Aspect and Modality of yinggai

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The paper investigates the semantic constraints on the interpretation of the modal auxiliary yinggai in Chinese. It shows that both situation aspect and aspect markers can restrict its interpretation, but temporal adverbials cannot. It argues that the aspect markers can restrict the interpretation of yinggai by affecting the addressee’s presupposition about the settledness of a relevant situation; temporal adverbials do not necessarily alter the interpretation of yinggai because yinggai can either scope over or fall within the scope of a temporal adverbial it appears with, depending on the situation aspect of the modal predicate.

1. Introduction

The Chinese modal auxiliary verb yinggai can express epistemic possibility and deontic necessity. As an epistemic modal, yinggai means that the speaker is almost certain about the occurrence of a situation. The epistemic judgment the speaker arrives at is usually based on relatively objective circumstance or situation which may or may not be explicitly stated (Tsang 1981, Li 2004, and others). For example,

(a) Zhe huir ta yinggai zai jia ne.
   now he should at home NE.
   He should be at home now.

(b) Taiyang xia shan le, ta yinggai dao-LE jia le. (adapted from Li 2004: 145)
   sun fall hill LE he should get PERF home LE
   The sun has set. He should have got home.

In (1a), the situation, based on which the assessment is made, is not stated but can be assumed as “as far as I know, he is often home at this time”. In (1b), this situation is explicitly expressed that “the sun has set” and it should be case that he got home.

As a deontic modal, yinggai expresses necessity arising from certain duty, custom, a body of law, or a set of moral principles, which do not have to be explicitly stated either. For instance,
(2) a. Ni yinggai duo chuan yi jian yifu, waimian kongpa hen liang. (Li 2004: 173)
   you should more wear a piece clothes outside I’m afraid very cool
   You should put on more clothes. It’s very cold outside, I’m afraid.

   b. Ta yinggai wei zhe jian shi fuze.
      he should for this CL matter responsible
      He should be responsible for this matter.

In (2a), “putting on more clothes” is necessary because it is cold outside; in (2b), the reason for why “he should be responsible” is not stated but can be inferred as “the facts or the situation suggest the necessity”.

While yinggai is not ambiguous in (1) and (2), regardless of whether or not the contextual information is provided, it is ambiguous in (3) and (4), as the translations show.

(3) Zhe ge wenti hen rongyi, xueshengmen yinggai hui huida.
   this CL question very easy students should know how to answer
   a. This question is very easy, (so) it is highly probable that the students can answer it.
   b. This question is very easy, (so) the students are supposed to be able to answer it.

(4) Wo shuo de hua, ni yinggai dong.
    I say DE word you should understand
    a. It is highly probably that you understand what I said.
    b. You are supposed to understand what I said.

The different modal meanings expressed by yinggai in (1)-(4) raise the question as to what factors other than context, if any, impact the interpretation of the modal. In this paper, I show that aspectual features of the situation within the scope of yinggai contribute to its interpretation. I also show that the perfective markers –le and –guo are always associated with the epistemic yinggai, because they can lead to the presupposition in the addressee that the situation within the scope of yinggai is settled.

The rest of the paper is organized as follows. Section 2 reviews previous linguistic analyses with regard to the interaction of temporality and modality; section 3 discusses the role of aspect in the interpretation of yinggai; section 4 concludes.

2. Temporality and modality

Linguistic analyses of the interaction of temporality and modality show that the interpretation of modal auxiliaries is “uniquely determined” or “at least severely restricted” by relevant temporal configurations (Laca 2008). Condoravdi (2001, 2003), for example, argues that a modal is epistemic when the situation expressed by the modal complement is in the past or present relative to the modal time; it may or may not be
epistemic when the situation is in the future of the modal time. Werner (2006) approaches the issue from a different perspective. He argues that the temporal location of the situation scoped within (English) epistemic modals may be past, present, or future, whereas that of (English) non-epistemic modals (e.g., deontic modals) is future. The relationship between the modality of a modal auxiliary and the temporality of the relevant situation is represented by (5a) and (5b) and exemplified by (6a) and (6b).

(5) a. Epistemic modals ← Past, Present
    b. Deontic modals → Future

(6) a. He may have won the game. (Epistemic)
    b. He may win the game. (Epistemic or Deontic)

In (6a), the modal complement with the perfect have is understood to express a past event, and so may is epistemic. In (6b), the event of winning the game is interpreted to be in the future, hence may can be epistemic or deontic.

Why is a modal epistemic when the temporality of the situation it scopes over is non-future? This, according to Condoravdi (2001), is because whether a modal is epistemic depends on whether a relevant issue is presupposed to be settled or not; settledness is always presupposed when the relevant issue is located in the past or present with respect to the modal time. For instance,

(7) a. He might have the flu (now).
    b. He might have won the game (yesterday).

In (7a), the state of his having the flu is located in the present time. The speaker knows the issue of whether he has the flu is settled, but he/she does not know in which way it is settled. Similarly, in (7b) whether he won the game yesterday is already settled, but the speaker does not know how it is settled. In both sentences, the settledness of the relevant non-future situation leads to the epistemic interpretation of might.

The relationship between temporality and modality shown in (5) seems to correctly predict the reading of yinggai in (8) and (9), but not that in (10) and (11).

(8) Ta yinggai shi zuotian lai de. (Epistemic)
    he should SHI yesterday come DE
    It should be yesterday that he arrived.

(9) Ni yihou yinggai shi ge hao haoshi. (Epistemic/Deontic)
    you in the future should be CL good teacher
    You should be a good teacher in the future.
In (8), the event of his coming happened yesterday, so *yinggai* is epistemic. In (9) his being a good teacher is located in the future by the adverbial *yihou* ‘in the future’, so both epistemic reading and deontic reading are possible with *yinggai*, although the epistemic reading is preferred when out of context. (10) contains a past time adverbial *zuotian* ‘yesterday’, but contrary to our expectation, *yinggai* expresses deontic (and counterfactual) modality. In (11), the event of his coming is located in the future by the future modal *hui* ‘will’, and yet *yinggai* only has the epistemic reading rather than both. (10) and (11) suggest that temporality is not the sole factor that decides the interpretation of *yinggai* in a sentence. In next section, I will show that the aspectual information conveyed by the complement of *yinggai* contributes to its interpretation as well.

3. Aspect and the modality of *yinggai*

3.1. Situation types and the modality of *yinggai*

We have seen in (8) and (9) that the temporal location of the situation in the scope of *yinggai* restricts its interpretation. We have also seen that temporality of the relevant situation alone is not sufficient to explain the interpretation of *yinggai* in (10) and (11). In this section, I will show that the interpretation of *yinggai* varies with whether the relevant situation is stative or eventive.

*Yinggai* can be either epistemic or deontic when it is before a verb phrase expressing a stative situation, even though the epistemic one is often preferred in out of blue context. For instance, *yinggai* in (12) and (13) takes the stative predicates *zhidao* ‘to know’ and *hen mei* ‘very beautiful’ respectively and expresses epistemic modality and deontic modality in both sentences.

(12) ta *yinggai* zhidao zenme chuli zhe jian shi.  
He should know how to handle this CL matter  
He should know how to handle this matter.

(13) Nar de chuntian *yinggai* hen mei.  
There DE spring should very beautiful  
Spring should be very beautiful there.

*Yinggai* only has a deontic reading when it is before a verb phrase expressing an eventive
situation except in a few cases to be discussed in (20). For instance, in (14) and (15) below, yinggai taking an eventive predicate is deontic.

(14) Ta yinggai gei mama da ge dianhua.
    He should to mum make CL call
    He should call his mum.

(15) Wo yinggai zao dianr likai.
    I should earlier leave.
    I should leave earlier.

Adding a temporal adverbial to sentences like (12)-(15) does not alter the reading of yinggai: it is still ambiguous with stative predicates, but unambiguous with eventive predicates.

(16) a. dangshi ta yinggai zhidao zenme chuli zhe jian shi.
    At that time he should know how to handle this CL matter
    a. He probably knew how to handle this matter at that time.
    b. He is supposed to know how to handle this matter at that time.

    b. xianzai ta yinggai zhidao zenme chuli zhe jian shi.
    now  he should know how to handle this CL matter
    a. He probably knows how to handle this matter now.
    b. He is supposed to know how to handle this matter now.

    c. yihou ta yinggai zhidao zenme chuli zhe jian shi.
    In the future he should know how to handle this CL matter
    a. He probably will know how to handle this matter in the future.
    b. He is supposed to know how to handle this matter in the future.

(16a) is modified by the past time phrase dangshi ‘at that time’; (16b) is modified by the present time phrase xianzai ‘now’; and (16c) by the future time phrase yihou ‘in the future’. Yinggai in all three sentences takes a stative predicate and expresses the speaker’s epistemic judgment or the deontic necessity of a situation, as the translations illustrate. The reading of yinggai with eventive predicates cannot be changed by temporal adverbials either. For example, yinggai in (17a)-(17c) below is deontic regardless of the time adverbials it appears with.

(17) a. Zuotian ta yinggai gei mama da ge dianhua.
    Yesterday he should to Mom make CL call
    He should have called his Mom yesterday.
b. **Xianzai** ta *yinggai* gei mama da ge dianhua.
   He should call his mum now.

   c. **Mingtian** ta *yinggai* gei mama da ge dianhua.
   He should call his mum tomorrow.

However, adding an aspect marker or a future modal auxiliary to the modal predicate can change the interpretation of *yinggai* in (12)-(15).

(18) a. ta *yinggai* zhidao –*le*  zenme chuli zhe jian shi.
   He should know PERF how to handle this matter
   He should know how to handle this matter now.

   b. Nar de chuntian *yinggai* hui hen mei.
   Spring should be very beautiful there.

(19) a. ta *yinggai* gei mama da –*guo/-le* dianhua le.
   He should have called his mum.

   b. ta *yinggai* zai gei mama da (-*zhe*) dianhua.
   He should be calling his mum (now).

   c. ta *yinggai* hui gei mama da dianhua.
   He should call his mum.

In (18a), the perfective marker –*le* suffixing to the stative verb *zhidao* ‘to know’ indicates a change of state. *Yinggai* in (18a) is epistemic, expressing the speaker’s conjecture that the change of state from “not knowing” to “knowing” took place in the past. In (18b), the future modal *hui* appears before the stative predicate *hen mei* ‘very beautiful’, making *yinggai* epistemic only. In (19a), the eventive verb phase after *yinggai* contains the perfective marker –*guo/-le*. *Yinggai* in this sentence is epistemic not deontic, expressing the speaker’s judgment about the possibility of the occurrence of a past event. In (19b), the verb phrase after *yinggai* takes the progressive marker *zai*, which presents the relevant situation as ongoing. Since the aspecual feature of an ongoing event resembles a state,
both epistemic reading and deontic reading is possible with (19b), with epistemic reading being primary. In (19c), yinggai is followed by the future modal auxiliary hui ‘will’, only expressing epistemic modality.

It should be pointed out, however, that yinggai scoping over a zero-marked eventive predicate expressing a future event may be epistemic when occurring in an epistemic environment that may or may not be overtly marked. For example,

(20) a. ta yinggai qu ba.
   He should go BA.
   He probably will go.

b. ta keneng bu hui huilia le, yinggai zhijie zai Shanghai zuo biye sheji le.
   She may not will return LE should directly in Shanghai do graduation design LE
   She may not come back. She should do her graduation project in Shanghai right away.

c. eluosi guji kuai de hua, yinggai zai liang nian zhinei rushi.
   Russia estimate if soon should two year within join WTO
   It is estimated that Russia should join WTO in two years, if not sooner.

d. An jihua, ta yinggai mingtian dao.
   According to schedule, he should tomorrow arrive
   According to the schedule, he should arrive tomorrow.

In (20a)-(20d), yinggai takes an eventive predicate, which expresses a future event, and obtains an epistemic reading. At the same time, yinggai in all four sentences of (20) appears in an epistemic context, which is either overtly marked with the sentence final marker ba (20a) or sentence final le (20b), both of which can express the uncertainty on the part of the speaker toward a state of affaire (Lü 1980, Zhu 1982, Tsang 1981, among others), or with the epistemic modal keneng ‘may’ (20b) or the epistemic verb guji ‘to estimate’ (20c). The epistemic context in (20d), which expresses a scheduled future event, is not marked by any explicit epistemic expressions. The availability of the epistemic reading of yinggai in (20a)-(20d) may due to that the future modal hui is assumed in the interpretation, although its presence is not required in an epistemic context. Since hui does not actually appear in the modal predicate, the deontic reading is not precluded from the above sentences. For example, (20a) with the particle ba can either express the speaker’s uncertainty about whether the event of his going will happen in the future, or about whether the event of his going is necessary. Yinggai is epistemic on the first reading but deontic on the second reading.

So far, we have seen that the modality of yinggai varies with the types of situation it scopes over. It is either epistemic or deontic with a stative predicate, with the former
being primary; it is deontic with an eventive predicate. The default interpretation can be overridden by the presence of an aspect marker or a future modal auxiliary in the modal predicate, but not by a temporal adverbial. I will discuss why this is the case in the following sections.

3.2 Temporal adverbials and the modality of yinggai

As shown in (16) and (17) above, time phrases do not change the meaning of yinggai. In particular, past and present time phrases do not cancel the deontic reading of yinggai with stative predicates, as in (16a) and (16b); they do not add epistemic reading to yinggai with eventive predicates either, as in (17a) and (17b). At first sight, the facts seem to contradict the relationship between temporality and modality shown in (5) and copied below, but a closer look reveals that they are, in fact, in accordance with them.

(5)  

a. Epistemic modals ← Past, Present (i.e., Non-future)  
b. Deontic modals → Future

The reason why past and present adverbials cannot change the interpretation of yinggai is because the temporal adverbials appearing with yinggai can either modify the situation within the scope of yinggai or the modal time of yinggai itself, depending on the modality of yinggai, which is constrained by the situation types expressed by the modal predicates. The temporal adverbial restricts the time of the relevant situation when yinggai is epistemic; it restricts the time of yinggai when it is deontic. In other words, temporal adverbials scope under epistemic yinggai, but scope over deontic yinggai. Since yinggai can be epistemic or deontic with stative predicates, the past adverbial added to (16a) can either locate the state in the past, leading to the epistemic reading, or locate the modal time of yinggai in the past, leaving the deontic reading unchanged. The same is true of the past adverbial in (17a) where yinggai takes an eventive predicate. Yinggai with an eventive predicate is deontic, so the past time adverbial modifies yinggai rather than the eventive predicate. As a result, the relevant event is not in the past but in the future of the deontic yinggai that situates in the past with the past adverbial. The same account applies to the present and future adverbials in (16b-c) and (17b-c).

3.3. Perfective markers and settledness

We saw from (16)-(19) that a temporal adverbial is insufficient to change the reading of yinggai. A perfective marker or a future modal auxiliary, e.g., hui ‘will’, is needed to remove the deontic reading of yinggai with stative predicates or make yinggai with eventive predicate epistemic. While the imperfective markers zai and zhe in (19b) allow both readings of yinggai by rendering the relevant event into a state-like situation, the perfective markers –le and –guo in (18a) and (19a) and the future modal hui in (18b) and (19c) completely erase the deontic reading. In this study, I will limit the discussion to the function of –le and –guo in the interpretation of yinggai. I show that the perfective
markers in the modal predicate can lead to the presupposition that the situation expressed by the predicate is settled, and so the epistemic reading of yinggai. As Condoravdi (2001) pointed out, whether a modal is epistemic depends on whether the relevant issue is presupposed to be settled or not, and a non-future situation is always presupposed to be settled. Given that yinggai can only be epistemic when the eventive predicate contains a perfective marker, we may say that an event marked by a perfective marker is always presupposed to be settled. Such a presupposition is reached via the “relative past” meaning of the perfective markers. Before we move to the function of –le and –guo, let us briefly review Condoravdi’s (2001) analysis of the English perfect have occurring after a modal, since it behaves very much like –le and –guo.

(21) He may/should have won *tomorrow/now/yesterday.

In (21), the event of his winning is in the past when the modal is followed by the perfect have. Condoravdi (2001) argues that the backward shifting reading in (21) is ascribed to the semantics of the perfect have, which can shift the local time of the situation within its scope to a time interval preceding the interval denoted by the modals, which is [now, _) by default.

Chinese –le and –guo can express “past” relative to a reference time (Ross 1994, Lin 2006). Following Condoravdi’s analysis, we can say that the perfective markers in the modal complement of (18a) and (19a), just like English perfect have, can locate the situation (or the change of situation) expressed by the complement in a time interval before the modal time “now”. As a result, the relevant situation, which is located in the past by -le/-guo, is presupposed to be settled, so yinggai is epistemic. However, this account needs modification to handle yinggai in (22), in which it is epistemic even though the situation marked by –le is in the future of the modal time “now”.

(22) Mingtian zhe ge shihou, ta yinggai dao –le. Tomorrow at this time he should arrive PERF He should have arrived at this time tomorrow.

In (22), the event marked by –le is after the speech time and before the future time “this time tomorrow”, yet yinggai only has the epistemic reading. This contradicts the claim that a modal can be epistemic or deontic when the relevant situation is in the future. We can save the account by claiming that a situation marked by –le or –guo is presupposed to be settled as long as the situation is located in the past relative to a reference time, which does not have to be the speech time. That a situation marked by –le or –guo is presupposed to be settled is also supported by the fact that –le and –guo do not appear with non-epistemic modals, as shown in (23).
(23) a. Ni dei qu (*–le*/–guo) tang Beijing.
   You have to go (PERF) CL Beijing.
   You have to make a trip to Beijing.

   b. wo xiang kan (*–le*/–guo) dianying.
   I want to watch (PERF) movie
   I want to watch movie.

(23a) contains the deontic modal dei ‘have to’; (23b) contains the dynamic modal xiang ‘want to’. Both sentences are ill-formed when a perfective marker is suffixed to the verb after dei and xiang. This is because the non-epistemic modals require the situation within their scope to be unsettled, whereas –le and –guo make the same situation settled. However, (24) below seems against the proposal, where yinggai with stative predicates marked with the perfective –le can be deontic.

(24) a. tamen zhijian yinggai you –le yixie liaojie.
   They between should have PERF some understanding
   a. They probably got to know each other (already).
   b. They are supposed to know about each other (now).

   b. Xiangshan de hong ye yinggai hong –le.
   Xiangshan DE red leave should red PERF
   a. Red leaves in Xiangshan probably turned red (already).
   b. Red leaves in Xiangshan are supposed to be red (now).

In (24a) and (24b), the stative verbs after yinggai take the perfective marker –le, and therefore obtain an inchoative reading, indicating a change of state. Given the above analysis of -le, we would expect that yinggai in both sentences cannot be deontic. However, this is not the case, as the translations illustrate. (24a) and (24b) are, in fact, not counterexamples. Take (24b) for example. -Le indicates that the change of state from “not red” to “red” is in the past and is settled, thus the epistemic reading (a). At the same time, the resulting state of the change is located at the present time, i.e., “leaves are red now”. Focusing on the current state of leaves’ being red rather than the state change itself makes the deontic reading (b) possible.

One remaining question is why the imperfective markers zai and –zhe, in contrast with the perfective markers –le and –guo, cannot mark the settledness of a situation, even though they can locate a situation in a time interval overlapping a reference time. For example, in (19b) the complement of yinggai contains zai and -zhe, which can locate the situation expressed by the modal complement in the present time. Therefore, the relevant situation should also be presupposed to be settled, resulting in the epistemic reading only. However, yinggai can be epistemic or deontic in the sentence. This shows that
imperfective markers and perfective markers behave differently in the modal environment. I will leave this topic to future research.

4. Conclusion

The modality of *yinggai* is largely restricted by the aspectual features of the situation within its scope. *yinggai* is epistemic or deontic with stative situations; it is deontic with eventive situations. The deontic interpretation of *yinggai* can be canceled by the perfective markers –*le* and –*guo*, but not by temporal adverbials. This is because the perfective markers can lead to the presupposition in the addressee that the situation expressed by the modal predicate is settled by locating the situation in the past of a reference point, which is not necessarily the modal time, removing the deontic reading. In contrast, a time adverbial does not necessarily modify the situation within the scope of *yinggai*. It either modifies the situation or the modal time, depending on the situation type of the relevant situation.

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