DOI: 10.6503/THJCS.2017.47(2).04

A Cartographic Study of Hlai Modals*

Lee Hui-chi**
Department of Foreign Languages & Literature
National Cheng Kung University

ABSTRACT

This paper focuses on the modal system in Hlai and its interaction with negation. Hlai is spoken on Hainan Island and it belongs to the Kra-Dai language group. While previous studies investigating Hlai are scarce, we contribute to the extension of linguistic theories applied to a language rarely known by researchers. This paper provides four types of modals in Hlai: epistemic, deontic, circumstantial and bouletic modals. The negative construals are also investigated in terms of their scopal interaction with various types of modality, as well as their distinct morphological shapes. Based on de Haan's (2004) typological hypothesis, Hlai is a 'modal suppletion' language. In addition, the scope of negation is higher than the modal scope. Through examining the co-occurrence restrictions among different types of modals, their hierarchical arrangement can be presented as follows: epistemic > subject > deontic > dynamic. Our findings by and large conform to Tsai's (2015) analysis of Chinese modals with respect to their structural distribution and semantic interpretation.

Key words: Hlai, modality, negation, Kra-Dai

* This paper is part of the research project (MOST 105-2410-H-006-072). I would like to thank Mei Kuang, Tsao Feng-fu, Lien Chinfa, Tsai Wei-tien and Wu Rui-wen for their encouragement and helpful comments. Thanks also go to the anonymous reviewers and their detailed comments.
** Author's email address: hclee6@mail.ncku.edu.tw

1. Introduction

Hlai is a language group spoken by people in the Hainan Li-Miao Autonomous Prefecture on Hainan Island. Hlai is generally assumed to belong to the Kra-Dai languages (cf. Ostapirat 2004, 2005), mainly spoken in Guangxi, Guizhou and Hainan. Like most Kra-Dai languages, Hlai is a language with tones. There are five main dialects of Hlai: Ha, Gei, Bendi, Mooi-fou and Ke-vou. The basic lexicon and the syntactic structures of the five dialects are very similar, but their phonetic forms are diverse.

Hlai has not been broadly surveyed by linguists. Most related studies are associated with the sound system of Hlai. Ouyang and Zheng (1983) is a reference book with a list of lexical items in Hlai and a simple introduction of phonetic and syntactic patterns. Explicit syntactic structures of Hlai have rarely been revealed in the literature. Yuan (1994) is a reference book of Hlai with descriptive grammar and the data in the book is mostly described in the Ha dialect. This paper aims to describe the modal system of Hlai and offer a theoretical account for the modal hierarchy. The data shown in this paper are collected from my fieldwork survey conducted mostly in Gei dialect.[1]

Hlai languages basically consist of SVO word order, as in (1). Like Chinese, classifiers are very common in Hlai, as in (2). The genitive marker and demonstrative marker follow the noun they modify, as in (3).

(1) a. Tsaɯ^{55} oh^{33} ngaau^{51}.
grandmother drink wine
'Grandmother drank wine.'

[1] Based on the results of my fieldwork research, the sound system of Gei contains the following consonants: /p, ph, ɓ, m, f, v, t, th, ɗ, n, l, ɬ, r, ts, tsh, s, z, N, k, kh, g, ŋ, ʔ, h/. /ɬ/ indicates voiceless alveolar lateral fricative. /N/ indicates alveolo-palatal nasal. Vowels include: /a, i, u, ɛ, ɯ, o/ and long vowels /aː, iː, uː, ɛː, ɯː, oː/. The vowel /ɛ/ is typed as 'e'; the long vowels are types as 'aa, ii, uu, ee, ɯɯ, oo.' The consonant /ŋ/ is typed as 'ng'; final coda /ʔ/ is as 'h.' In addition, the tonal system includes eight tones: '33, 121, 55, 11, 51, 15, 55, 13.' The language consultant in this paper is female and in her sixties. She can speak Mandarin, Hainan Min and Hlai. The most common language used in her life is Mandarin.

b. Di^{55}-liih^{55} phoon^{55} guau^{33}.
DIM-kid break bowl
'The little kid broke the bowl.'

(2) a. pa^{11} lang^{33} ngaan^{51}
five CL goose
'five geese'

b. ɯ^{55} ɗan^{51} kuun^{33}
one CL road
'a road'

c. ɯ^{55} hom^{33} zɯɯm^{11}
one CL egg
'an egg'

(3) a. pha^{55}-maan^{33} mɯɯ^{33}
MAS-old 2SG
'your husband'

b. ha^{55}aau^{33} ni^{51}
person this
'this person'

The negative marker in Hlai is *vei*^{11} and it occurs before the element which it negates. The examples of negation are as shown in (4).

(4) a. Tshau^{33}tho^{55} vei^{11} khɯn^{33}.
cane NEG heavy
'This cane is not heavy.'

b. Hou^{33} vei^{11} oop^{55} tshoom^{33}-thooh^{33}.
1SG NEG like fruit-eggplant
'I do not like eggplants.'

With this syntactic background knowledge of Hlai, the goal of this paper is to provide a comprehensive account of the syntactic and semantic properties of modals and

their negative counterparts in Hlai. The distribution of modals are examined in section 2. Four types of modals are introduced, including epistemics, deontics, circumstantials and bouletics. Hlai is a very unfamiliar language for linguists. This paper offers much data which has never been described systematically or theoretically. The third section explores the interaction between modals and negation, since both modality and negation bear scopes. This paper employs subject, modals and negation to discuss the hierarchy of different types of modals along with subject and negations. The proposal is that epistemic modals are higher than root modals. Negation has two positions, one for epistemic and one for root modals. Among root modals, circumstantials and bouletics are not distinct from each other in terms of hierarchical structure. The hierarchy is examined by semantic evidence. In addition to the semantic scopal comparison, section 4 provides syntactic evidence to re-check the hierarchy which is proposed in section 3. By examining the co-occurrences of different modals, section 4 further explores the topography of modals in Hlai in terms of cartographic analyses. This paper aims to develop a topography through both semantic and syntactic accounts.

2. Types of Modality

The simplest way to describe modality is that it signals a speaker's attitude towards a proposition (cf. Palmer 1986, 1990). In English, modality is realized as expressions like *must*, *have to*, *may*, *might*, *can*, *could*, *will*, *would*, *should*, *ought to*, etc. The literature on modality is vast and there is not enough agreement on categorization of modality. However, a distinction between epistemic and root modality has been made by a large proportion of the previous studies. For example, Halliday (1970) postulates epistemic modality as the speaker's assessment of probability and predictability; Cook (1978) relates root modality to permission, obligation and ability. Modality thus can be mainly divided into two subtypes: epistemic and root. Epistemic modality indicates the speaker's commitment to the truth of a proposition; root modality indicates the speaker's judgment concerned with obligation, permission, commanding, requesting, ability and willingness. Palmer (1990) further proposes that root modality can be divided into deontic and dynamic modality. In addition, dynamic modality is split into two subtypes respectively

associated with ability and volition.

2.1 Four Types of Modality

Considering modality as an issue of context-dependence, Kratzer (1981, 1991) assumes that modal expressions cannot be appropriately interpreted until they are understood in combination with background context. For example, *must* can be construed differently according to different context, such as epistemic, like (5); as deontic, like (6).

(5) In view of the available evidence, Jockl must have been the murderer.
(6) In view of what the law provides, Jockl must go to jail.

Another contribution of Krazter (1981, 1991) is her attempt to uniform the modality by assuming modals as operators quantifying over possible worlds. This idea is followed by von Fintel and Gillies (2009) who also speculate that different types of modality correspond to quantification over different domains of possible worlds. In addition, von Fintel (2006) introduces modality in languages and he uses the term 'circumstantial' to indicate modals involved with ability and 'bouletic' to indicate modals related with volition. This paper employs von Fintel's (2006) categorizations of modality which reveal four types of modality: (i) Epistemic modality is defined to concern what is possible or necessary given what is known and what the available evidence is. (ii) Deontic modality concerns what is possible, necessary, permissible, or obligatory, given a body of law or a set of moral principles or the like. (iii) Circumstantial modality concerns what is possible or necessary, given a particular set of circumstances. (iv) Bouletic modality concerns what is possible or necessary, given a person's desires. The four types of modality are exemplified as (7)-(10).

(7) Epistemic
It must be rainy outside.
'It is a necessary assumption that it is rainy outside (in view of the evidence of the observation of the outside).'

(8) Deontic
Arthur must keep away from drugs.
'Arthur is required to keep away from drugs (in view of the convention of social judgment).'

(9) Circumstantial
Susan can swim across the lake.
'Susan is able to swim across the lake (in view of a certain situation).'

(10) Bouletic
I will marry you.
'I am willing to marry you (in view of the volition of the speaker).'

Based on the previous canon of modal theories and through contextual clues, the language informants of Hlai were consulted and data with modal expressions were collected. The four types of modals are shown as in (11)-(19).

2.2 Epistemic Modality

Modality is often associated with 'certainty,' 'advice,' 'requesting,' 'obligation,' 'permission,' 'ability' and 'volition.' Certainty is an epistemic property of speakers' beliefs. An epistemic expresses how certain a speaker expresses his/her opinion towards the truth about a proposition. Depending on the conversational background, I found two expressions in Hlai, conveying the epistemic meanings, *kɯɾ*^{55} and *kham*^{55}. *Kɯɾ*^{55} is interpreted as an existential epistemic modal because the context of *kɯɾ*^{55} shows that the proposition is true when it is true in at least one of the possible worlds. For example, in (11), when one of the betel nuts is ripened, the proposition is considered to be true. *Kham*^{55} is interpreted as a universal epistemic modal because the context of *kham*^{55} shows that the proposition is true when it always happens in every possible world. For example, in (12), the weather in May always rains in the worlds of Hlai area on Hainan Island. The proposition of (12) is true if it always rains in May.

(11) ɯ^{55}-loong^{55} kɯ^{55} tɯɯh^{55} e^{33}.
one-betel.nut will ripe PART
'The betel nuts will ripen soon.'

Paraphrase: In view of what I know, it is possible that the betel nuts are going to ripen soon.

Context: The language consultant looks at the betel nut tree outside the window. She has long-term experience selling the betel nuts in the market. Given what she knows about the betel nuts, she believes that the betel nuts outside the window are about to ripen soon. However, she cannot fully assure the certainty of the ripeness of betel nuts of the tree.

(12) Naan^{33} pa^{11} kham^{55} tau^{11} fun^{33}.
month five must fall rain
'It must rain in May.'

Paraphrase: In view of what I know, it always rains in May.

Context: The language consultant is at the age of 60s. She has been lived in the Hlai area for more than sixty years. Given what she knows about the weather in the area, the language consultant believes that it surely rains in May.

2.3 Deontic Modality

Deontics are concerned with obligation, permission, advice, offering, requesting, granting, commanding. Deontics express the assertions about what possibilities are allowed/disallowed by the rules or social judgments. Depending on the conversational background, I found two expressions in Hlai, conveying the deontic meanings, *koom*^{33} and *kham*^{55}. *Koom*^{33} is interpreted as an existential deontic modal because the context of *koom*^{33} shows that the proposition is true when it is true in at least one of the possible worlds. For example, in (13), the addressee is allowed to drink wine in at least one possible world. *Kham*^{55} is interpreted as a universal deontic modal because the context of *kham*^{55} shows that the proposition is true when it always happens in every possible world. For example, in (14), children are expected to obey their parents in every possible world.

(13) Mɯɯ^{33} koom^{33} oh^{33} ngaau^{51}.
2SG may drink wine
'You may drink wine.'

Paraphrase: Given what the law is, you are allowed to drink wine.

Context: The law states that a person over eighteen can drink wine. The addressee has been over eighteen years old. The law thus permits the addressee to drink wine.

(14) Di^{55} kham^{55} phooh^{55} pi^{15} pha^{55} rien^{11} thun^{33}.
kid must listen mother father say word
'Children must listen to (their) parents' words.'

Paraphrase: In view of the social judgment, the only allowable possibility for the Hlai children is that they obey their parents.

Context: Given what the social expectations are, children in Hlai are strictly required to obey their elders, especially their parents.

2.4 Circumstantial Modality

Circumstantial modals make assertions about what possibilities or necessities are allowed by the physical facts/circumstances. Kratzer (1991) exemplifies the circumstantial modality with the example *Hydrangeas can grow here*. The context of the circumstantial modal *can* is that a person moved to a new place and tried to plant hydrangeas. The result is that the soil and the climate allow the growth of hydrangeas and this person concluded and uttered *Hydrangeas can grow here*. That is, given a particular set of circumstances, a circumstantial modal is used and interpreted. Kratzer (1991) further offers another example to explain circumstantial modality: *Cathy can make a pound of cheese out of this can of milk*. The paraphrase of this sentence is that *Cathy is able to make a pound of cheese out of this can of milk*. Circumstantial modals are thus often interpreted as conveying 'ability' meaning. This paper basically employs the abilitive meaning of circumstantial modality to explore the circumstantial modals in Hlai.[2]

I found three circumstantial modals in Hlai: *kiiu*^{33}, *koom*^{33} and *khuung*^{33}. *Kiiu*^{33} expresses the agent not only has the ability to do something, but also frequently engages in the activity. *Koom*^{33} also conveys the meaning of 'sufficiency.' When it is used as a

[2] In von Fintel (2006), he offers an example to show the necessity of circumstantial modality: *I have to sneeze*, (given the current circumstance of my nose). This type of 'have to' examples are not found in Hlai.

modal, it expresses that the agent has sufficient ability to do something. *Khuung*[33] is also used as a verb indicating 'know, understand.' When *khuung*[33] is used as a modal, it means that the agent knows/understands how to take the action or achieve the performance.

(15) Na[33] kiiu[33] tok[55] ɬa[33].
3SG can stab fish
'He can shoot fish.'
Paraphrase: Given the circumstances, a physical possibility is that he shoots fish well.
Context: Lau-Geeng is a skilled angler and often goes fishing. His physical state allows him to shoot fish well.

(16) Hou[33] koom[33] gou[121] khaɯ[33].
1SG can run fast
'I can run fast.'
Paraphrase: Given the circumstances, a physical possibility is that I have the ability to run fast.
Context: The language consultant is a grandmother who sometimes needs to take care of her grandchildren. She also sometimes needs to run with her grandchildren. The language consultant believes that while she is old, she still has sufficient ability to run fast with her grandchildren.

(17) Hou[33] khuung[33] khuung[55] thun[33] Gei[11].
1SG understand speak language Gei
'I can speak Gei.'
Paraphrase: Given the current circumstances, a physical possibility is that I have the ability to speak Gei.
Context: The language consultant is a Gei native speaker. She knows how to speak the language. She has the ability to speak Gei well.

2.5 Bouletic Modality

Bouletic modals make assertions about what possibilities are allowed by the goals/desires of the subject. In addition, bouletic modals are often interpreted as conveying 'willingness' meaning. I found two bouletic modals in Hlai: *kɯɯ*[55] and

ɗeen^{33}*gooh*^{55}. *Kɯɹ*^{55} expresses the agent is willing to do something and the action will occur in the near future. *Deen*^{33}*gooh*^{55} expresses the willingness of the agent, but does not imply the action will be taken in the immediate future. In other words, sentences with *kɯɹ*^{55} are mostly irrealis, while sentences with *ɗeen*^{33}*gooh*^{55} do not involve aspectual implication.

(18) Pha^{55} kɯ^{55} paaɯ^{11} plong^{55}.
father will return home
'Father will return home.'

Paraphrase: Given what the father's desires are (i.e., returning home early), an allowable possibility is that he returns home.

Context: The family is waiting for the returning of their father. The father wants to go home early to avoid his family's awaiting him. At the same time, the father is about to return home.

(19) Aɯ^{55} hou^{33} ɗeen^{33}gooh^{55} ɗuuh^{55} plong^{55} paaɯ^{11} aau^{33}-faat^{55}.
elder sister 1SG willing have house return people-poor
'My elder sister is willing to marry a poor man.'

Paraphrase: Given what my sister's desires are (i.e., marrying a man who is in bad financial condition), an allowable possibility is that she marries him.

Context: The parents of the speaker worry about their daughter's marriage. The speaker tries to persuade her parents that her elder sister is willing to marry a man who is not rich.

Based on the previous discussion, the modals in Hlai are listed in (20) and the corresponding examples are shown as follows.

(20) Affirmative modal expressions in Hlai

	Possibility	Necessity
Epistemic	*kɯɹ*^{55}	*kham*^{55}
Deontic	*koom*^{33}	*kham*^{55}
Circumstantial	*kiiu*^{33}, *koom*^{33}, *khuung*^{33}	
Bouletic	*kɯɹ*^{55}, *ɗeen*^{33} *gooh*^{55}	

Some of these modal expressions can co-occur and the linear order of the modals is restricted. For example, within the circumstantial modal group, *koom*[33] and *khuung*[33] can co-occur and *koom*[33] must precede *khuung*[33], but not vice versa, as in (21).

(21) a. Hou[33] koom[33] khuung[33] khuung[55] thun[33] Gei[11].
1SG can understand speak language Gei
'I can understand how to speak Gei.'
b. *Hou[33] khuung[33] koom[33] khuung[55] thun[33] Gei[11].
1SG understand can speak language Gei
'I understand and am able to speak Gei.'

Similar to *koom*[33] and *khuung*[33], the bouletic modal *kɯ*[55] and *ɗeen*[33]*gooh*[55] may co-occur, but the word order is fixed. *Kɯ*[55] must precede *ɗeen*[33]*gooh*[55]. The opposite word order is not acceptable.

(22) a. Di[55]-liih[55] kɯ[55] ɗeen[33]gooh[55] lau[51] nam[55]-maai[55] ɗat[55]-ɗat[55].
DIM-kid will willing eat water-sugarcane very
'The little kid will want to drink water sugarcane juice very much.'
b. *Di[55]-liih[55] ɗeen[33]gooh[55] kɯ[55] lau[51] nam[55]-maai[55] ɗat[55]-ɗat[55].
DIM-kid willing will eat water-sugarcane very
'The little kid will want to drink water sugarcane juice very much.'

In addition to the co-occurrence restriction between modals, the subject of a sentence and modals also reveal syntactic hierarchy. This claim has been widely noted by several linguists (e.g. McDowell 1987; Picallo 1990; Butler 2003; Tsai 2015). They mostly conclude that epistemic modals scope higher than subjects, while deontic modals scope lower than subjects. Hlai data in this paper also support this claim.

(23) Van[11]-ni[51] kɯ[55] fun[33].
day-this will rain
'It will rain today.'

Paraphrase: It is a possible assumption that it is on the verge of raining today, according to the evidence of the situation of the weather.

Scope: modal > subject (epistemic)

(24) Mɯɯ^{33} kham^{55} lau^{51} tha^{51}.
2SG must eat rice
'You must eat rice.'

Paraphrase: You are required to eat rice by the doctor, because you are sick.

Scope: subject > modal (deontic)

This conclusion fits the findings of previous studies. That is, the modal data in Hlai also concord with the fact that epistemic modals are higher than root modals.

3. Interaction between Modals and Negation

Modality may interact with negation because the two operators both take scopes over propositions. In the previous section, we observed that the scope of epistemics is higher than the one of deontics. This finding provides the evidence that modals differ in the scopes. As for the negation, Klima (1964) distinguishes the sentence negation, as in (25), from the constituent negation, as in (26).

(25) She is not happy.
(26) She is unhappy.

In addition, the sentence negative marker in English, *not*, is able to stack on the constituent negative marker, *un-*, as in (27). From the paraphrase of example (27), the English negative markers (*not* and *un-*) show that negative markers can take scopes. The sentence negative marker usually scopes over the constituent negative marker.

(27) She is not unhappy.
Paraphrase: It is not the case that she is unhappy. (*not* > *un-*)

Since both modals and negative markers can take scopes, the scopes of modality and negation will interact with each other. For example, in (28), modality has wider scope over negation, while in (29), modality has narrower scope over negation. The scope distinction will affect the interpretation of the sentences, even if the linear order of modality and negation in these two sentences is the same.

(28) You must not come here. (Mod (Neg (p)))
Paraphrase: You are required not to come here. (*required* > *not* > *come*)
(29) You need not come here. (Neg (Mod (p)))
Paraphrase: It is not necessary for you to come here. (*not* > *necessary* > *come*)

With the same word order [Mod+Neg], *must not* and *need not* displays different scopal interaction: (Mod (Neg (p))) vs. (Neg (Mod (p))). The *must not/need not* examples show that syntactic linear order (Mod > Neg) may not fully reflect their semantic relationship (Mod > Neg/ Neg > Mod).

de Haan (2004) offers a typological investigation of negation and modality through the survey of several languages. He proposes two types of strategies for showing the interaction between negation and modality: (i) negation placement strategy and (ii) modal suppletion strategy. Languages taking the former strategy depend on the word order to interpret the scopes of negation and modality. This strategy is formalized as in (30). On the other hand, the linear order of negation and modality is not crucial to languages, taking the modal suppletion strategy, to achieve the proper scopal interpretations, formalized as in (31).

(30) Negation Placement Strategy Formalization
a. (Neg Mod) V_{main} (Neg (Mod (p)))
b. Mod (Neg V_{main}) (Mod (Neg (p)))
(31) Modal Suppletion Strategy Formalization
a. Neg Mod_1 V_{main} (Mod (Neg (p)))
b. Neg Mod_2 V_{main} (Neg (Mod (p)))

The two types of typological strategies shown in de Haan (2004) will be examined by the Hlai data in this section.

The negative suppletion, involving negative forms that are entirely different from the corresponding positive forms, has never been investigated in Hlai in the previous linguistic studies, even though the present study found that the negative suppletions are very common in Hlai. There are two main criteria for identifying cases of suppletion (cf. Mel'čuk 1994): phonological distance and uniqueness. Phonological distance indicates few to no shared phonological material between the suppletive forms; the uniqueness indicates few to no morphological processes are involved in the suppletive forms. For example, the expressions *khuung*^{33} 'understand' and *ɬɯm*^{55} 'not understand' are pronounced entirely differently and do not have clear relationships with each other in any formational process. The present study introduces the negative forms of modals in Hlai and discuss the typological strategies that Hlai adopts to link the syntactic forms and their scopal interpretations.

3.1 Negation in Hlai

Hlai has a single syncretic negative marker, *vei*^{11}, which occurs before the element which it negates. The examples of negation are as in (32)-(34).

(32) a. Tshau^{33}tho^{55} khɯn^{33}.
cane heavy
'This cane is heavy.'

b. Tshau^{33}tho^{55} vei^{11} khɯn^{33}.
cane NEG heavy
'This cane is not heavy.'

(33) a. Hou^{33} oop^{55} tshoom^{33}-thooh^{33}.
1SG like fruit-eggplant
'I like eggplants.'

b. Hou^{33} vei^{11} oop^{55} tshoom^{33}-thooh^{33}.
1SG NEG like fruit-eggplant
'I do not like eggplants.'

(34) a. Eeng^{55} ɗuuh^{55} feeng^{15} tshat^{55}.
brother have clothes wear
'My brother has clothes to wear.'
b. Eeng^{55} vei^{11} ɗuuh^{55} feeng^{15} tshat^{55}.
brother NEG have clothes wear
'My brother does not have clothes to wear.'

However, the negative form of copula is a suppletive form. The affirmative copula is *man*^{33}, while its negative form is *guai*^{121}, as in (35).

(35) a. Mang^{55}ko^{51} man^{33} tshoom^{33}tshai^{33}.
mango be fruit
'Mango is a fruit.'
b. Mang^{55}ko^{51} guai^{121} tshoom^{33}tshai^{33}.
mango NEG fruit
'Mango is not a fruit.'

The negative forms in Hlai basically employ a single negator *vei*^{11} to negate the predicate. Some specific elements have their corresponding suppletive forms, like the copula.

The following sections will introduce the negative modal forms in Hlai. We discuss the interactions of modals with regard to negation which also bears scopes. In addition to modals and negative forms, the position of 'subject' is also used to help establish the hierarchy of modality and negation. Butler (2003) points out that epistemic and root modals can be distinct from each other by their syntactic positions. The epistemic reading corresponds to an interpretive position above TP; the root reading corresponds to the position above *v*P. The semantic scopes of epistemic/root modals are reflected in terms of the position of the subject. Epistemic modals take scope over the subject; root modals take scope below the subject. Based on the semantic interpretation, Butler (2003) develops the scopal interaction between modal, subject and negation.[3] For example, in

[3] Butler's (2003) semantic treatments of modality will be mostly adopted in this paper, because some sentences are considered to be syntactically too complicated to utter for my language consultants. In addition, there are not sufficient previous studies with Hlai data for me to analyze. In future fieldwork, I

the paraphrase of (36), the modal *might* corresponds to *possible* which is higher than the subject *all languages*. Through the semantic interpretation of (36), the paraphrase, the scopes of the modal and the subject are established. Likewise, the subject *all users* in (37) scopes over the root modal *can* (corresponding to *permitted*) according to the semantic interpretation, the paraphrase.[4]

(36) Epistemic modal vs. subject
All languages might ultimately originate from a single mother tongue.
= 'It is a possible assumption that all languages originate from a single mother tongue.'
Scope: modal > subject

(37) Root modal vs. subject
All users can post messages.
= 'All users are permitted to post messages.'
Scope: subject > modal

Because the word order may not fully reflect the semantic interpretation, this paper follows Butler's assumption to create the hierarchy of modality, subject and negation through their semantic interpretations.

3.2 Epistemic Negatives

In the previous section, the affirmative epistemic modals are shown as *kham*^{55} 'must' and *kɯɹ*^{55} 'will.' However, these two affirmative modal expressions do not correspond to their negative forms with the negative marker *vei*^{11}. It is not acceptable to add the negative marker *vei*^{11} preceding the two modals, as in (38) and (39).

(38)	*ɯ^{55}-loong^{55}	vei^{11}	kɯɹ^{55}	tɯɯh^{55}	e^{33}.
	one-betel.nut	NEG	will	ripe	PART
	'The betel nut will not ripen soon.'				

will try harder to obtain sentences with which I can recheck the syntactic structures. For example, I will re-examine sentences with inner and outer subjects or with different types of adverbs.

4 Examples (36) and (37) are cited from Butler (2003: (38) and (39)).

(39) *Naan^{33} pa^{11} vei^{11} kham^{55} tau^{11} fun^{33}.
month five NEG must down rain
'It must not rain in May.'

The only way to express negative epistemic modality is *vei*^{11} *oi*^{51} 'will not,' while *oi*^{51} is not used as an affirmative modal, as in (40).[5]

(40) a. Vei^{11} oi^{51} tau^{11} fun^{33}.
NEG will fall rain
'It will not rain.'
b. *Oi^{51} tau^{11} fun^{33}.
will fall rain
'It will rain.'

Example (40) can be construed as 'It is not the case that it will be the case that the weather rains, in view of the available evidence of the speaker.' The scope of negation and modality revealed in (40) is (41).

(41) Scope: negation > epistemic possibility > subject

The epistemic necessity in Hlai is expressed by the combination of adverb and modal, instead of a specific modal expression. The example is shown as in (42). The scopal interaction between negation and modality is that the epistemic modal scopes over the negation.

[5] Some modals in some languages only occur in negative environments. For example, *need* only appears in sentences with negative elements when *need* is used as a modal auxiliary, occurring with a bare verb complement.
(i) a. You need not come.
b. Nobody need come.
c. *You need come.
d. *Somebody need come.
Such special modals do not exist in Hlai. *Oi*^{51}, occurring in epistemic negative modal environment, is not considered as a 'negative polarity' modal in Hlai. The only distribution of *oi*^{51} is to co-occur with the negator *vei*^{11} and it is not used alone in any linguistic environments. In other words, *vei*^{11} *oi*^{51} is used as an individual element.

(42) Pha^{55} nge^{51} vei^{11} oi^{51} gua^{51}-ngaan^{33}.
father definitely NEG will raise-liver
'Father definitely will not get angry.'
= 'It is definite that it's not the case that Father gets angry.'
Scope: epistemic necessity > negation > subject

Negation scopes between the two types of epistemic modals. When subject is concerned, it situates the lowest. The hierarchy is summarized as in (43).

(43) Scope: epistemic necessity > negation > epistemic possibility > subject

3.3 Deontic Negatives

Similar to epistemic modals, the affirmative deontic modals do not have corresponding negative forms which simply occur with negative marker *vei*^{11}.

(44) *Mɯɯ^{33} phɯɯn^{33}-ni^{51} vei^{11} koom^{33} rien^{11} thun^{33} e^{33}.
2SG generation-this NEG may say word PART
'You may not speak now.'

(45) *Di^{55} vei^{11} kham^{55} phooh^{55} pi^{15} pha^{55} rien^{11} thun^{33}.
kid NEG must listen mother father say word
'Kids must not listen to (their) parents' words.'

The negative deontic expressions in Hlai are not formed by the analytic strategy (neg + deontic), but by the lexical strategy. There are two specific deontic modals, *zou*^{55} and *zou*^{55}*mong*^{11}, respectively expressing negative counterparts of *koom*^{33} and *kham*^{55}. These two modals convey both negative and modal meanings within one lexical item. Different types of modals (possibility vs. necessity) will cause the different scopal interaction between negation and modality. Negation scopes under deontic necessity, while over deontic possibility. When subject is concerned, subject achieves their highest rank, as

shown in (46) and (47).[6]

(46) Mɯɯɯ^{33} zou^{55} thua^{55} aau^{33}.
2SG may.not deceive people
'You may not deceive others.'
= 'You are not allowed to deceive others (in most cases), according to the social regulations.'
Scope: subject > negation > deontic possibility

(47) Na^{33} zou^{55}-mong^{11} rien^{11} ɬaai^{33} ɬaai^{33}.
3SG must.not say much much
'S/he must not say too much.'
= 'S/he is required not to say too much, according to the rules of the village.'
Scope: subject > deontic necessity > negation

The data suggest that the lowest scope position is deontic possibility and the highest position is subject.

(48) Scope: subject > deontic necessity > negation > deontic possibility[7]

---

[6] While the two modals *zou*^{55} and *zou*^{55}-*mong*^{11} share the identical morpheme *zou*^{55}, they respectively indicate 'may not' and 'must not.' The interpretations are mainly based on the intuition of language consultants. The principle of compositionality cannot be well explained at this moment because the meaning of *mong*^{11} is still mysterious to me. The semantic difference between *zou*^{55} and *zou*^{55}-*mong*^{11} may be attributed to their lexical idiosyncrasies.

[7] I do not find any specific lexical items with the [~□ (negation > deontic necessity)] interpretation in Hlai. However, when I asked the language consultant to make examples conveying 'not have to (not necessary)' meanings, the consultant offered examples with Mandarin expressions *bu yong* 'not use' but with Hlai pronunciation. Mandarin *bu yong* 'not use' can be used to express 'need not,' for example, *Ni bu yong ziji zoulu huijia* 'You need not walk home by yourself.' Corresponding to Mandarin data, the Hlai data also employs *bu yong* 'not use' to express 'need not.'

(i) Mɯɯɯ^{33} vei^{11} lau^{51} mɯɯɯ^{33} ɯ^{55}-tsaɯ^{15} fei^{33} paaɯ^{11} plong^{55}.
2SG NEG use 2SG one-oneself walk return home
'You don't have to walk home by yourself.'

If this data is counted, we need two positions for negations: subject > negation > deontic necessity > negation > deontic possibility. However, the data is not included in the paper, because it is uncertain to

3.4 Circumstantial Negatives

Like deontic modals, the circumstantial modals *khuung*[33], *kiiu*[33] and *koom*[33] do not have their negative counterparts appearing with the pattern of [Neg + Modal], as in (49)-(51).

(49) *Hou[33] vei[11] khuung[33] khuung[55] thun[33] Gei[11].
1SG NEG understand speak language Gei
'I cannot speak Gei.'

(50) *Na[33] vei[11] kiiu[33] tok[55] ɬa[33].
3SG NEG can stab fish
'He cannot shoot fish.'

(51) *Hou[33] vei[11] koom[33] gou[121] khaɯ[33].
1SG NEG can run fast
'I cannot run fast.'

There are two lexical items specifically for negative circumstantial meanings: *ɬɯm*[55] 'not understand/ not have the ability to' and *ka*[51] 'cannot.' The scope of negation is higher than the one of circumstantial modal. The subject ranks the highest.

(52) Hou[33] ɬɯm[55] plei[33] nam[55].
1SG not.understand swim water
'I cannot swim.'
= 'I am not able to swim./ I do not know how to swim.'
Scope: subject > negation > circumstantial modal

(53) Pa[11] za[11] ka[51] fei[33] e[33].
dog old cannot walk PART
'The old dog cannot walk.'
= 'The old dog is not able to walk now.'
Scope: subject > negation > circumstantial modal

originate from Hlai. The language consultant hesitated very much when she uttered the sentence.

The two negative circumstantial modals cannot co-occur; they do not have scopal interaction.

(54) a. *Hou^{33} ka^{51} ɬɯm^{55} plei^{33} nam^{55}.
1SG cannot not.understand swim water
'I cannot not understand how to swim.'
b. *Hou^{33} ɬɯm^{55} ka^{51} plei^{33} nam^{55}.
1SG not.understand cannot swim water
'I cannot be unable to swim.'

3.5 Bouletic Negatives

It is not surprising to find that the negative counterparts of bouletic modals, *ɗeen*^{33}*gooh*^{55} and *kɯ*^{55}, do not have forms with the [Neg + Modal] pattern.

(55) *Na^{33} vei^{11} ɗeen^{33}gooh^{55} hei^{33}.
3SG NEG willing go
'I am not willing to go.'
(56) *Hou^{33} vei^{11} kɯ^{55} hei^{33}.
1SG NEG will go
'I will not go.'

There is only one negative form of bouletic modality: *ai*^{55}. With subject stands the highest, the scope of negation is higher than the one of bouletic modality.

(57) Guung^{11} ai^{55} aap^{55}.
younger.sibling unwilling bathe
'The younger brother is unwilling to take a shower.'
= 'The younger brother is not willing to take a shower.'
Scope: subject > negation > bouletic modal

3.6 Summary

There are two issues on which we focus in this section: (i) the inventory of negative modals in Hlai and (ii) the scope hierarchy of negation and modality. According to the empirical data we have seen so far (cf. (43), (48), (52), (53), (57)), the scopal hierarchy of negation and modality is summarized in (58).

(58) Hierarchy of negation and modality in Hlai
epistemic necessity > negation^{E} > epistemic possibility > subject > deontic necessity > negation^{R} > deontic possibility/circumstantial modal/bouletic modal

The hierarchy of deontic possibility, circumstantial modality and bouletic modality is not clear yet. The next section will address this question again and propose a structure for the whole modal system. In the array of (58), negation occurs twice and the order reflects that negation may be distributed in two layers: epistemic modal layer and root modal layer. Negation appearing in the epistemic layer is marked as Negation^{E}; the root layer is marker as Negation^{R}. Both high negation and low negation can separate necessity from possibility. Within the two individual layers, a rigid hierarchy appears as in (59).

(59) necessity > negation > possibility

Necessity is always higher than possibility and negation occurs in between.

Based on the facts in Hlai, the conclusion (58) does not confirm the structure proposed by Cinque (1999), which is shown in (60).

(60) Modal hierarchy of Cinque (1999)
epistemic > alethic necessity > alethic possibility > volition > deontic necessity > dynamic/deontic possibility

In Cinque's hierarchy, volition is higher than deontic necessity and dynamic/deontic possibility. This assumption of modality is not fully supported by the findings in Hlai.

In addition to the scopal interaction between negation and modality, this section also introduces the inventory of negative modals expressions in Hlai, which is compiled into a table as (61).

(61) Negative modal expressions in Hlai

	Possibility	Necessity
Epistemic	*vei*^{11} *oi*^{51}	
Deontic	*zou*^{55}	*zou*^{55} *mong*^{11}
Circumstantial	*ɬɯm*^{55}, *ka*^{51}	
Bouletic	*ai*^{55}	

Considering the forms of their affirmative forms (repeated here in (62)), negative modals are generally expressed by very different lexical elements (suppletion). That is, Hlai does not use syntactic mechanism to form negative modals in terms of a [Neg + Modal] pattern. Hlai employs the lexical mechanism to contrast affirmative and negative forms.

(62) Affirmative modal expressions in Hlai (= (20))

	Possibility	Necessity
Epistemic	*kɯɾ*^{55}	*kham*^{55}
Deontic	*koom*^{33}	*kham*^{55}
Circumstantial	*kiiu*^{33}, *koom*^{33}, *khuung*^{33}	
Bouletic	*kɯɾ*^{55}, *deen*^{33}*gooh*^{55}	

Based on the Hlai data with negative forms of modals, the types of modals decide the scopal interaction with negation. The word order of modals and negation is not critical to the scopes. The typological strategy helps us categorize Hlai into the language group of modal suppletion strategy. In addition to English, Finnish, German and Dutch, this language group also includes Hlai.

4. Topography of Modals

The spectrum of modality and negation provided in the previous section helps map out the topography of Hlai modals and negation. This section further focuses on the

interaction between modal expressions. Following Rizzi's (1997) and Cinque's (1999) cartographic approach, Tsai (2015) points out that Chinese modals can be accounted by a three-tier cartographic analysis. This cartographic analysis is adopted by the present study to discover the modal topography in Hlai. Cinque (1999) speculates that hierarchical syntactic realization correlates to the scopes of modals. This paper thus uses multiple occurrences of different modals to examine the interaction of various modals. However, it is not always natural for the language consultant to utter sentences with several modals. Five types of sentences with multiple modals are collected from the fieldwork survey. The sequences of the multiple modals are (i) epistemic + circumstantial, (ii) epistemic + bouletic, (iii) deontic + circumstantial, (iv) bouletic + circumstantial and (v) circumstantial + bouletic. The data are respectively shown as follows.

4.1 Epistemic > Circumstantial

Epistemic modal precedes not only circumstantial modal but also the negative form of circumstantial modal. The examples occur in the configuration of *kɯɻ*^{55} + *khuung*^{33} or *kɯɻ*^{55} + *ka*^{51}. According to the interpretations of (63) and (64), the scopal interactions are shown below the examples. In addition, the negative meaning in (64) belongs to the root modal layer.

(63) Di^{55} ne^{33} tshu^{55} hom^{33} Naan^{33}, ɓan^{11} kɯ^{55} khuung^{33} gom^{33}.
kid/DIM infant three CL month soon will understand creep
'The three-month-old infant will know how to crawl soon.'
= 'It is possible for a three-month-old infant to know how to crawl.'
Scope: epistemic > subject > circumstantial modal

(64) Mɯɯ^{33} vei^{11} gua^{51}, kɯ^{55} ka^{51} toon^{121} vok^{13} kong^{33}.
2SG NEG rise will cannot catch up do work
'If you don't wake up, you will be unable to catch up with the work.'
= 'It is possible for you to be not able to catch up with your work.'
Scope: epistemic possibility > subject > negation^{R} > circumstantial modal

The opposite order is not allowed in Hlai. Examples (65) and (66) show that epistemic

modals are not possible to follow circumstantial modals.

(65) *Guung^{11} khuung^{33} kɯ^{55} tɯn^{55}.
younger.sibling understand will dance
'(Intended) The younger brother is able to dance and he will dance.'
Scope: *circumstantial > epistemic

(66) *Hou^{33} ka^{51} kɯ^{55} roong^{121} ɯ^{55}-tshai^{33}.
1SG cannot will cook vegetable
'(Intended) I am not unable to cook and I will cook.'
Scope: *circumstantial > epistemic

4.2 Epistemic > Bouletic

Similar to the sequence of epistemic and circumstantial modals, the epistemic modal also precedes circumstantial modal and its negative form. The examples occur in the configuration of *kham*^{55} + *oo*^{55} or *kɯ*^{55} + *ai*^{55}. According to the interpretations of (67) and (68), the scopal interactions are shown below the examples. In addition, the negative meaning in (68) belongs to the root modal layer.

(67) Na^{33} kham^{55} oo^{55} phooh^{55} hou^{33} rien^{11} thun^{33}.
3SG must willing listen 1SG say word
'He must be willing to listen to my words.'
= 'It is very certain that he is willing to listen to my words.'
Scope: epistemic necessity > subject > bouletic modal

(68) Tsou^{33} kɯ^{55} ai^{55} ɓaang^{33} mɯɯ^{33}.
sister-in-law will unwilling help 2SG
'The sister-in-law will be unwilling to help you.'
= 'It is possible that the sister-in-law is not willing to help you.'
Scope: epistemic possibility > subject > negation^{R} > bouletic modal

The opposite order of epistemic and bouletic modals is not allowed in Hlai. Examples (69) and (70) show that epistemic modals are not possible to follow bouletic modals.

(69) *Po^{15}-ho^{51} na^{33} oo^{55} kɯ^{55} oh^{43} ɓiang^{51}.
tomorrow 3SG willing will drink rice.wine
'(Intended) He is willing to drink rice wine and will drink it tomorrow.'
Scope: *bouletic > epistemic

(70) *Guung^{11} ai^{55} kɯ^{55} aap^{55}. Na^{33} tsoon^{33} e^{33}.
younger.sibling unwilling will bathe 3SG sleep PART
'(Intended) The younger brother is unwilling to take a bath. He has slept.'
Scope: *bouletic > epistemic

4.3 Deontic > Circumstantial

Deontic and circumstantial modals are both considered as root modals. Some root modals can stack on other root modals. For example, deontic modal *kham*^{55} can co-occur with circumstantial modal *khuung*^{33} and the deontic modal scopes over the circumstantial modal.

(71) Mɯɯ^{33} kham^{55} khuung^{33} plei^{11} nam^{55}.
2SG must understand swim water
'You must be able to swim.'
= 'You have to be able to swim.'
Scope: subject > deontic necessity > circumstantial modal

However, the opposite word order is not allowed in Hlai. Circumstantials cannot precede the deontics, either syntactically or semantically.

(72) *Maai^{33} ni^{51} khuung^{33} kham^{55} lau^{51} ɯ^{55}-thiep^{55} thiep^{55} tshai^{33}.
Han.people this understand must use chopsticks clip vegetable
'(Intended) This Han person knows and he must know how to pick up vegetables with chopsticks.'
Scope: *circumstantial > deontic

4.4 Bouletic vs. Circumstantial

The order of bouletic and circumstantial modals are not very clear. *Kɯɯ*^{55} can precede *khuung*^{33}, but *ɗeen*^{33}*gooh*^{55} cannot. Notice that *kɯɯ*^{55} can receive two distinct readings, epistemic and bouletic. The language consultant of Hlai accepts the two readings of *kɯɯ*^{55} for the example (73). In other words, example (73) is ambiguous, construed either as 'It is possible for the younger brother to understand how to dance' or as 'The younger brother is willing to understand how to dance.' If the bouletic meaning of *kɯɯ*^{55} is uttered, we can draw a scopal conclusion in (73). However, example (74) with the bouletic modal *ɗeen*^{33}*gooh*^{55} will conflict the scopal hierarchy in (73). Due to this controversy, we cannot yet draw a conclusion about the order of bouletic and circumstantial modals.

(73) Guung^{11} kɯ^{55} khuung^{33} tɯn^{55}.
younger.sibling will understand dance
'The younger brother will (learn and) understand how to dance.'
= 'The younger brother is willing to understand how to dance.'
Scope: subject > bouletic modal > circumstantial modal

(74) *Hou^{33} ɗeen^{33}gooh^{55} khuung^{33} khuung^{55} Gei^{11}.
1SG willing understand speak Gei
'I am willing to understand how to speak Gei.'
Scope: *subject > bouletic modal > circumstantial modal

4.5 Circumstantial vs. Bouletic

The disputation of the order between circumstantial and bouletic modals remains when the possibility of circumstantial modal preceding bouletic modal is concerned.

(75) Hou^{33} ka^{51} ai^{55} ɗɯɯ^{33} mɯɯ^{33} hei^{33}.
1SG cannot unwilling give 2SG go
'I cannot be unwilling to let you go.'
= 'I am not able to be not willing to let you go.'

Scope: subject > negation^{R} > circumstantial modal > negation^{R} > bouletic modal

(76) *Hou^{33} khuung^{33} ɗeen^{33}gooh^{55} khuung^{55} Gei^{11}.
1SG can willing speak Gei
'I can be willing to speak Gei.'
= 'I am able to be willing to speak Gei.'
Scope: *subject > circumstantial modal > bouletic modal

The scopal interactions between circumstantial and bouletic modals in (75) and (76) conflict with each other. This finding is similar to the previous observation where the order of circumstantial and bouletic modals remains unclear. A certain word order of the two types of modals cannot be achieved a simple conclusion. The present study thus follows Palmer's (1986) categorization of modality which groups circumstantial (ability) and bouletic (volition) modals into one category, the dynamic modal. Concerning the linguistic facts of scopal interaction and word order, circumstantial and bouletic modals in Hlai well match the classification of modality proposed by Palmer (1986).

From the co-occurrence of modals shown in this section, the hierarchy of modality in Hlai is summarized in (77). This result agrees with the order of modality and negation in (58).

(77) Hierarchy of modality in Hlai
epistemic > subject > deontic > dynamic

4.6 Topographical Analyses in Hlai

In order to clarify the topographical structure of Chinese modals, Tsai (2015) examines four syntax-semantics correspondences of Chinese modal construals: (i) the co-occurrence restrictions, (ii) the entailment relations, (iii) the interaction between root modals, and inner/outer subjects, and (iv) the interaction between epistemic modals and negation.

In line with Cinque (1999), Tsai (2015) points out that some modal adverbs often co-occur with some corresponding modal auxiliaries. In addition, there are restrictions for their pairing of co-occurrences. The findings of Tsai's study are that epistemic adverb co-occurs with epistemic auxiliary; deontic adverb is with deontic auxiliary. However, epistemic adverbs need to precede deontic auxiliaries. It is not possible for a deontic adverb to precede an epistemic auxiliary.

Inner subject and outer subject may also help distinguish deontics from dynamics. Tsai (2015) examines Mandarin Chinese data with inner/outer subjects and their specificity. The result of Tsai's (2015) modal/subject hierarchy is [outer subject (specific) > deontics > inner subject (nonspecific) > dynamics]. Furthermore, negation is also employed to clarify the structural positions of modals. The word order of epistemic modals and the two negators, realis negator *mei* 'have not' and the irealis negator *bu* 'not,' are tested and the result is [Neg^{Irr} > epistemics > Neg^{Rea}].[8]

Another syntax-semantics correspondence is that some predicates allow mutual entailment, for example, *look like*, in the pair *John looks like Eric* and *Eric looks like John*. Butler (2003) points out that the mutual entailment relation will still hold when epistemic modals co-occur with the predicate, while the mutual entailment will not hold when deontic or dynamic modals occur in the sentence. For example, *John may look like Eric* and *Eric may look like John* bears mutual entailment relation (*may* with epistemic reading), while *John should look like Eric* and *Eric should look like John* do not bear mutual entailment relation (*should* with deontic reading). Like English, Tsai (2015) argues that Mandarin Chinese also displays the same pattern in which deontic and dynamic modals block the mutual entailment relation of the predicates. This entailment relation is examined in Hlai and the relation is observed between the two sentences in (78). When the epistemic modal *kɯɯ*^{55} is inserted, the entailment relation cannot be completely broken, as in (79), while the relation is blocked when the deontic modal *koom*^{33} is added, as in (80).

[8] We do not have sufficient data in Hlai with inner/outer subjects. This part of data will be seriously re-checked in my next field work.

(78) a. Thoong^{55}-khun^{33} hou^{33} ngou^{33} ɗong^{33} hou^{33}.
friend 1SG slim like 1SG
'My friend is slim like me.'

b. Hou^{33} ngou^{33} ɗong^{33} thoong^{55}-khun^{33} hou^{33}.
1SG slim like friend 1SG
'I am slim like my friend.'

(79) a. Thoong^{55}-khun^{33} hou^{33} kɯ^{55} ngou^{33} ɗong^{33} hou^{33}.
friend 1SG will slim like 1SG
'My friend may be slim like me.' (epistemic *may*)

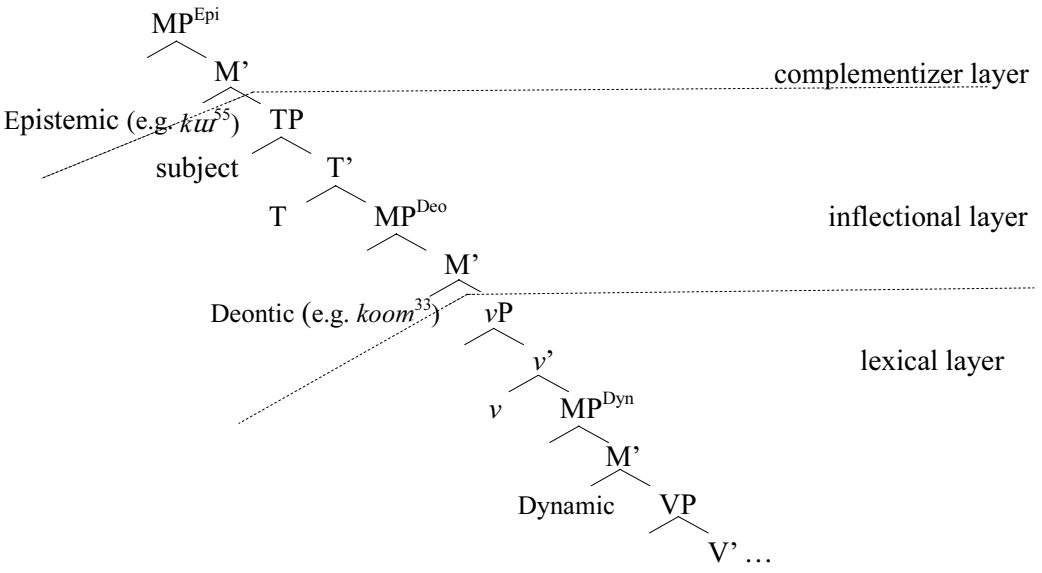
b. Hou^{33} kɯ^{55} ngou^{33} ɗong^{33} thoong^{55}-khun^{33} hou^{33}.
1SG will slim like friend 1SG
'I may be slim like my friend.' (epistemic *may*)

(80) a. Thoong^{55}-khun^{33} hou^{33} *koom*^{33} ngou^{33} ɗong^{33} hou^{33}.
friend 1SG may slim like 1SG
'My friend should be slim like me.' (deontic *should*)

b. Hou^{33} *koom*^{33} ngou^{33} ɗong^{33} thoong^{55}-khun^{33} hou^{33}.
1SG may slim like friend 1SG
'I should be slim like my friend.' (deontic *should*)

Based on the four syntax-semantics correspondences, Tsai (2015) offers a topography of Chinese modals and a three-tier cartographic analysis. Like Mandarin Chinese, our findings in Hlai are in line with Tsai's result. The epistemic modal occupies the highest layer; the dynamic modal stays the lowest and the deontic modal is in between these two types of modals. Along with the findings of our Hlai data illustrated in this section, the modal hierarchy is summarized in the diagram (81).

(81) Modal hierarchy in Hlai



5. Concluding Remarks

This paper explores the modal system of Hlai in which linguists have seldom investigated. Hlai is a Kra-Dai language spoken on Hainan Island. Hlai has not been actively spoken for decades and before long the language may become endangered. There are not sufficient studies on Hlai by the previous investigators. Syntactic or semantic studies on Hlai are very rare; furthermore, there are no linguistic studies on Hlai with cartographic accounts. Since previous linguistic studies in Hlai have been scarcely investigated, we introduce a new field for linguists to describe and analyze the data spoken on Hainan Island. This paper systematically provides data about the issues of modality.[9] We describe four types of modals and their syntactic distribution. The negative modals are introduced along with the scopal interaction with modality and negation. In addition, the hierarchy of modals in Hlai is established through the cartographical approach.

Based on the classifications of modality of Palmer (1986, 1990), Kratzer (1981, 1991) and von Fintel (2006), four types of modals in Hlai are introduced: epistemic,

[9] The data were collected from my field investigation of the Hlai dialect, Gei, spoken in the central part of Hainan Island around Wuzhishan (Mt. Five Finger) areas.

deontic, circumstantial and bouletic modals. These modals are also explored by the syntactic configuration concerning its word order with the subject. The syntactic hierarchy may reveal the scopal interaction from the perspective of the syntax-semantics interface. The modal scopes of Hlai agree with the findings of several of the previous studies in other languages, such as English (e.g. Butler 2003) and Mandarin Chinese (e.g. Tsai 2015). The simplified version of the hierarchy is that epistemic modal stands the highest and deontic modal occupies the lowest (epistemic > subject > deontic).

In addition, modality and negation are two operators taking scopes over propositions. This paper also explores the scopal interaction between negation and modality. The results show that Hlai data somewhat support the formula of the Modal Suppletion Strategy, as in (82), proposed by de Haan (2004).

(82) Modal Suppletion Strategy Formalization (de Haan 2014: 84)
  a. Neg Mod_1 V_{main} (Mod (Neg (p)))
  b. Neg Mod_2 V_{main} (Neg (Mod (p)))

In the formula, the linear order of negation and modality does not decide the scopal hierarchy. This matches the situation happening in Hlai data and the scopal hierarchy shown in the second formula of (82), negation higher than modality, reflects the order shown in Hlai. By demonstrating different modal elements, the present study assumes that Hlai is a language that employs the modal suppletion strategy to express negation and modality.

This paper also proposes a cartographic account for the modal system in Hlai. The topography is examined by the co-occurrence of different types of modals. Tsai's (2015) analysis of Chinese modal topography is adopted and our findings in Hlai agree with Tsai's conclusion in Chinese. Epistemic modals occupy the highest position, higher than the subject. Deontic modals occur after the subject. Bouletic and circumstantial modals stand the lowest position, while the two types of modals cannot be clearly distinguished from each other through the mechanism of word order. This paper follows Palmer's (1986) categorization of modality to group circumstantial and bouletic modals in one single category, named 'dynamic' modals.

(Proofreader: Kong Ling-an)

References

Butler, Jonny. “A Minimalist Treatment of Modality,” *Lingua*, 113, 2003, pp. 967-996. doi: 10.1016/S0024-3841(02)00146-8

Cinque, Guglielmo. *Adverbs and Functional Heads*: *A Cross-Linguistic Perspective*. Oxford: Oxford University Press, 1999.

Cook, Walter A. “Semantic Structure of English Modals,” *TESOL Quarterly*, 12.1, 1978, pp. 5-15.

von Fintel, Kai. “Modality and Language,” in Donald M. Borchert (ed.), *Encyclopedia of Philosophy* (2nd edition), vol. 10. Detroit: MacMillan Reference USA, 2006, pp. 20-27.

von Fintel, Kai and Anthony S. Gillies. “‘Might’ Made Right,” in Andy Egan and Brian Weatherson (eds.), *Epistemic Modality*. Oxford: Oxford University Press, 2009, pp. 108-130. doi: 10.1093/acprof:oso/9780199591596.003.0004

de Haan, Ferdinand. “Typological Approaches to Modality,” in William Frawley (ed.), *The Expression of Modality in Natural Language*. Berlin: Mouton de Gruyter, 2004, pp. 27-69. doi: 10.1515/9783110197570.27

Halliday, Michael Alexander Kirkwood. “Functional Diversity in Language as Seen from a Consideration of Modality and Mood in English,” *Foundations of Language*, 6.3, 1970, pp. 322-361.

Klima, Edward. “Negation in English,” in Jerry A. Fodor & Jerrold J. Katz (eds.), *The Structure of Language*. Englewood Cliffs, NJ: Prentice Hall, 1964, pp. 246-323.

Kratzer, Angelika. “The Notional Category of Modality,” in Hans J. Eikmeyer & Hannes Rieser (eds.), *Words, Worlds, and Contexts*. Berlin: Mouton de Gruyter, 1981, pp. 38-74. doi: 10.1515/9783110842524-004

_____. “Modality,” in Arnim von Stechow & Dieter Wunderlich (eds.), *Semantics: An International Handbook of Contemporary Research*. Berlin: Mouton de Gruyter, 1991, pp. 639-650.

McDowell, Joyce P. “Assertion and Modality,” Ph.D. Dissertation, Los Angeles: University of Southern California, 1987.

Mel’čuk, Igor. “Suppletion: Toward a Logical Analysis of the Concept,” *Studies in Language*, 18.2, 1994, pp. 339-410. doi: 10.1075/sl.18.2.03mel

Ostapirat, Weera. “Proto-Hlai Sound System and Lexicons,” in Lin Ying-chin 林英津, Hsu Fang-min 徐芳敏, Lee Tsun-chih 李存智, Jackson T.-S. Sun 孫天心, Yang Hsiu-

fang 楊秀芳 and Ho Dah-an 何大安 (eds.), *Han Zang Yu Yanjiu: Gong Huangcheng Xiansheng Qizhi Shouqing Lunwenji* 漢藏語研究：龔煌城先生七秩壽慶論文集 *(Studies on Sino-Tibetan Languages: Papers in Honor of Professor Hwang-Cherng Gong on His Seventieth Birthday)*. Taipei 臺北: Institute of Linguistics, Academia Sinica 中央研究院語言學研究所, 2004, pp. 121-175.

_____. "Kra-Dai and Austronesian: Notes on Phonological Correspondences and Vocabulary Distribution," in Laurent Sagart, Roger Blench and Alicia Sanchez-Mazas (eds.), *The Peopling of East Asia: Putting Together Archaeology, Linguistics and Genetics*. New York: Routledge, 2005, pp. 107-131. doi: 10.4324/9780203343685_chapter_7

Ouyang Jueya 歐陽覺亞 & Zheng Yiqing 鄭貽青. *Liyu Diaocha Yanjiou* 黎語調查研究 (*Survey of the Li Lanugages*). Beijing 北京: China Social Sciences Press 中國社會科學出版社, 1983.

Palmer, Robert Frank. *Mood and Modality*. Cambridge: Cambridge University Press, 1986.

_____. *Modality and the English Modals (Second Edition)*. London: Longman, 1990.

Picallo, M. Carme. "Modal Verbs in Catalan," *Natural Language and Linguistic Theory*, 8, 1990, pp. 285-312. doi: 10.1007/BF00208525

Rizzi, Luigi. "The Fine Structure of the Left Periphery," in Liliane Haegeman (ed.), *Elements of Grammar: Handbook in Generative Syntax*. Dordrecht: Kluwer Academic Publishers, 1997, pp. 281-337.

Tsai, Wei-tian Dylan. "On the Topography of Chinese Modals," in Ur Shlonsky (ed.), *Beyond Functional Sequence*. Oxford: Oxford University Press, 2015, pp. 275-294. doi: 10.1093/acprof:oso/9780190210588.003.0015

Yuan Zhongshum 苑中樹 (ed.) *Liyu Yufa Gangyao* 黎語語法綱要 (*Outline of Grammar in Li*). Beijing 北京: Minzu University of China Press 中央民族大學出版社, 1994.

黎語模態詞之製圖分布研究

李惠琦
國立成功大學外國語文學系
hclee6@mail.ncku.edu.tw

摘　要

本文聚焦在黎語之模態詞體系及其與否定之間的互動關係。黎語是海南島的語言，屬於侗台語系。本文討論四類模態詞：認知、義務、能力及意願。否定部分探討否定與模態之間的語意互動，同時也討論否定模態的特殊詞彙型態。根據 de Haan's (2004) 的類型研究，黎語屬於模態異幹互補語言類型。此外，本文發現黎語的否定範圍高於模態範圍。透過不同類型模態之間的同現限制，模態與主語之間的階層是：認知 > 主語 > 義務 > 動態。有關黎語的模態句法分布及語義理解，我們的研究結果與 Tsai (2015) 對漢語的模態分析結果是一致的。

關鍵詞：黎語，模態，否定，侗台語

（收稿日期：2016. 3. 8；修正稿日期：2016. 8. 22；通過刊登日期：2016. 12. 15）