

Research Article

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The cartographic syntax of *Lai* in Mandarin Chinese

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Abstract: This study provides the first comprehensive analysis of the Mandarin particle *lai* across its diverse syntactic structures and functions, with a particular emphasis on its interaction with the verb phrase (VP). The study examines three distinct constructions of *lai*, within the Cartographic Theoretical framework: (1) preverbal *lai* (*lai*₁), (2) sentence-final particle *lai* (*lai*₂), and (3) *lai* + VP + *lai* (*lai*₃). Data from various sentence types reveal that spatial *lai*₁ indicates physical displacement, while non-spatial *lai*₁ functions as an aspect marker. Sentence-final *lai*₂ denotes both physical and abstract displacement, whereas *lai*₃ combines a focus-marking function with the marking of physical movement. Syntactically, spatial *lai*₁ occupies the head of VP, non-spatial *lai*₁ is located at AspP₁, sentence-final *lai*₂ is positioned at the head of the Event Phrase, and *lai*₃ moves from the Event Phrase to the head of the Focus Phrase for feature checking. The study offers a holistic view of syntactic structures and functions of *lai*, particularly in VP combinations, and provides a foundational reference for future research on Mandarin particles.

Keywords: *Lai*, sentence-final particle, Cartography, Mandarin, syntactic property

1 Introduction

In Mandarin, the deictic particle *lai* can appear in preverbal and sentence-final positions as shown in examples (1), (2), (3), (4), and (5), which are the focus of this article's discussion.

- (1) Wo lai huida zhege wenti.
I lai₁ answer this question.
Let me answer this question.
- (2) Lisi mai-le yidaner mi lai.
Lisi buy-PFV some rice lai₂.
Lisi bought some rice.
- (3) Ta jing xia xin lai₂.
He quiet down heart lai₂
he quieted his mind.

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- (4) Ta chang qi ge lai₂
 He sings rise song lai₂
 He started singing.
- (5) Ni lai₁ shuo ji ju lai₃.
 You lai₁ say a few words lai₃
 You come to say a few words.

Three constructions involving *lai* will be examined. In the first construction, *lai* precedes the verb phrase (VP), as shown in (1) (herein referred to as *lai*₁, for convenience). In the second construction, *lai* follows the VP and appears in sentence-final position, as shown in (2), (3), and (4) (herein referred to as *lai*₂). In the third construction, *lai* occurs in a *lai*+VP+*lai* structure as shown in (5) (herein referred to as *lai*₃).

Although both *lai*₂ and *lai*₃ follow a VP and appear in the sentence-final position, they are distinct.

Syntactically, *lai*₂ and *lai*₃ behave differently. *Lai*₂ cannot be replaced by discourse markers, as demonstrated in (6), whereas *lai*₃ can, as shown in (7).

- (6) *Ta jing-xia xin ba.
 He calm-down heart SFP
 He calmed down.
- (7) Ni lai₁ shuo ji ju ba.
 You lai₁ say a few words SFP
 You come to say a few words.

Another important distinction lies in omissibility: while *lai*₂ is obligatory and cannot be omitted without affecting grammaticality (8), *lai*₃ is optional and can be dropped without causing ungrammaticality (9).

- (8) ? Ta jing-xia xin.
 He calm-down heart
 He calmed down.
- (9) Ni lai₁ shuo ji ju.
 You lai₁ say a few words
 You come to say a few words
 Lastly, consider the following contrast between (10) and (11):
- (10) a. Lisi mai-le yidaner mi lai₂.
 Lisi buy-PFV some rice lai₂
 Lisi bought some rice.
 b. Lisi mai-lai-le yidianer mi.
 Lisi buy-come-PFV some rice
 Lisi bought some rice.
- (11) a. Ni lai₁ shuo ji ju lai₃
 You lai₁ say a few words lai₃
 You come to say a few words.
 *b. Ni lai₁ shuo-lai ji ju.
 You lai₁ say-come a few words
 You come to say a few words.

In (10), both *mai-le yidaner mi lai*₂ (bought some rice) and *mai-lai-le yidianer mi* (bought some rice) are grammatical. However, in (11), while *lai*₁ *shuo ji ju lai*₃ (come to say a few words) is grammatical, *lai*₁ *shuo-lai ji ju* (come to say a few words) is ungrammatical.

Although both *lai*₂ and *lai*₃ occur in sentence-final position, these differences indicate that they belong to distinct syntactic categories. Their semantic and pragmatic properties will be further examined in the following sections.

Lai in constructions such as *VP₁+lai+VP₂*, *PP+lai+VP*, and *dao +O+ lai+VP* is not within the scope of this research (examples (12), (13), and (14)).

- (12) Tamen kai hui lai taolun zhege wenti
 They have meeting lai discuss this question
 They have a meeting to discuss this question

- (13) Ta yong gangbi lai xie zi
 He with pen lai write character
 He writes with a pen.

- (14) Tamen dao Beijing lai diaocha zhe shi
 They to Beijing lai investigate this thing
 They come to Beijing to investigate this thing.

Regarding the syntactic structures and functions of *lai*_i, Hu (2022) and Fan (2014) propose that *lai*_i functions as a verb, forming a serial verb construction. Zhang and Wan (2015) argue that *lai*_i is a lexical predicate, suggesting that in *lai*₁+VP+*lai*₃, *lai*_i serves as the main verb, retaining the [+displacement] feature and conveying a concrete sense of displacement. Following their analysis, the syntactic structure for (15) would be as shown in (16):

- (15) Ta lai₁ chi fan lai₃
 He lai_i eat rice lai₃
 He is coming to eat.

- (16) [_{TP}ta_i.... [_{VP}[_{DP} t_i][_{VT}[_{V1}lai₁][_{VP} PRO_i [_{V'}[_V chi][_{NP} fan]][_{VP2} lai₃]]]]]]¹

Alternatively, some studies suggest that *lai*_i functions as an auxiliary verb and occupies a functional head position in the syntactic structure (Zhang 2003, 2020, Wu 2023). Wu (2023) argues that non-spatial *lai*_i indicates a prospective aspect and that non-spatial *lai*_i and spatial *lai*_i are distinct syntactic heads. The position of non-spatial *lai*_i is higher than that of spatial *lai*_i. Wu (2023) proposes that non-spatial *lai*_i is located in the head position of the Nonspatial Deictic Phrase (NDeicP) due to its aspectual function. The deictic verb in this position signifies movement associated with the event expressed by the VP. In the case of non-spatial *lai*_i, the event is regarded as the goal of the movement.

The NDeicP is positioned below ModP, as non-spatial *lai*_i appears after the modal verb, as illustrated in (17). The corresponding syntactic structure is represented in (18).

- (17) wo keyi lai₁ chuli zhe-jian shi.
 I can non-spatial lai₁ handle this-CL matter
 I can handle this matter.

- (18) [TPwo_i [T'[Tense] [_{ModP} [_{Mod}keyi] [NDeicP [NDeiclai₁(non-spatial)] [_{VP}t_i [_V [_v chuli]_j] [_{VP} [_V [_v t_j] [NP zhe-jian shi]]]]]]]]]]

In addition, Wu (2023) assumes that NDeicP is positioned higher than AspP. If the aspectual marker cannot affix to spatial *lai*_i when spatial *lai*_i occupies a functional head higher than AspP, Zhang (2003) proposes that the spatial *lai*_i is indeed higher than AspP. The syntactic structure for (19) is represented in (20):

¹ In (16), *Lai*_i serves as the main verb, taking *PRO chi fan (eating) lai*₃ (VP) as its complement. Within the complement VP, *chi* (eat) functions as the main verb, while *lai*₃ attaches to the intermediate structure (*V'*) to further specify *chi fan* (eating). The subject PRO of the complement VP is controlled by the matrix subject *ta* (he) and refers to the same entity.

- (19) Ta lai zhao-guo ni.
 He spatial lai₁ seek-EXP you
 He has already come to look for you.

- (20) [_{TP}Ta_i[_T[Tense]] [_{FP}[_Flai₁(spatial)]] [_{AspP} [_{Asp} Zhao-guo] [_{vP}t_i [_{v'} [_v] [_{VP} [_{v'} [_{vtj}] [_{NP}ni]]]]]]]]]²

Building on Zhang (2003), Wu (2023) further argues that since non-spatial *lai*₁ is positioned higher than spatial *lai*₁, it must also be higher than AspP. This suggests that NDeicP is structurally higher than AspP.

However, in Zhang's (2003, 2020) analysis, she treats spatial and non-spatial *lai*₁ as the same functional head, which differs from that of Wu (2023), who considers spatial *lai*₁ and non-spatial *lai*₁ as distinct heads.

Given these two main approaches to the syntactic structure and function of *lai*₁, we wonder which approach should be the right one to account for the syntactic properties of the *lai*₁ under a cartographic theoretical framework (Rizzi 1997, 2004, Cinque 1999; among many others).

For the function and syntactic structure of *lai*₂, most researchers (Chao 1968, Tang 1979, Xu 1983) classify it as an auxiliary, though there is no consensus on its precise functions. Regarding *lai*₂'s syntactic structure and its occurrence in sentence-final position, Wu (2023) argues that *lai*₂ is a base-generated functional head positioned lower than IP, with the VP preceding it in linear order moving to a higher position. Building on these foundational and insightful analyses, we aim to explore the specific function of *lai*₂ and its precise syntactic position within the cartographic theoretical framework (Rizzi 1997, 2004, Cinque 1999, among others).

For *lai*₃, Zhang (2020) proposes that *lai*₃ is a verb, expressing displacement orientation, occupying the head position of VP. Liang (2007) argues that *lai*₃ is an aspectual expression. In light of their insightful proposals, we investigate the function and syntactic position of *lai*₃, attempting to combine the two different ideas.

Although *lai*₁, *lai*₂, and *lai*₃ have been examined in numerous studies, including those by Xu (1983), Xing (1996), Xing (1998), Zhang and Wan (2015) and Hu (2022), no comprehensive analysis has been conducted on their full range of uses and syntactic structures when combined with a VP. Existing studies have mostly focused only on specific usages, leaving the shared properties among *lai*₁, *lai*₂, and *lai*₃ largely unexplored.

This article aims to address two research questions: (i) the functions of *lai*₁, *lai*₂, and *lai*₃; (ii) the syntactic positions of the pre-VP *lai*₁ and the sentence-final *lai*₂ and *lai*₃ within the cartographic theoretical framework. For the first question, it will be argued that spatial *lai*₁ functions as a lexical verb, introducing an additional locative argument and indicating physical movement, while non-spatial *lai*₁ serves as an aspect marker. *Lai*₂ functions to indicate displacement, either physically or abstractly, while *lai*₃ functions both as a focus marker and as an indicator of physical movement. Regarding the second question, spatial *lai*₁ occupies the head of VP, while non-spatial *lai*₁ is base-generated in the head position of AspP₁, between MP_{deontic} and vP. Additionally, it will be argued that sentence-final *lai*₂ is the head of the Event Phrase, and *lai*₃ is base-generated in the head of the Event Phrase and subsequently moves to the head position of FocusP for feature checking.

This article is structured as follows: Section 2 introduces the Cartographic and Light Verb theories. Section 3 examines the functions and syntactic position of *lai*₁, followed by Section 4, which explores the functions and syntactic positions of *lai*₂ and *lai*₃. Finally, Section 5 presents the conclusion.

2 Theoretical framework

2.1 Cartography

Cartography aims to create detailed maps of syntactic configurations. In posit that “syntactic structures are uniform, locally simple and both necessary and sufficient to structurally represent the grammatical or functional information relevant for semantic/pragmatic interpretation” (Shlonsky 2010, 417).

² In (20), *F* indicates that *lai*₁ functions as a functional head, while FP represents a functional phrase. The *lai*₁ in (20) carries a spatial interpretation, distinguishing it from the *lai*₁ in (17), which conveys a non-spatial meaning.

Rizzi (1997) is regarded as the first to conduct a cartographic analysis of the CP domain, or the Left Periphery, which is the region between the Complementizer Phrase (CP) and the Inflectional Phrase (IP). According to Rizzi (1997), the topic and focus elements in human language are organized in the Left Periphery, with the linear order as follows:

(21) FORCE (TOP*) FOC (TOP*) FIN

In this structure, the “*”, which can be placed above or below the focus, indicates that the topic can recursively appear. However, Benincà and Poletto (2004) argue that topics should be excluded after focus, as the recursion of functional projections of the same type is not a viable option in natural languages. Instead, they propose that the topic should be positioned higher than the focus.

In this study, we follow Benincà and Poletto (2004), assuming that no topic appears after focus, as illustrated in (22):

(22) FORCE TOP FOC FIN

In this direction, Cinque (1999) analyses adverbial phrases (AdvP), arguing that they follow a strict hierarchical order rather than merely serving as modifiers of the sentence or predicate. He contends that adverbial phrases should not be treated as adjuncts but rather as specifiers of various functional phrases.

Beyond SFPs in Chinese, Tsai (2010, 2015) applies the Cartographic Approach to Chinese modals and proposes their syntactic positions as follows:

(23) [_{MP3} epistemic [_{TP} Subject [_{T'} T [_{MP2} deontic [_{VP} v [_{MP1} dynamic [_{VP} V ...

In light of these studies, we will try to find out the syntactic position of preverbal and sentence-final *lai* by exploring the linear order, co-occurrence limitation, and other interactions between other elements such as modals, SFPs, and other components with *lai*.

2.2 Light verb theory

In this article, light verb theory is employed to analyze the syntactic position of the *lai* in conjunction with Cartography Theory. Huang (1997) and Lin (2001) propose that verbs can be divided into two components: a light verb and a verb root. The light verb, which carries minimal semantic content and is shared across many verbs, functions similarly to a functional category or auxiliary verb, typically taking a VP as its complement (Huang 2008).

Phonologically, light verbs may exist only as affixes or may lack phonological content entirely, requiring support from the verb root, which moves to the head position to establish the surface word order (Huang 2008).

Light verbs serve as eventuality predicates, including DO, CAUSE, BECOME, OCCUR, BE, and HOLD, determining event structure types, assigning external arguments, and selecting VP complements.

The realization of light verbs differs across languages. In Chinese, light verbs are expressed at the syntactic level, meaning they are not part of the verb's inherent semantic structure. In contrast, in English, light verbs are realized at the lexical level, meaning they are already incorporated into the verb's semantic structure (Huang 1997, Lin 2001). Multiple eventuality predicates can be nested within a sentence. The verb root, projecting as VP, acts as the complement to the eventuality predicate, with different verb types aligning with specific predicates (e.g., activity verbs with DO, inchoative verbs with BECOME/OCCUR, stative verbs with BE/HOLD, and causative verbs with CAUSE) (Huang 1997).

Light verb theory will be adopted to explore the syntactic position of preverbal *lai*_i.

3 Analysis of *lai* in Mandarin Chinese

3.1 Analysis of preverbal *lai*_i

In this section, the preverbal *lai*_i's function and syntactic position are investigated.

3.1.1 Function of *lai*_i

For *lai*_i, it can be classified into two types. In the first type, it has physical spatial reading, implying the agent moving from one position to another position as shown in (19). In the second type, *lai*_i has no physical spatial reading as shown in (17).

Some researchers distinguish between the non-spatial and spatial reading of *lai*_i, treating them as two distinct words with separate semantic functions (Zhu 1982, Xing 1998, Cao 2002, Lu 2006, Wu 2023, Mariko 2010). In contrast, other researchers argue that both readings of *lai*_i should be analyzed as a single lexical or functional item, maintaining a unified representation despite their interpretational differences (Zhang and Wan 2015, Zhang 2003, 2020). Below, we will follow the first opinion, taking spatial *lai*_i and non-spatial *lai*_i as two different words with the same pronunciation.

It is assumed in this research that *lai*_i should be treated as two different words for their different syntactic distribution. First, non-spatial *lai*_i cannot co-occur with the negative marker *meiyou* 'not', but spatial *lai*_i can, as in (24). Second, location NP can be located after spatial *lai*_i, but for non-spatial *lai*_i, it cannot, as in (25). Third, non-spatial *lai*_i cannot co-occur with Aspect Marker *le*, but spatial *lai*_i can, as shown in (26).

- (24) A. *Ni meiyou lai shuo ji ju ma?
 You no non-spatial *lai*_i say a few sentences SFP
 Don't you say a few words?
 B. Ni meiyou lai kan wo ma?
 You no spatial-*lai*_i see me SFP
 Don't you come to see me?
- (25) A. Wo lai Beijing kan ni.
 I spatial *lai*_i Beijing see you
 I come to Beijing to see you.
 B. Wo lai (zheer*) shuo ji ju
 I non-spatial *lai*_i here say a few words
 I will say a few words
- (26) A. Wo zuotian lai kan-le ni.
 I Yesterday spatial-*lai*_i see-aspect ni
 Yesterday, I came to see you.
 B. Wo lai shuo-le(*) ji ju
 I non-*lai*_i say- a words
 spatial aspect few
 I will say a few words

For non-spatial *lai*_i's semantic function, as stated above, many researchers have explored it. Zhang and Wan (2015) don't differentiate between spatial *lai*_i and non-spatial *lai*_i and argue that *lai*_i indicates displacement and purpose, where in some cases it represents physical displacement, as in (26a), while in other cases it signifies an abstract displacement in psychological space, bridging psychological distance, as in (26b).

Although Zhang and Wan (2015) analysis may capture some phenomena of *lai*_i in Mandarin, there is one major shortcoming. The *lai*_i may not necessarily be a displacement, indicating abstract or physical. Suppose

that (26b) is uttered by a leader who is making a speech; in this scenario, the leader doesn't use *lai_i* to bridge the psychological distance between him and the audience.

For spatial *lai_i*, we argue that spatial *lai_i* conveys physical displacement. Consider (27):

- (27) ta lai zheer kan ni.
 he spatial lai_i here see you
 He comes here to see you.

In (27), spatial *lai_i* indicates that the subject *ta* (he) is moving toward the speaker.

For non-spatial *lai_i*, Wang (2010) believes that it expresses the meaning of the near future. However, the near future meaning can be cancelled with the usage of the future modal verb *hui* 'will' as in (28).

- (28) Cong mingnian kaishi, wo hui lai
 From next year start, I modal non-spatial lai_i
 Fuze zhege xiangmu
 Take charge of this project
 From next year, I will start to take charge of this project.

In (32), there is no near-future implication. So non-spatial *lai_i* doesn't indicate near-future.

Lu (2006) indicated that the main semantic function of *lai_i*, which loses its sense of displacement and function as a restrictive focus marker. Xiong (2013, 2015, 2017) proposes that restrictive focus is positioned outside TP. Tsai (2015) argues that the future modal *hui* ('will') occupies the head position of T.

Considering both analyses, if non-spatial *lai_i* functions as a restrictive focus marker, it would logically be positioned higher than the future modal *hui* ('will') and the subject. However, this arrangement contradicts observed language patterns, as illustrated in (28). Wu (2023) also proposed that non-spatial *lai_i* conveys a prospective aspect. We adopt Wei's (2023) perspective in this article, assuming that non-spatial *lai_i* expresses a prospective aspect. Prospective aspect, as proposed by Comrie (1976), is an aspectual category that indicates a connection between the present state and a future event. While it functions similarly to the perfect aspect, which relates a past event to the present, the prospective aspect instead indicates a future event that holds present relevance, emphasizing an impending or anticipated action.

The different interpretations of spatial and non-spatial *lai_i* arise from their distinct syntactic positions, a point which will be further elaborated in Section 3. Maintaining that spatial *lai_i* denotes physical movement, while non-spatial *lai_i* indicates a prospective aspect.

3.1.2 Syntactic position of *lai_i*

3.1.2.1 Clausal layers

As mentioned in Section 2, the structural representation of a clause can be divided into three layers: the lexical layer, the inflectional layer, and the complementizer layer (Rizzi 1997). Cinque (1999) further argues that temporal adverbial phrases serve as specifiers of distinct functional projections that encode temporal information in the clause structure.

Consider the following examples (29) and (30), in which the temporal adverb *mashang* ('immediately') precedes both spatial *lai_i* and non-spatial *lai_i*, demonstrating that both types of *lai_i* are positioned below TP. In other words, they do not belong to CP.

- (29) Wo mashang lai shuo ji ju
 I immediately non-spatial lai_i say a few words
 I'll say a few words immediately.

- (30) Wo mashang lai kan ni
 I immedi- spatial see you
 ately lai₁
 I will come to see you immediately.

In the cartographic analysis of Chinese clauses presented in Tsai (2010, 2015), the hierarchical structure of the inflectional layer and lexical layer is shown in (31).

- (31) ... [_{MP3} epistemic [_{TP} Subject [_{T'} T [_{MP2} deontic [_{vP} v [_{MP1} dynamic [_{vP} V ...

Deontic modality in Mandarin can be realized as *keyi* ('can'). Example (32) shows that the non-spatial *lai₁* follows the deontic modal *keyi*, indicating that non-spatial *lai₁* is positioned lower than *MP₂*, a functional projection within the inflectional layer.³

- (32) Ni keyi lai huida zhege wenti ma?
 You can non-spatial *lai₁* answer this question SFP
 Can you answer this question?
 Moreover, non-spatial *lai₁* also precede light verb USE as shown in (33)
- (33) Ni lai qie zhe-ba dao
 You non-spatial *lai₁* cut this-CL knife
 You cut with this knife

In conclusion, the position of non-spatial *lai₁* is between *MP₂* and *vP*, placing it within the inflectional layer. For spatial *lai₁*, following Wu (2023), non-spatial *lai₁* is positioned higher than spatial *lai₁*, which means that spatial *lai₁* is also lower than the *MP₂*.

Spatial *lai₁* can also form an A-NOT-A question, as shown in (34):

- (34) Ni lai-bu-lai kan wo?
 You spatial *lai₁*-not-spatial *lai₁* see me
 Do you come to see me?

According to Tsai and Yang (2015) and Lu (2022), A-not-A questions can be classified into at least two types: lower A-not-A questions and higher A-not-A questions. Lower A-not-A questions systematically exclude frequency adverbs but can occur with temporal adverbs. The fact that sentence (35a) is incompatible with the frequency adverb *Changchang* ('frequently') and compatible with the temporal adverb *mingtian* ('tomorrow') provides strong evidence that it is a lower A-not-A question as shown in (35b):

- (35) a. *Ni changchang lai-bu-lai kan wo?
 You frequently spatial *lai₁*-not-spatial *lai₁* see me
 Do you come to see me frequently?
- b. Ni mingtian lai-bu-lai kan wo?
 You tomorrow spatial *lai₁*-not-spatial *lai₁* see me
 Do you come to see me tomorrow?

³ The reviewer suggested that the word order seems to derive from the fact that *lai* cannot be separated from the following verb, suggesting that it behaves like a compound. However, we have found that non-spatial *lai₁* can be separated from the following verb by the phrase *yong zhe ba dao* (use this knife), as shown in the following example. This demonstrates that word order can be used to test the relative position of non-spatial *lai₁* in relation to other functional heads.

- (1) Ni lai yong zheba dao qie rou.
 You non-spatial *lai₁* use this knife cut meat
 You cut the meat with this knife

Tsai and Yang (2015) and Lu (2022) further argue that in lower A-not-A questions, element A is base-generated within the lexical layer. Driven by the uninterpretable [*uV*] feature of the light verb *v*, the A element moves to the *v* position. Consequently, it can be deduced that the position of spatial *lai_i* is also within the lexical layer.

Based on the above discussion, we argue that spatial *lai_i* is within the lexical layer, whereas non-spatial *lai_i* occupies a position lower than dynamic modality (MP₂), higher than *vP*, within the inflectional layer.

3.1.2.2 Head of VP and AspP1

3.1.2.2.1 Head of VP

In this section, we examine the nature and function of the position *lai_i* occupies between MP₂ and *vP*. We propose spatial *lai_i* functions as the head of VP.

First, based on its function, spatial *lai_i* expresses displacement from the speaker's location to the listener's location. This suggests that sentences containing spatial *lai_i* inherently include an implied argument indicating location, which is licensed by *lai_i*, as shown in (36):

- (36) Wo lai Beijing kan ni.
I spatial *lai_i* Beijing see you
I came to Beijing to see you.

Elements in a sentence that can introduce lexical arguments include lexical verbs, light verbs, and prepositions.

Second, the A-not-A test supports the classification of spatial *lai_i* as primarily a lexical verb (Paul 2008), as demonstrated in (37):

- (37) Ni lai -bu – lai Beijing kan wo? (A-not-A sentence)
You spatial *lai_i* -not -*lai_i* Beijing see me
Do you come to see me or not?
The syntactic structure of (38) is as shown in (39)

- (38) Wo lai Beijing kan ni
I spatial *lai_i* Beijing see you
I will come to Beijing to see you

- (39) [_{TP}Wo_i [_T] [_{VP}t_i [_V [_{Do}+spatial *lai_i*]_{VP} Beijing [_V t_j]_{VP} PRO_i kan ni]]]]]

Since spatial *lai_i* must to be used with highly agentive verbs, the presence of a subject-selecting light verb DO is required in (43). The verb *lai_i* ('come') incorporates into DO, leaving the locative NP (*Beijing*) in place, resulting in the surface structure shown in (43). The subject PRO of the complement VP is controlled by the matrix subject *ta* (he) and co-references it.

For non-spatial *lai_i*, it functions as a prospective aspect marker. Wu (2023) proposes that it is in the head position of Non-Deictic Phrase between *vP* and TP. And in the previous section, we have also demonstrated that the position of non-spatial *lai_i* is between MP₂ and *vP*, within the inflectional layer. Here, we adopt a three-layered analysis of aspectual projections, as portrayed in the studies by Tenny (2000), Shu (2003), Liao (2004):

- (40) [TP T [AspP1 Asp1 [vP V [Asp2P Asp2 [VP V-Asp3]]]]]

Regarding its aspectual role, non-spatial *lai_i* cannot co-occur with Asp1 markers such as *-guo*, as shown in (41). However, it precedes Asp3-*zhe*² in (42). Since it is situated within the inflectional layer, we propose that non-spatial *lai_i* occupies the head position of AspP1.

- (41) (*) Wo lai shuo-guo ji ju
 I lai₁ say-Asp1 a few words
- (42) Wo lai kan(first tone)-zhe² ta
 I lai₁ watch-Asp3 him
 I will watch him

The incompleteness effect of (43) can also prove that non-spatial *lai*₁ is lower than T syntactically, according to Xiong (2020).

- (43) Wo lai xiang banfa
 I lai₁ figure out solutions
 I will figure out solutions

The syntactic position of non-spatial *lai*₁ is as shown in the following diagram:

[_{MP3} epistemic [_{TP} Subject [_T T [_{MP2} deontic [_{AspP1} non-spatial *lai*₁ [_{VP} v [_{MP1} Modal^{Dyn} [_{VP} V ...

If the proposed analysis is correct, then, following Rizzi's (1997) framework of clausal layers, non-spatial *lai*₁ should belong to the inflectional layer, while spatial *lai*₁ should be part of the lexical layer.

3.2 Analysis of sentence-final particle *lai*₂ and *lai*₃

In this section, the semantic meaning and syntactic position of sentence-final *lai*₂ and *lai*₃ will be explored.

3.2.1 Functions of sentence-final particle *lai*₂ and *lai*₃

For *lai*₃, it occurs in the *lai*₁+VP+*lai*₃ structure, as shown in (44). Zhang and Wan (2015) argues that *lai*₃ in this structure functions as a directional verb, implying physical displacement. A directional verb cannot be omitted from the sentence; otherwise, the entire displacement event would be incomplete, as illustrated in example (45). However, in the *lai*₁+VP+*lai*₃ structure, as shown in example (46), the deletion of *lai*₃ does not affect the legality of the sentence, and the overall expression is not significantly impacted. Furthermore, as Wu (2023) argues, the main verb can be affixed with an aspectual marker, but *lai*₃ cannot. Therefore, *lai*₃ should not be regarded as a lexical verb.

- (44) lai chi fan lai.
 lai₁ eat rice lai₃
 come to eat
- (45) A. waiguoren lai zhongguo
 Foreigner come China
 Foreigners come to China
 B.* Waiguoren zhongguo
 Foreigner China
- (46) A. ni lai shuo ji ju lai.
 you lai₁ say a few words lai₃
 You come to say a few words
 B. Ni lai shuo ji ju
 you lai₁ say a few words
 You come to say a few words.

Xu (2005) argues that *lai*₃ functions as an aspect marker. However, *lai*₃ behaves differently from typical aspect markers.

First, omitting *lai*₃ does not significantly alter the meaning of a sentence, whereas omitting aspect-marking sentence-final particles such as *le* changes the meaning, as illustrated in (47) and (48):

- (47) a. *lai* *kankan* *lai*
 *lai*₁ look *lai*₃
 Come take a look.
 b. *lai* *Kankan*.
 *lai*₁ look
 Come take a look.
- (48) a. *wo* *xizao* *le*
 I take a shower SFP
 I have taken a shower
 b. ?*wo* *xizao*
 I take a shower
 I take a shower.

Second, sentence-final aspect markers can co-occur with SFPs that express speaker attitude, whereas *lai*₃ cannot, as demonstrated in (49):

- (49) a. *wo* *xizao* *le ya*
 I take a shower SFPSFP
 I have taken a shower.
 b.* *lai* *kankan* *lai* *ma*
 Come look *lai*₃ SFP
 Come take a look.

Xu (1983) and other researchers have analyzed *lai*₃ in this structure as a sentence-final particle.

For *lai*₂, it can occur simply after VP and appear in the sentence-final position, as shown in (50). Some researchers treat *lai*₂ as an aspect marker. For example, Jian (2001) consider it a perfective aspect particle. However, there are some issues with this viewpoint. One piece of evidence against the claim that *lai*₂ functions as an aspect marker is its compatibility with imperative sentences, as illustrated in (51). Additionally, *lai*₂ can co-occur with adverbs that indicate gradual progression, such as *manman* ('slowly'), as shown in (52). Notably, imperative sentences and adverb *manman* ('slowly') typically do not co-exist with perfective aspect markers, as evidenced by the ungrammaticality of (53) and (54). Since *lai*₂ is compatible with these constructions, it cannot be classified as an aspect marker.

- (50) *Lisi qian-le* *yi-pi* *ma* *chu* *lai*
 Lisi bring-PFV one-CL horse exit *lai*₂
 'Lisi brought out a horse.'
- (51) *lengjing xia* *lai* !
 calm down *lai*₃
 Calm down!
- (52) *Ta manman lengjing xia* *lai*.
 He gradually calms down *lai*₃
 He gradually calmed down.

- (53) * Lǎngjīng-le/guó/zhe xiálai!
 Calm-PER down lai₃
 Having Calmed down!
- (54) * Tā mānmān kān-zhe/le/guó shū.
 He progressive read-Asp book
 He is reading /has read a book.

Moreover, Wu (2023) argues that *lai*₂ without a spatial reading is a verb and is part of a non-continuous directional verb compound. However, as Xu (1983) mentioned, describing *lai*₂ as part of non-continuous directional verbs does not comprehensively capture the linguistic phenomenon. Zongli and Min (2022) consider *lai*₂ after VP to be a viewpoint aspect marker; however, this analysis cannot explain the displacement orientation conveyed by *lai*₂.

As mentioned before, based on the analyses of most researchers (Chao 1968, Tang 1979, Xu 1983) regarding the nature of *lai*₂'s and *lai*₃'s, it is assumed that both are sentence-final particles for the following reasons.

Hancil et al. (2015) define the basic properties of SFPs as follows:

Formally, SFPs are typically non-inflecting, monomorphemic units that are prosodically integrated with a host unit, receiving low-key intonation, lacking constituent status, and being positionally fixed at the end of that unit. They have no conceptual meaning, cannot be questioned or focused, and cannot be used as an utterance on their own; instead, they require a host unit. Functionally, SFPs fulfil various tasks related to discourse structure, speaker attitude, illocutionary force, and turn-taking. Structurally, the use of SFPs is not licensed by syntactic rules but is determined by the context, as they relate an utterance to various aspects of the communicative context, such as the speaker's stance, the speaker's illocutionary goal, and discourse cohesion (Hancil et al. 2015, 16).

First, *lai*₂ and *lai*₃ meet most of the properties proposed by Hancil et al. (2015). The word 'typically' indicates that not all SFPs display all of these features, as some SFPs in Japanese do not exhibit all these features (e.g., SFP *ne* forms a turn-utterance on its own). Therefore, SFPs are best understood as a gradable notion, whereby the concept of SFP-ness is specified along a continuum.

Second, although *lai*₂ and *lai*₃ do not satisfy the formal criterion of being devoid of conceptual meaning, many SFPs in Cantonese also imply conceptual meaning. For example, *sin* indicates 'first', *gamzai* means 'almost' (Tang 2020), *zaa3* means 'only', and *tim*₁ means 'also' (Law 2004). Additionally, some linguists have argued that SFPs have consistent, context-independent meanings as in previous studies (Fung 2000, Sybesma and Li 2007).

Third, *lai*₂ and *lai*₃ are non-inflecting, monomorphemic units, receiving low-key intonation.

Fourth, *lai*₂ and *lai*₃ lack constituent status. Based on the question test, no question can be formed with the answer being *lai*₂ and *lai*₃. According to the movement test, *lai*₂ and *lai*₃ cannot be moved to other positions in the sentence without rendering the sentence ungrammatical.

Finally, *lai*₂ and *lai*₃ are also syntactically 'transparent' (Hooper 1975) to tag questions, negation, and other syntactic processes as shown in (55) and (56):

- (55) A. Nǐ lai shuo jǐ jǔ lai
 You lai₁ say a few words lai₃
 You come to say a few words
- B. *Nǐ lai shuo jǐ jǔ bù lai
 You lai₁ say a few words no lai₂
- (56) A. Tā zōu jīn mén lai.
 He walk in door lai₂
 He walks into the door toward me
- B. *Tā zōu jīn mén bù lai
 He walk in door no lai₂

These criteria suggest that *lai*₂ and *lai*₃ are situated close to the other prototypical SFPs.

Moreover, the fact that *lai*₂ and *lai*₃ occupy the most peripheral position within the utterance, one which may only be followed by vocatives and other sentence-final particles, substantiates their status as SFP.

So, these criteria suggest that *lai*₂ and *lai*₃ are situated close to the other prototypical SFPs.

We propose that *Lai*₃ functions as an independent focus marker and simultaneously indicates displacement toward the speaker for the following reasons.

For indicating displacement function, since *lai*₃ can only occur in sentences with displacement meaning and for sentences without displacement meaning, it is ungrammatical with *lai*₃ as (57), (58), and (59) show. For (57), it can convey two meanings, with physical displacement and without physical displacement. And both are grammatical. For (58), it can only convey the non-physical displacement meaning. So, when *lai*₃ is added to the end of the sentence, it becomes ungrammatical as (59) shows.

(57) Ni lai shuo ji ju lai
 You *lai*₁ say several sentences *lai*₃
 You come to say a few sentences or you say a few sentences

(58) Wo lai shuo ji ju
 I *lai*₁ say several sentences
 I will say a few sentences

(59) *Wo lai shuo ji ju lai
 I *lai*₁ say several sentences *lai*₃

Thus, *lai*₃ in this construction has a displacement reading.

For focus marking, Yuan (2003a) defines focus as the semantically prominent part of a sentence that the speaker intends the listener to pay special attention to. Regarding information focus, Halliday (1967) states that focus reflects new information. Yuan (2003a, b) categorizes sentences in which the entire sentence conveys new information as *broad focus*. Since *lai*₃ is used to direct the addressee's attention to the information denoted by the clause, as shown in (60), it is analyzed as a sentence-final particle of the focus type.

(60) a. Ni lai kankan lai
 You *lai*₁ look *lai*₃
 You come to take a look.
 b. Ni lai kankan.
 You *lai*₁ look
 You come to take a look.

In (60), the presence of *lai*₃ in (60a) conveys an emphatic tone that is absent in (60b). *lai*₃ indicates that the entire clause presents information that the addressee should focus on. Since spatial *lai*₁ also expresses displacement, the repetition of the displacement reading serves to reinforce emphasis, highlighting the importance of this information.

Additionally, we can test whether *lai*₃ in *lai*₁+VP+*lai*₃ construction marks new information by examining its compatibility with subsequent negative sentences, considering (61) and (62):

(61) Tamen lai kankan ni lai, ni bu zhidao ba
 They *lai*₁ see you *lai*₃ you no know SFP
 They came to see you and you didn't know it.

(62) *Tamen lai kankan ni lai, ni zhidao de
 They *lai*₁ see you *lai*₃, you know CERT

The grammaticality of (61) demonstrates that *lai*₃ is compatible with the new information. The unacceptability of (62) suggests that *lai*₃ contradicts presupposed information, further confirming its role as a focus marker.

Functioning to draw the attention of the addressee to the new information, *lai*₃ falls into the category of the focus marker.

Since *lai*₃ functions to direct the addressee's attention to new information, it falls within the category of focus markers. We propose that the focus-marking function of *lai*₃ results from the grammaticalization of the motion verb *lai* ('come').

From a phonetic perspective, *lai*₃ [lə] is the result of phonetic weakening and monophthongization of the directional verb *lai* ('come').

From a syntactic perspective, its position at the end of the sentence increases the likelihood of further grammaticalization into a higher-level grammatical category. According to Hengeveld and Olbertz (2012), grammaticalization typically follows a pathway from the lower layer to the higher structural layers. This means that the displacement verb *lai* ('come'), originally in the lexical domain, can grammaticalize into a focus marker by moving upward. Focus pertains to the CP domain (see Section 5 for further discussion).

From a semantic perspective, *lai*₃ retains part of its original directional meaning. The fundamental reason why the directional verb *lai* is moved to the end of the sentence and used as a focus marker lies in its inherent semantic compatibility with focus functions. When *lai* is used as a verb of motion, its pragmatic function is to instruct the listener to move in a proximal direction toward the speaker, using the speaker as the reference point. In terms of communicative intent, this imperative nature establishes a link to its focus-marking function.

When movement is conceptualized in discourse, *lai*₃ shifts the listener's focus from their current state of attention to the upcoming speech act of the speaker. From the speaker's perspective, *lai*₃ serves as a focus marker by prompting the addressee to shift from a state of inattentiveness to one of attentiveness toward the information conveyed by the clause. This focus-marking function aligns internally with the movement function expressed by *lai* ('come') as a directional verb.

Thus, we hypothesize the following grammaticalization pathway for *lai*₃ in *lai*₁+VP+*lai*₃ construction:

Focus *lai*₃ < displacement *lai* ('come').

For *lai*₂, many researchers classify it as a directional complement, indicating directional movement. However, it will be argued that directional complement and *lai*₂ should behave differently.

First, the directional complement *lai* can appear with the perfective aspect verbal suffix -le in (63), while the sentence-final *lai*₂ cannot in (64). It is assumed that there is a matching or agreement requirement on the *lai*₂ and the perfective aspect verbal suffix -le. Such a requirement is, however, not observed in directional complement *lai*.

- (63) Ta zou-le jin lai
 He walk-aspect marker enter come
 He walked in.

- (64) *Ta zou-le jin men lai
 He walk-aspect marker enter door lai₂
 He walked in the door.

Second, *lai*₂ can rescue the incompleteness effect of sentences as in (65), but directional complement *lai* cannot as shown in (66). Xiong (2020) claims that Chinese sentences always show the incompleteness effect, but it can be rescued by the realization of one of the functional categories above the argument structural layer. So *lai*₂'s completeness function proves it is a functional category above the argument structural layer but not a directional complement.

- (65) a. ta zou jin men (?)
 He walk inside door
 He walk in the door
 b. ta zou jin men lai
 He walk in door lai₂
 He walk in the door

As shown by the contrast between (65a) and (65b), *lai*₂ can rescue the incompleteness of (65a). With *lai*₂, (65b) is a complete sentence.

- (66) Ta ji lai qian (?)
 He sends lai (complement) money
 He sends over money.

As shown in (66), with standard directional complement *lai*, this sentence is still incomplete. So, the standard directional complements *lai* and *lai*₂ belong to different categories and have different functions.

For the semantic function of *lai*₂, we will follow Fan (2014) analysis, stating that it indicates movement toward the speaker physically or abstractly.

When *lai*₂ indicates physical movement toward the speaker, it signifies that something or someone is moving in the speaker's direction, as shown in (67)

- (67) ta zou jin men lai.
 He walks inside door lai₂
 He walks inside the door.

In (67), *lai*₂ conveys that the subject *ta* ('he') physically moves toward the speaker.

When *lai*₂ indicates abstract displacement toward the speaker, it emphasizes the path of event change rather than physical movement. In this case, the source refers to the subject's state before the change, while the goal represents the subject's state after the change is complete. *lai*₂ marks the transition of an event from its initial state to its result state, with the speaker conceptually positioned at the endpoint, serving as the deictic center, and observing the entire process in retrospect. Here, movement occurs within the mental domain, where the source and goal are not abstract, but rather concrete. Consider (68):

- (68) ta chang qi ge lai.
 He sing raise song lai₂
 He starts to sing.

In (68), the starting point of the event is 'not singing', while the endpoint is 'singing'. The speaker is positioned at the endpoint of the event, observing the process unfold.

Therefore, in this context, *lai*₂ here indicates the event progression from the starting point to the endpoint, without direct physical displacement.

In summary, *lai*₂ consistently indicates movement, whether physical or abstract, with the deictic center – typically the speaker's physical location or the event's result state – serving as the reference point. The speaker conceptually positions themselves at the endpoint of the transition, observing the event's progression.

Additionally, in some cases, some researchers (Wu 2023, Zongli and Min 2022) have analyzed *lai*₂ as an aspect marker. Consider (69) and (70):

- (69) Ni yao jing xia xin lai
 You should calm down heart lai₂
 You should calm down.
- (70) Ni yao jing xia xin.
 You should calm down heart
 You should calm down.
- (71) Ta chang qi ge lai
 He sing up song lai₂
 He starts to sing.

The contrast between (69) and (70) indicates that (69) emphasizes the process and the change from a state of being anxious to a state of calming down, while (70) emphasizes the state of calming the mind itself. In (71), *lai*₂ indicates the change from the state of not singing to the state of singing. Overall, *lai*₂ does not indicate physical movement, but rather a transition of the event from one state to another. This can be understood as an abstract displacement, where the source is the subject's status before change and the goal is the subject's status when the change is complete. This represents a metonymic semantic shift from the physical displacement reading of the particle *lai*₂.

In conclusion, *lai*₃ indicates displacement toward the speaker while simultaneously functioning as a focus marker. Its focus-marking function arises from the grammaticalization of the directional verb *lai* ('come'). In contrast, *lai*₂ exhibits a deictic function, marking movement toward the deictic center, which can be either the speaker's physical location in cases of spatial motion or the event's result state in instances of abstract displacement.

3.2.2 Syntactic positions of *lai*₂ and *lai*₃

In this section, we first analyze the syntactic position of *lai*₃'s followed by the analysis of *lai*₂. Based on the above analysis, *lai*₃ has two different functions, ranging from indicating displacement toward the speaker to serving as a focus marker.

The following represents the syntactic structure of the clausal periphery under the Cartographic Approach proposed in this article. This section first discusses the rationale behind this structure, followed by an explanation of how the syntactic positions of *lai*₂ and *lai*₃ are determined within this framework based on the ordering of particles.

(72) ForceP >Focus> S.Asp >FiniteP > TempP> EventP

The hierarchical structure can be divided into four layers: vP, TP, and Complementizer Phrase (CP).

For the CP layer, we adopt Rizzi's (1997) analysis, which further divides CP from bottom to top into Finite, Focus, and Force. In Rizzi's (1997) framework, topics appear both above and below the focus. However, since topic phrases do not have sentence-final particles, they are not included in this discussion. The S.Asp (sentential aspect) category is adopted from Pan's (2019) analysis of Mandarin sentence-final particles.

The TP layer includes temporal particles, classified under the temporal category as defined by Tang (1998). *Temp* serves as a convenient label for *Temporal* and corresponds to the temporal properties of the clause, positioned at the periphery of TP.

Regarding the vP layer, Event is a projection at the periphery of the vP domain, associated with the eventualities and aspectual properties denoted by the predicate (Tang 1998).

Based on the previous analysis of the functions of *lai*₃, in the structure *lai*₁+VP+*lai*₃, *lai*₃ functions as a focus marker. Therefore, it is reasonable to suggest that the SFP *lai*₃ merges in the head position of the Focus Phrase.

However, under this analysis, one question remains unresolved, which is how to explain the displacement function of *lai*₃.

Considering the functions of *lai*₃, we propose that *lai*₃ occupies the head position of the EventP. This is followed by head movement to the head position of FocusP, as shown in the following tree diagram (in the diagram, for convenience, the head movement is represented in one step).

[..._{[FocusP}Focus+*lai*₃]_{[S.Asp}S.Asp]_{[FiniteP}FiniteP]_{[TP}Spec_{[T'}T]_{[EventP}Spec_{[Event'}t_i]_{[vP}t_j

To derive the right word order, it is assumed that Focus is head-initial while vP in this diagram undergoes movement on the surface to a position somewhere between the subject and *lai*₃, along the lines in Kayne (1994).

Based on HMC (Head Movement Constraint), movement from one head position to another is only possible between a given head and the closest head that asymmetrically c-commands it. But for convenience, the structure above is simplified for expository purposes by not showing the middle movement steps. And the syntactic movement operation can explain the dual functions of *lai*₃.

*lai*₃'s syntactic position can be proved by the non-occurrence of modal verbs like *yao* *will* and *neng* *can* and *lai*₃ as shown in (73). For modal verbs to occupy the syntactic position between vP and ForceP, their occurrence would block the movement of *lai*₃ from the vP layer to the CP layer.

- (73) a. Ni lai shuo ji ju lai
 You *lai*₁ say a few words *lai*₃
 You come to say a few words
 b. Ni neng lai shuo ji ju lai(*)
 You can *lai*₁ say a few words *lai*₃

Additionally, *lai*₃ moves from Event to Focus because *lai*₃ is endowed with the feature [Focus], and hence, for feature checking, attracts *lai*₃ to move from Event to Focus. This process involves head-to-head feature checking (Cormack and Smith 1996).

For the movement of vP to the specifier position of FocusP, Pan syntacticians (2021) propose that under the minimalist framework, each SFP heads a phase and bears an EPP feature. Complement-to-specifier raising is required as a last resort to satisfy the EPP. So, the movement of vP to the specifier position of FocusP is to meet the EPP of FocusP.

For the syntactic position of *lai*, we propose that *lai*₂ occupies the head position of EventP for the following reasons.

First, as we mentioned earlier, Event is associated with the eventualities and aspectual properties denoted by the predicate and serves as a projection in the periphery of the vP domain. Since the deictic function of *lai*₂ inherently ties it to the eventuality expressed by the predicate, as it marks the event's directional development toward a deictic center, whether spatially or abstract. It is reasonable to place it in the head position of EventP. To derive the correct word order, vP also undergoes movement on the surface to a position between the subject and *lai*₂.

Second, the linear order between sentence-final particle *mei* and *lai*₂ further supports this analysis. *Lai*₂ appears in a position lower than *mei*, assuming *lai*₂ occupies the head position of EventP and *mei* functions as an SFP of the temporal type in the head of TempP, which belongs to the inflectional layer (Tang 2022). This is illustrated in (74):

- (74) Ta ji-le qian lai mei ?
 He send- perfective aspect money *lai*₂ neg
 Did he send over money?

Third, analyzing the sentence-final *lai*₂ as a sentence-final particle in the head position of EventP accounts for the particle cluster in (75), aligning with the syntactic hierarchy proposed in (72).

Example (75) further shows that the sentence-final *lai*₂ can co-occur with *ma*, a sentence-final of the interrogative type, and *le*, a sentence-final particle in the head position of S.AspP, implying that syntactically, *lai*₂ is in the lower position compared to *le* and *ma*.

Finally, as a sentence-final particle in the EventP position, *lai*₂ cannot be modified by adverbials, consistent with other sentence-final particles in Mandarin, regardless of their semantics.

In conclusion, *lai*₂ occurs in the head position of the EventP, situated between TP and vP. In contrast, *lai*₃ is base-generated in the head position of EventP and subsequently moves to the head position of FocusP.

4 Conclusion remarks

In this article, it has been argued that the preverbal spatial *lai*₁ and the non-spatial *lai*₁ are two distinct categories located within different syntactic layers. The spatial *lai*₁ is base-generated in the head position of VP, indicating physical movement, while the non-spatial *lai*₁, which implies a prospective aspect, is base-generated in the head position of the Asp₁Phrase located within the inflectional layer.

Furthermore, the sentence-final *lai*₂, functioning as a sentence-final particle, marks the directional development of an event toward a deictic center – whether spatially or abstract – in relation to the eventuality expressed by the predicate. It occupies the head position of the Event Phrase within the vP layer.

Similarly, the sentence-final *lai*₃, which indicates physical movement toward the speaker in relation to the eventuality denoted by the predicate and also functions as a focus marker, is base-generated in the head position of the Event Phrase. It then moves to the head position of FocusP in the complementizer layer. The presented analysis not only clarifies the syntactic roles of these particles but also enhances the understanding of their functions within Mandarin syntax.

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