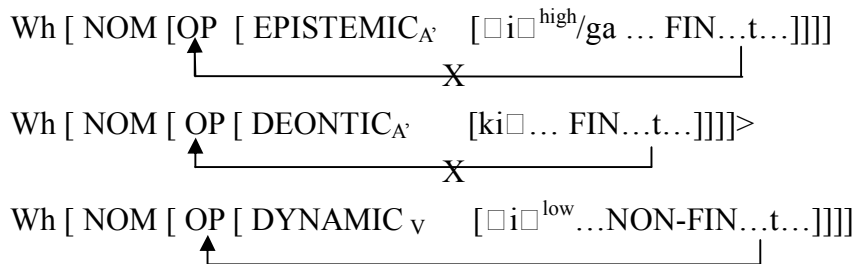
(36) EPISTEMIC > DYNAMIC > DYNAMIC

4.2 Finiteness

- EPISTEMIC [$\square i^{\text{high}}$ /ga ... FIN...]
 DEONTIC [ki... FIN...]>
 DYNAMIC [$\square i^{\text{low}}$...NON-FIN...]

Dynamic modals will select a non-finite clause introduced by a low linker $\square i^{\text{low}}$. And, the affix *pa-* designates a future event in modal sentences. Deontic modals select a finite clause introduced by a high linker *ki*. Epistemic modals select a linker, *ga* and $\square i^{\text{high}}$ to introduce a finite clause. The finiteness property can be a standard to differentiate the Low layer of Dynamic modals *baq* (as lexical layer). In other words, the Low modals can head a non-finite clause, while the High modals, a finite clause. The Low linker $\square i^{\text{low}}$ is set as a standard between the Low and the High modals.

4.3 A'-movement



Operator can cross the linker $\square i^{\text{low}}$ only. The epistemic modal *ki* / $\square asi$ and linker $\square i^{\text{high}}$ /ga occupy a higher position of syntactic structure, and it may block the A'-movement of the *wh*-operator. Deontic modal $\square asi$ and linker *ki* too.

4.4 Scope of Negation

order as in (i):

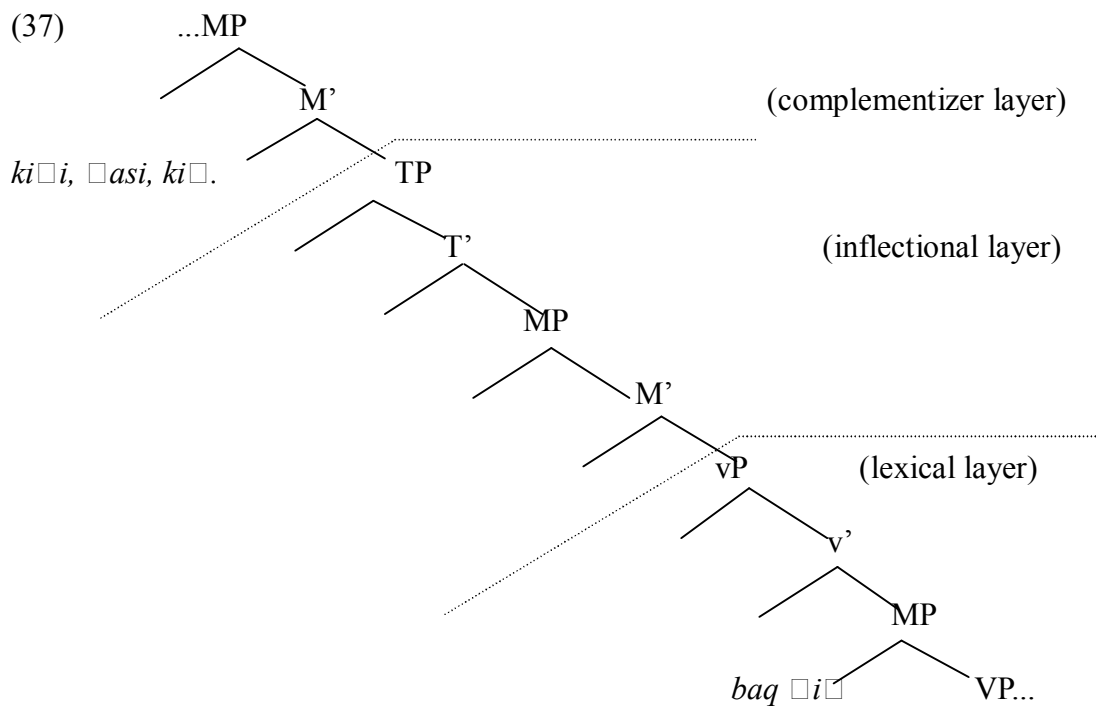
- (i) a. ki^{Epi} $\square i^{\text{high}}$ $\square asi^{\text{Epi}}$ ga baq^{Dyn} $\square i^{\text{low}}$ k<um>aal
 Probably^{Epi} LNK^{high} likely^{Epi} LNK can^{Dyn} LNK^{low} speak<AV>
 cu itaal na itaal $\square i$ watan
 ACC word GEN Tayal NOM Watan
- b. $\square asi^{\text{Epi}}$ ga ki^{Epi} $\square i^{\text{high}}$ baq^{Dyn} $\square i^{\text{low}}$ k<um>aal
 likely^{Epi} LNK probably^{Epi} LNK^{high} can^{Dyn} LNK^{low} speak<AV>
 cu itaal na itaal $\square i$ watan
 ACC word GEN Tayal NOM Watan
 'It is likely that Watan can speak Atayal language'
 EPISTEMIC, DYNAMIC > DYNAMIC

(*NEG) EPISTEMIC/ DEONTIC (NEG) DYNAMIC

Since the dynamic modals is generated in the lexical layer whereas the epistemic and deontic modals in CP-layer, the negator is predicted to be merged higher than the dynamic modals rather than the epistemic and deontic modals.

That's mena scope of negation can be over the low modal *baq* but not over the high high modal *ki□i*, *□asi* and *ki□*.

We could then map the hierarchy onto a finer tree diagram, where the possible distributions of subjects are also included:



5. Conclusion

In this paper, we investigate a variety of Mayrinax Atayal modals and analyze their syntactic behaviors. The study has the following findings.

First, categorially, Mayrinax modals are divided into verbs and auxiliaries; the former include *baq* ‘can’ and the latter include *asi* ‘must’, *ki□i* and *asi* ‘probably’. As a head, they all can attract pronominal clitics. However, unlike lexical verbs, modal auxiliaries cannot be inflected for voice.

Second, Mayrinax modals observe a universal hierarchical tendency, i.e. distributed from high to low; however, with a typological variation, Mayrinax modals exhibit a slight different hierarchy: Epistemic modals, Deontic modals > Dynamic modals, from that in Chinese (Tsai 2009). Further speaking, the modals can be structurally divided into two groups. One lies in CP-layer, including epistemic and deontic modals which select high complementizers *ga*, *ki□i*, *□i□^{high}* that introduce finite clauses. The other lies in *v*P-layer, including dynamic modals which co-occur with low Comps, such as *□i□^{low}*, introducing non-finite clausal complements. Therefore, we argue that, different from Chinese modals (Tsai 2009), in Mayrinax Atayal there is no inflection layer but complementizer layer and lexical layer

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