

Notes on reference time of epistemic modals and their verbal complements in English and Thai

Peerapat Yangklang*

Peerapat@su.ac.th

Abstract

This article discusses essential syntactic and semantic properties of epistemic modals and their verbal complements in English and Thai with respect to tense and aspect. Although in English the epistemic modals themselves lack of future-shift or past-shift of evaluation time, because it is located at present time/tense, we can see a shift of reference time of the verbal complement of the modals. We found that types of aspect, namely situational aspect play a crucial role in specifying the reference time of the verbal complement in English, while this is not the case in Thai. On the other hand, it is the temporal adverbials and the context that help specify the reference time of the epistemic modal complement in Thai. These differences have implications for L2 acquisition of epistemic modals in English by Thai learners of English.

Keywords: epistemic modal, verbal complement, aspect, reference time, second language acquisition

บทคัดย่อ

บทความนี้มุ่งอภิปรายคุณลักษณะทางวากยสัมพันธ์และอรรถศาสตร์ที่สำคัญของกริยานุเคราะห์ แสดงการคาดคะเนและกริยาเติมเต็มในภาษาอังกฤษและภาษาไทย ที่สัมพันธ์กับกาลและการณ์ลักษณะ แม้ว่าในภาษาอังกฤษกริยานุเคราะห์แสดงการคาดคะเนจะไม่สามารถแสดงเวลาเชิงอนาคตหรืออดีตได้ด้วยตัวมันเอง เนื่องจากคุณลักษณะเชิงเวลาของตัวกริยานุเคราะห์นั้นถูกจำกัดอยู่ที่ปัจจุบันเท่านั้น แต่กริยาเติมเต็มของกริยานุเคราะห์นั้นสามารถแสดงเวลาอ้างอิงที่ต่างกันได้ ทั้งนี้ขึ้นอยู่กับการณ์ลักษณะของกริยาเติมเต็ม ซึ่งมีบทบาทสำคัญในการบ่งชี้เวลาของส่วนเติมเต็ม ขณะที่ปรากฏการณ์นี้ไม่เกิดขึ้นกับกริยานุเคราะห์แสดงการคาดคะเนและกริยาเติมเต็มในภาษาไทย ความแตกต่างเหล่านี้มีนัยสำคัญต่อการเรียนรู้กริยานุเคราะห์แสดงการคาดคะเนในภาษาอังกฤษสำหรับคนไทยผู้ที่เรียนภาษาอังกฤษเป็นภาษาที่สอง

คำสำคัญ: กริยานุเคราะห์แสดงการคาดคะเน, กริยาเติมเต็ม, การณ์ลักษณะ, เวลาอ้างอิง, การเรียนรู้ภาษาที่สอง

* Lecturer, Faculty of Management Science, Silpakorn University Petchaburi IT Campus

1. Introduction

Modality is a grammatical category, which is cross-linguistically found in languages. It is closely associated with tense and aspect because these three categories are of the clause. While tense is concerned with time of events, aspect is concerned with nature of events. However, the modality differs from tense and aspect in that it does not refer directly to any characteristics of the event, but simply to the status of the proposition that describe the event (Palmer, 2001: 1).

Modal expressions are widely recognized to communicate two broad clusters of meanings: epistemic and deontic. Apart from these two clusters of modality, a third type of modality is, however, often proposed, namely, dynamic modality. It involves ability, intention, and willingness (Palmer, 2001: 1).

Epistemic modality involves implications concerning the speaker's knowledge of the situations stated at the time, and can range from certainty to uncertainty. The meanings expressed by this type of modality are concerned with possibility, probability, inference, and hypothetical.

Deontic modality is also known as 'Directives', where we try to get others to do things. This type of modality is concerned with necessity, unnecessity, obligation, prohibition, and permission.

Dynamic modality involves the ability and willingness or volition of the subject to perform an action stated in the proposition.

Sentences (1) and (2) below contain epistemic and deontic modal auxiliaries respectively, whereas sentence (3) below contains the so-called dynamic modal auxiliaries.

- (1) (a) She *must* be John's daughter.
(b) He *may* be at home.
(c) It *should* be colder at night
- (2) (a) He *must* finish his homework before going out with friends.
(b) You *may* go home now.
(c) Nina *should* study harder if she wants to pass the exam.
- (3) (a) Tom can run very fast.
(b) I will come to see you tomorrow.

Dynamic modality and deontic modality are sometimes classified and included in the same category i.e. 'root modality' (Coates, 1983: 18). This is because both deontic and dynamic modality are agent-oriented, whereas epistemic modality is speaker-oriented.

In this paper, I will, however, not go further in details of deontic and dynamic modality. The remains of this article will only be concerned with epistemic modals. In section 1, I start off with the review of the essential syntactic and semantic properties of preverbal modal expressions in English under Generative Approach. Next, I discuss the syntactic properties of the modal complements with respect to tense and aspect. Section 3 presents some facts of the preverbal modal auxiliaries in Thai paralleling those in English. Section 4 is conclusion and implications for SLA.

2. Epistemic modals in English

2.1 The essential syntactic and semantic properties of epistemic modals in English

It is generally agreed that modal verbs in English share some formal features with other auxiliaries, for example, the occurrence with negation, inversion, code, and emphatic affirmation. These features are known as NICE properties (Huddleston, 1976):

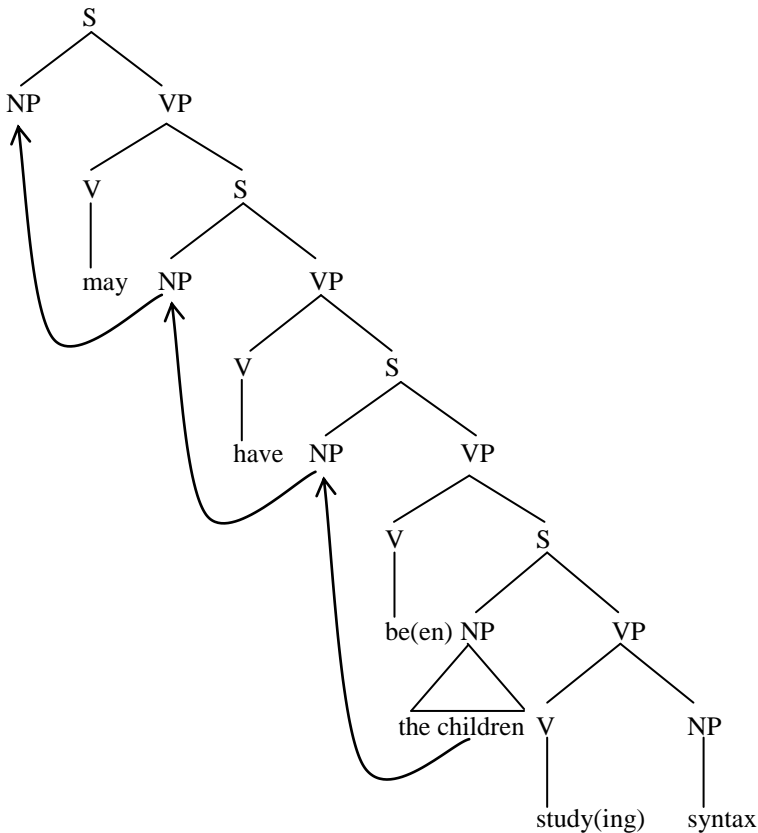
- N They take negation directly without the need for Do support e.g. *can't*, *mustn't*, etc..
- I They are inverted with the subject in interrogative sentences e.g. *Can I...?*, *May I ...*, etc..
- C They encode the proposition in elliptic constructions: *John can swim and so can Bill*.
- E They convey emphatic meaning: *He will be there*.

Apart from the four features above, Palmer (2001: 100) argues that although these modals share some features with other auxiliaries like BE and HAVE, they have their own features which can be summarised as follows.

- (i) No co-occurrence. This means that the modal auxiliaries never occur with other auxiliaries. There is no **may will*, **must can*, etc. (except in some dialects).
- (ii) No –s forms for third person singular. For example **cans*, **mights*, etc.
- (iii) No non-finite forms. There is no **I hope to can come tonight*.
- (iv) Although, *could*, *would*, *should* can be used as past time reference, it is not the common function of these auxiliaries. Rather, they are usually used to express hypothetical meaning or tentativeness.

According to these properties, modal verbs are categorized as a kind of auxiliary, like *be*, *have*, *do*. The set of epistemic modal auxiliaries in English includes *may*, *might*, *must*, *will*, *should*, *would*, and *could*.

Jackendoff (1977) points out that modal auxiliaries generally take verb expressions as their complement, and they do not have semantic features e.g. predicate-argument structure, unlike typical verbs. In other words, they do not take a range of different types of complement (Radford, 1997: 50). The tree representation of the clause that contains an auxiliary can be illustrated in Figure 1.



The children may have be(en) study(ing) syntax.

Figure 1 The tree representation of the clause that contains an auxiliary

(Radford, 1997: 50)

The subjectivity of epistemic modality has also been discussed in the previous studies of modality. Epistemic modality is essentially subjective in that it is concerned with the speaker's attitude to the proposition expressed in the main predication (Coates, 1983: 46). Regarding its subjective interpretation, the epistemic

modality can be placed at the two ends of a scale whose extremes represent confidence and doubt, as illustrated by Figure 2.

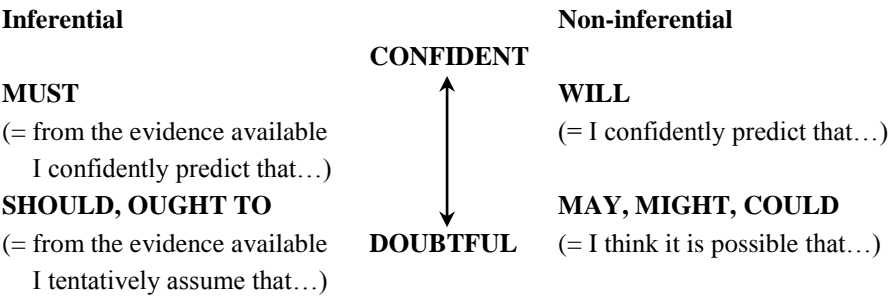


Figure 2 The Epistemic modals (Coates, 1983: 19)

2.2 Epistemic modals and tense

Although epistemic modal auxiliaries are not inflected for tense, they behave as if they are semantically present tense. This fact gives rise to the question of whether or not tenses are intrinsic features of the epistemic modal auxiliaries. This section thus discusses the relationships between the epistemic modals and tense. Before discussing the relationships between epistemic modals and tense and aspect, it is necessary to briefly discuss the conceptualization of time associated with the temporal interpretation of epistemic modals: modal time, speech time, situational time, and reference time, as it is relevant to tense. Modal time refers to the time at which the modal evaluation under consideration holds. Speech time is the moment of speech. Situational time is the time at which the situation or event described in the modal complement in the scope of the modal holds. Reference time gives temporal perspective or standpoint (Guéron, 2008: 144).

Padovan (2006: 2) argues that epistemic modals are outside of the scope of tense. Stowell (2004: 481), on the other hand, argues that the epistemic modals behave like present-tense verbs because they are situated in the deictic present time/tense. In other words, the time of the epistemic modal is claimed to be simultaneous to the speech time. Therefore it is impossible for epistemic modals to express a real past reading (Guéron, 2008: 144). Consequently, they do not exhibit any morphological present/past alternation.

Although epistemic modals lack future-shift or past-shift of evaluation time, we can see a shift of reference time of the modal verbal complement (Drubig 2001: 16). The non-finite verbal complement of epistemic modals may have present time

reference, future reference time or past time reference. Demirdarche and Uribe-Etxebarria (2008: 92) point out that the reference time of the modal complement is sensitive to lexical aspect or certain types of verbs. In other words, the situational aspect or the verb type in the complement determines particular reference time of an individual epistemic modal. The rest of this section, thus, discusses the relationship between the epistemic modals and the reference time of the modal complements. I will focus on the modals: *may*, *might*, *must* and *will*. I will not include *should*, *would*, and *could* in this article because the epistemic interpretation of these modals are not distinct from deontic, and the use of these modals involves conditionals.

2.2.1 Future reference time and epistemic modal complements

When the verbal complement of epistemic *may/might* is a stative predicate, which has imperfective aspect, as in (5), the reference time of the modal complement can be construed as either present or future.

- (5) Amina *may/might* be in Ottawa (now/tomorrow)

On the other hand, if the verbal complement of epistemic *may/might* is an eventive predicate, which has perfective aspect, as in (6), the reference time of the modal complement is construed as future.

- (6) Amina *may/might* win the marathon.

As for *must*, the verbal complement has to be stative in order for the modal to receive epistemic reading, and reference time of the verbal complement is construed as present as in (7). However, if the modal is followed by an eventive verb, the modal will receive deontic reading as in (8).

- (7) He *must* know that person. (epistemic)

- (8) He *must* read the book. (deontic)

As for *will*, when it is used to indicate probability, it always has future implication no matter what type the verb is. This is one of the reasons why *will* is often used as a future marker.

- (9) He *will* pass the exam.

- (10) It *will* rain.

2.2.2 Present reference time and epistemic modal complements *may/might*

Present reference time and epistemic modal complements *may/might* may take an eventive predicate as their complement, and usually have present reference time by the addition of BE + ING as in (11). Without BE + ING, the verbal complement will have future reference time as shown in (6).

- (11) He *might* be coming to the party.

This is also the case for *must*. In other words, it is possible for *must* to take an eventive verb as its complement. However, progressive form BE + ING needs to be added on the verb. The verbal complement is thus construed as present, as in (12).

(12) He must be reading the book.

2.2.3 Past reference time and epistemic modal complements

As mentioned earlier, the epistemic modals do not have real past reading. However, it is possible for the modal complement to get past reading by the addition of HAVE + EN. Although the verb form of the verbal complement is perfective, it does not have perfective reading. It, on the other hand, has real past reading. This mechanism is known as ‘Past Tense Replacement (PTR) effect’ Drubig (2001: 16). In English present perfect usually cannot be used with reference to a specific time in the past. However, in epistemic context like (13), the perfective receives past reading, and does not express perfective any more. This is shown by the compatibility of the perfective verb with simple past temporal adverbial *last Tuesday*.

(13) He must have left last Tuesday. (Past)

Although the situational aspect of the verb in the modal complement seems to play a crucial role in determining the reference time of the complement, I myself find that the situational aspect of the verb alone cannot give rise to any reference time interpretation of the modal complement. Rather, the reference time of the modal complement results from the interplay of a certain epistemic modal auxiliary with a certain type of a verb. In other words, an occurrence of a certain epistemic modal auxiliary with a certain type of a verb yields different reference time of the modal complement. In the current article I shall call such occurrences ‘syntactic patterns’.

The syntactic patterns that indicate reference time of epistemic modal complement in English are shown in Table 1.

Table 1 Syntactic patterns that indicate reference time of epistemic modal complements

Patterns	Reference Time		
	Present	Future	Past
1 MAY/MIGHT + A STATIVE VERB e.g. <i>Ben may like the chocolate.</i>	✓	✓	×
2 MAY/MIGHT + AN EVENTIVE VERB e.g. <i>He might study math.</i>	×	✓	×
3 MAY/MIGHT + BE AN EVENTIVE VERB – ING e.g. <i>He might be studying math.</i>	✓	×	×
4 MUST + A STATIVE VERB e.g. <i>The teacher must be angry.</i>	✓	×	×
5 MUST + BE + AN EVENTIVE VERB –ING e.g. <i>Ben must be cooking the dinner.</i>	✓	✓	×
6 WILL + STATIVE/EVENTIVE VERB e.g. <i>Jerry will be late, or Ben will miss the bus.</i>	×	✓	×
7 EPISTEMIC MODALS + HAVE –EN = PAST e.g. <i>Ben might have been at home.</i>	×	×	✓

2.3 Epistemic modals and aspect

The relationships between epistemic modals and aspect have been discussed in studies concerning with syntax of modality (Dubrig 2001; Van Gelderen 2003; Stowell 2004; Padovan 2006; Boogaart 2007; Demirdarche and Uribe-Etxebarria 2008; Guéron 2008). It is claimed that the grammatical aspect or viewpoint aspect of the non-finite verbal complement plays a crucial role in determining epistemic and deontic reading of the modals. Van Gelderen (2003) points out that epistemic modals take perfective and imperfective as their complements, while deontic modals do not. This is one of the properties that distinguishes epistemic and deontic modals in English.

- (14) He must have left last. (epistemic)
- (15) He must be working. (epistemic)
- (16) He must leave last. (deontic)
- (17) He must work. (deontic)

We can notice that the sentences in (14) and (15) have epistemic readings because the verbs in the complement have perfective and imperfective aspect

respectively. However, the sentences in (16) and (17) have deontic reading because of absence of the perfective HAVE + -EN and progressive BE + -ING markers.

2.3.1 Epistemic modal complements and perfective aspect

The epistemic modals may take perfective aspect as their complements. However, the complements do not have perfect reading due to ‘Past Tense Replacement (PTR) effect’. They have simple past reading. This can be illustrated by the compatibility of HAVE + EN with the temporal adverbials indicating simple past as in (18). In English, the present perfective is incompatible with past time adverbials like *yesterday*, *last night*, *two months ago* etc. as in (19). However, this is not the case when an epistemic modal precedes perfective auxiliaries like *have* as in (18).

(18) He must have read that letter yesterday.

(19) *He has read that letter yesterday

In (18) the perfective complement no longer has perfective meaning when it is preceded by an epistemic modal. This is also true when it is preceded by the future marker *will*. The perfective complement in this case has past reading as shown in (20).

(20) He will have read that letter.

2.3.2 Epistemic modal complements and imperfective aspect

Imperfective aspect in this case is referred to as progressive. The progressive in English is indicated by BE + ING. Epistemic modals also take progressive aspect as their complements as shown in the previous section. The progressive complements of epistemic modals usually have present reference time, as in (21), and future reference time in a certain case as in (22).

(21) John may/might be writing a letter *now*.

(22) John may/might be writing a letter *tomorrow/when you get home*.

2.4 Summary

We can see so far that the epistemic modals have a closer relationship with the present tense. The simultaneity of the evaluation time and the speech time gives rise to the claim that epistemic modals have only present tense, and do not have future or past tenses. Nevertheless, we may see the future-shift or past-shift in modal complements. As illustrated, the reference time of the event expressed in the modal complement is sensitive to certain types of verbs, which intrinsically have different

situational aspects. In addition, when considering the grammatical aspect of the modal complement, we found that although the verb form in the modal complement is perfective, it does not express present perfective meaning. On the other hand, it has real past reading due to the PTR effect.

In the following sections, I discuss the essential syntactic and semantic properties of epistemic modals in Thai paralleling English epistemic modals, and then identify differences that may cause difficulties for learners in acquiring the epistemic modals in English.

3. Preverbal epistemic modals in Thai

3.1 The essential syntactic and semantic properties of preverbal epistemic modals in Thai

Linguistic forms in Thai which are often treated as relevant forms of epistemic modal auxiliaries in English include *tɔɔŋ*³, *tɕaɿ*², *khuan*¹, *khɔŋ*¹, *ʔaat*², and *naa³tɕaɿ²* as shown in Table 2. These forms can also be used in deontic and dynamic sense. It is the view point aspect of the modal complement and the context that distinguish epistemic modals from deontic ones. However, I will not go further on this point until section 3.3.

Table 2 The Thai relevant forms of epistemic modal auxiliaries in English

Thai preverbal modals	English modal auxiliaries
<i>tɔɔŋ</i> ³	must
<i>tɕaɿ</i> ²	will
<i>khuan</i> ¹	should
<i>khɔŋ</i> ¹	may, might
<i>ʔaat</i> ²	may, might
<i>naa³tɕaɿ²</i>	be likely

The forms in Table 2 above have often been treated as helping verbs or preverbal auxiliaries because they usually precede the main verb, and signify modal meanings (Kullayavajijya 1968; Panupong 1970; Sookgasem 1990; Rangkupan 2003, 2005). However, in this article, I will call those linguistic forms ‘epistemic preverbal modals’. Thai linguists generally agree that the epistemic preverbal modals are not full verbs because they cannot head a verb phrase by itself. Simply stated, they cannot function alone as predicates as illustrated in (23) and (24) because they are not semantically complete in themselves. They need a non-finite

verb as their complements. For these reasons, preverbal modals are considered to be a kind of complement-taking verbs (Thepkanjana, 2008: 150).

(23) *khaw⁵ tɔɔŋ³
 he/she must

(24) *khaw⁵ ʔaat²
 he/she may/might

(25) khaw⁵ khit⁴
 he/she think
 ‘He/she thinks’

(26) khaw⁵ nii⁵
 he/she escape
 ‘He/she escaped’

The verb *khit*⁴ ‘to think’ in (25) and the verb *nii*⁵ ‘to escape’ in (26) are full verbs because they do not need a non-finite verb to complete their meanings.

Wilawan (1993: 130) argues that a finite verb refers to a verb that takes a nominative NP as its subject, whereas a non-finite verb refers to the verb whose overt grammatical subject does not occur. In Thai, although a clause may contain more than one verb, namely serial verb/ verb concatenation, only the first verb in the series is considered to be finite, and the second verb is co-indexed with the first verb, hence non-finite.

(27) khaw⁵ khit⁴ nii⁵
 he/she think escape
 ‘He thought of escaping’

In (27), verbs *khit*⁴ ‘to think’ and *nii*⁵ ‘to escape’ occur in serial verb/ concatenation. The verb *khit*⁴ ‘to think’, which occurs in the first place, and takes *khaw*⁵ ‘he/she’ as its grammatical subject, is considered to be a finite verb regarding the definition of a finite verb and a non-finite verb by Wilawan (1993: 131). As for the verb *nii*⁵ ‘to escape’, which occurs in the second place, and is co-indexed with the *khaw*⁵ ‘he/she’, is therefore considered to be a non-finite verb. Savetamalya (1987: 21) Indrambarya (1998: 84) Rangkupan (2005: 53) agree that so-called ‘preverbal modals’ take non-finite verbs as their complements. The dependent structure of a clause containing a modal verb is shown in (28).

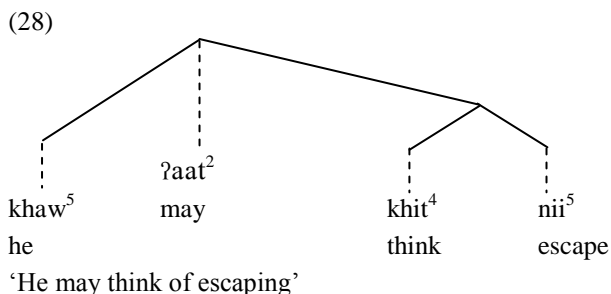


Figure 3 The tree representation of the clause that contains a modal verb in Thai
 (Indrambarya, 1998: 83-83).

We can see that in (28) the modal ʔaat² ‘may/might’ precedes a non-finite verb *khit*⁴ ‘to think’, which is actually its complement, and has a wider scope over the verb *khit*⁴ ‘to think’. In addition, the verb *khit*⁴ ‘to think’ in (28) is shifted to a non-finite verb when it follows a preverbal modal like ʔaat² ‘may/might’.

Indrambarya (1998: 85) also argues that other epistemic modal auxiliaries *tɔɔŋ*³, *khon*¹, *naa*³*tɕa*² and *tɕa*² also behave like ʔaat² in a clause.

The set of preverbal modal particles is associated with different degrees of certainty or the speaker’s confidence. This ranges from an inference with the speaker’s most confidence to the one with the speaker’s least confidence as illustrated in Figure 4.

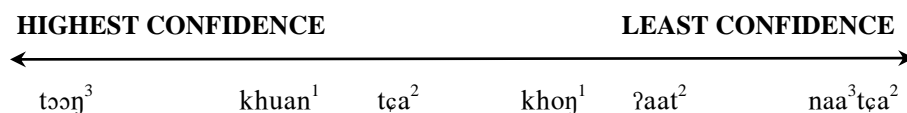


Figure 4 The scale of inferential preverbal modals in Thai

3.2 The modal complements in Thai and Reference time

We have already seen that epistemic modals in Thai, like in English, select non-finite verbs as their complements. In this section, I will discuss some properties of the modal complement e.g. reference time and aspect. Since tense morphology does not exist in Thai, I will discuss the relationship between epistemic modals and reference time in this section instead.

In Thai, adverbials and contexts play a crucial role in specifying the reference time of the verb. This is because verbs are not morphologically marked for indicating tense.

Without a temporal adverbial or when out of the context, the reference time of a verb is vague. People who are not present at the time of speaking will not know whether the event in focus has taken place or not. For example, the verb in (29) may have present, past or future reference time. In order to specify the reference time of the verb, a temporal adverbial such as *mua³wa:n¹nii⁴* ‘yesterday’, and *pruŋ³nii⁴* ‘tomorrow’ etc. is required, as in (30) and (31). In other words, temporal adverbials are grammatical means

- (29) dææŋ yuu² baan³
 Dang be/stay house/home
 ‘Dang is at home
 Or Dang was at home
 Or Dang has been at home
 Or Dang will be at home’
- (30) dææŋ yuu² baan³ mua:³wa:n¹nii⁴
 Dang be/stay house/home yesterday
 ‘Dang was at home yesterday’
- (31) dææŋ yuu² baan³ pruŋ³nii⁴
 Dang be/stay house/home tomorrow
 ‘Dang will be at home tomorrow’

We can notice that the verb *yuu²* ‘be/stay’ in (29) can have present, future and past reading. However, the sentence in (30) has only past reading because of the presence of the adverbial *mua:³wa:n¹nii⁴* ‘yesterday’, which contributes the meaning of past to the sentence. In (31), the sentence has only future reference time because of the presence of the adverbial *pruŋ³nii⁴* ‘tomorrow’, which contributes the meaning of past to the sentence.

Temporal adverbials do not only play a crucial role in determining the reference time of the verb, but also the reference time of the modal complements. Unlike in English, the reference time of epistemic modal complements in Thai is not sensitive to lexical aspect or certain types of verbs. In other words, the reference time of the modal complement is unpredictable regardless of the type or lexical aspect of the verb. The reference time of the modal complement is thus determined by temporal adverbials or context, as shown below.

- (32) dææŋ¹ ʔaat² pen¹ wat²
 Dang may/might be cold
 ‘Dang may have a cold (now, yesterday, tomorrow)’

- (33) dəæŋ¹ ʔaat² maa¹ saaj⁵
 Dang may/might come late
 ‘Dang may may/might come late (now, yesterday, tomorrow)’
- (34) dəæŋ¹ ʔaat² pen¹ wat² mua³wa:n¹nii⁴
 Dang may/might be cold yesterday
 ‘Dang may have had a cold yesterday’
- (35) dəæŋ¹ ʔaat² maa¹ saaj⁵ prun³nii⁴
 Dang may/might come late tomorrow
 ‘Dang may may/might come late tomorrow’

We can notice that no matter what the lexical aspect of the modal complement is e.g. either imperfective as in (32) or perfective as in (33), the reference time of the modal complement can be present, past or future. However, in (34) and (35) the reference time of the modal complements can only be past and future respectively due to the presence of temporal adverbs.

3.3 The modal complements in Thai and Aspect

In this section, I consider the aspect of complements of epistemic modals. In Thai, like in English, viewpoint aspect seems to play a crucial role in distinguishing between epistemic and deontic modals. Before discussing the viewpoint aspect of epistemic modal complements, I will briefly present general facts of viewpoint aspect in Thai.

In Thai, perfective aspect is expressed by the final particle *læw*⁴ ‘already’ and preverbal particle *khəj*¹ ‘used to, ever’, as shown in (36) and (37). Imperfective aspect is expressed by the final particle *juu*¹ (imperfective) and preverbal particle *kam¹lay¹* (progressive) as shown in (38) and (39).

- (36) dəæŋ¹ ʔaan² naŋ⁵suuw⁵ læw⁴
 Dang read book already
 ‘Dang has already read the book’ (perfective)
- (37) dəæŋ¹ khəj¹ ʔaan² naŋ⁵suuw⁵
 Dang used to/ever read book
 ‘Dang has/used to read the book’ (perfective)
- (38) dəæŋ¹ ʔaan² naŋ⁵suuw⁵ juu¹
 Dang read book IMP
 ‘Dang reads a book now’ (imperfective)

- (39) dææŋ¹ **kam¹laŋ¹** ʔaan² naŋ⁵suu⁵
 Dang PROG read book
 ‘Dang is reading a book’ (imperfective: progressive)

As mentioned at the beginning of this section, in Thai, apart from context, viewpoint aspect plays a crucial role in distinguishing between epistemic and deontic modals. That is, epistemic modals may take perfective or imperfective aspect as their complements, while deontic modals do not. When the aspect markers like *khəəj¹* ‘used to, ever’ and *kam¹laŋ¹* (progressive) occur in modal complements, the modals will have only epistemic reading as illustrated in (40). Deontic reading is not possible at all as in (41).

- (40) dææŋ¹ tɔŋ³ khəəj¹ ʔaan² naŋ⁵suu⁵ (epistemic)
 Dang must ever read book
 ‘Dang must have read the book’
- (41) dææŋ¹ tɔŋ³ khəəj¹ ʔaan² naŋ⁵suu⁵ (*deontic)
 Dang must ever read book
 ‘Dang must have read the book’

The evidence that supports the claim that the deontic modals do not take perfective or imperfective aspect as their complements is the ungrammaticality of the sentence where a deontic modal co-occurs with aspectual marker. This can be illustrated as follows.

- (42) *dææŋ¹ khuuan¹ ʔaan² naŋ⁵suu⁵ juu² (deontic)
 Dang should read book IMP
- (43) *dææŋ¹ kam¹laŋ¹ saa⁴maat³ ʔaan² naŋ⁵suu⁵ (deontic)
 Dang PROG can read book
- (44) *dææŋ¹ khuuan¹ khəəj¹ ʔaan² naŋ⁵suu⁵ (deontic)
 Dang should ever read book

The sentences in (42), (43) and (44) are ungrammatical due to the presence of aspect markers. This is therefore evidence in support of the claim that deontic modals in Thai, like English, do not take aspect as their complements. Nevertheless, this is not the case for epistemic modals. I will discuss the relationship between epistemic modals and the viewpoint aspect in Thai in the following subsections.

3.3.1 Epistemic modals and perfective aspect

Now, let us first turn to epistemic modal complements and perfective aspect. Epistemic modals may take verbal complements which have perfective as illustrated in (45) and (46).

- (45) dææŋ¹ tɔŋ³ ʔaan² naŋ⁵suu⁵ lææw⁴ (epistemic)
Dang must read book already
'Dang must have read the book'

- (46) dææŋ¹ tɔŋ³ khəj¹ ʔaan² naŋ⁵suu⁵ (epistemic)
Dang must used to/ever read book
'Dang must have read the book'

Interestingly, although epistemic modals in Thai may take the perfective aspect as their complements, perfective complements do not shift to simple past reading, unlike in English. This suggests that 'Past Time Replacement (PTR) effect' does not exist in modal complements in Thai. The evidence that supports this idea is the incompatibility of the perfective complements with temporal adverbials indicating simple past, as in (47).

- (47) *dææŋ¹ tɔŋ³ khəj¹ ʔaan² naŋ⁵suu⁵ mua³wa:n¹nii⁴
Dang must used to/ever read book yesterday

3.3.2 Epistemic modals and imperfective aspect

Epistemic modals may also take verbal complements which have imperfective as illustrated in (48) – (49).

- (48) dææŋ¹ tɔŋ³ ʔaan² naŋ⁵suu⁵ juu² (epistemic)
Dang must read book IMP
'Dang must be reading a book'

- (49) dææŋ¹ tɔŋ³ kam¹laŋ¹ ʔaan² naŋ⁵suu⁵ (epistemic)
Dang must PROG read book
'Dang must be reading a book'

It is also worth mentioning that the addition of perfective makers does not help specify the reference time of the modal complement. The reference time is, on the other hand, still unpredictable despite the presence of perfective markers such as *juu*¹ 'imperfective' and *kam¹laŋ¹* 'progressive', as shown in (50). Unlike English, the addition of the imperfective marker on the verbal complement yields present or

future reference time of the verbal complement. The reference time of the modal complement is specified by the temporal adverbial as shown in (51) and (52).

- (50) dəŋ¹ khon³ ʔaan² naŋ⁵suu⁵ juu²
 Dang may/might read book IMP
 ‘Dang must be reading a book (now/tomorrow/yesterday)’
- (51) dəŋ¹ khon³ ʔaan² naŋ⁵suu⁵ juu² mua³wa:n¹nii⁴
 Dang may/might read book IMP yesterday
 ‘Dang may/might have been reading a book yesterday’
- (52) dəŋ¹ khon³ ʔaan² naŋ⁵suu⁵ juu² prun³nii⁴
 Dang may/might read book IMP
 ‘Dang might be reading a book tomorrow’

3.4 Summary

In this section we have discussed the essential syntactic and semantic properties of epistemic preverbal modals in Thai. Although there are quite a few syntactic analyses of preverbal modals in Thai, linguists agree that preverbal modals are functional words which take a non-finite verb as their complement. This section also considers the relationship between epistemic preverbal modals and two types of aspect e.g. situational aspect and viewpoint aspect. We have seen that situational aspect has virtually no affect on the reference time of the modal complement. Furthermore, the addition of viewpoint aspect markers on the verbal complement does not play any role in determining the reference time of the modal complement. Rather, they merely distinguish the epistemic modals from deontic ones, and it is the temporal adverbials that specify the reference time of the modal complement.

4. Conclusion and implications for SLA

This chapter outlined the essential syntactic and semantic properties of epistemic modal expressions, particularly the preverbal auxiliaries, in English and Thai. It also presented general facts about the relationship between preverbal auxiliaries and other elements e.g. tense and aspect in the clause. First, we see that epistemic modal auxiliaries in English and epistemic preverbal modals in Thai are quite similar in that they are functional words which always precede a non-finite verb, and take non-finite verbs as their complements. Second, we notice that with respect to reference time of modal complements, modal complements in English are sensitive to situational aspect, but this is not the case for epistemic preverbal modals

in Thai. In addition, with respect to the viewpoint aspect, epistemic modals in English and Thai may take perfective complements. However, perfective complements in English, in fact, do not have perfective reading. Rather, they have real past reading. This is, again, not the case for epistemic preverbal modals in Thai. Finally, only temporal adverbials seem to play a crucial role in specifying the reference time of modal complements in Thai. The differences between the two languages discussed in this article are summarised in Table 3.

Table 3 The differences between English and Thai epistemic modality

Epistemic modals in English	Epistemic modals in Thai
Status	Status
- Functional words	- Functional words
- Take a non-finite verb as its complement	- Take a non-finite verb as its complement
- Auxiliaries verb	- Auxiliaries verb
Tense/reference time	Tense/reference time
- present	- no tense morphology
- sensitive to lexical/situational aspect of modal complements	- not sensitive to lexical/situational aspect
- determine by lexical aspect or certain types of verbs	- determine by temporal adverbial or context
Aspect	Aspect
- take perfective and imperfective as its complement	- take perfective and imperfective as its complement
- Past Time Replacement (PTR) effect can be observed	- no PTR effect

The differences in Table 3 may cause difficulties for Thai L2 learners of English in acquiring epistemic modals in English. As the reference time of the modal complements in English is instantiated differently from Thai, Thai L2 learners of English will have to work out what reference time interpretation is or is not possible for certain syntactic patterns. Although teachers in some classrooms may introduce epistemic modals to learners, they do not normally draw learners' attention to the fact that, in English, different reference times linked to epistemic modal complements result from certain syntactic patterns. This kind of knowledge is, however, not explicitly taught in typical English language classrooms. It is assumed to be part of the implicit knowledge of English native speakers. This,

therefore, points to the ‘*poverty of stimulus*’ phenomenon. Besides, as Thai learners commence acquisition of epistemic modals in English with knowledge of epistemic modals in Thai, Thai L2 learners of English may initially transfer their L1 properties to their acquisition of epistemic modals in English. For these reasons, the differences presented in this paper are quite crucial and open the way for further research in the area of second language acquisition.

Notes

- 1 Smith (1983: 481) makes a distinction between lexical aspect or situational aspect and grammatical aspect or viewpoint aspect. According to him, situational aspect concerns the internal temporal character of an event, whereas viewpoint aspect concerns the perspective taken on a situation by relating it to a reference point.
- 2 Perkins (1983: 140) and Coates (1983: 146) argue that *may* and *might* indicate the same meaning and can be used interchangeably without changes in the meaning of the sentence. For this reason, *may* and *might* will be used interchangeably in the test stories.
- 3 The aspectual marker *lææw*⁴ ‘already’ behaves differently from other aspectual markers. When it occurs in a statement with an epistemic modal, which can be used in both epistemic and deontic senses like *tɔɔŋ*³ ‘must’, *khuan*¹ ‘should’, *naa³tɕa²* ‘be likely’, it does not force epistemic reading for these modals. Based on this point, one may argue that the deontic meaning of these modals are more obvious than their epistemic meaning. Hence, *tɔɔŋ*³ ‘must’, *khuan*¹ ‘should’, *naa³tɕa²* ‘be likely’ are weak epistemic modals.

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