Sentence-final particles in Mandarin Chinese: Syntax, semantics and acquisition*

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Abstract
Sentence-final particles (SFPs) in Mandarin Chinese realize the heads of three projections in the rigidly ordered head-final CP 'Low CP < ForceP < AttitudeP'. Only the highest projection AttitudeP encodes discourse-related properties, whereas ForceP encodes the sentence-type (interrogative, imperative). Low Cs interact with properties of the TP-internal extended verbal projection and are obligatory when acting as (non-default) anchors. They play an important role in determining the temporal interpretation and finiteness in Mandarin Chinese and can therefore no longer be neglected by studies addressing these issues. There is no evidence for an "incremental" acquisition "up the tree" of the different projections in the split CP nor for the acquisition of TP prior to CP, as postulated by the cartographic approach.

Keywords
split CP, sentence type, finiteness, tense, aspect

1. *Introduction*

Mandarin Chinese not only features SFPs linked to discourse (as would be expected from its alleged "discourse-oriented" nature), but also SFPs encoding the sentence-type (interrogative, imperative etc.) as well as a set of SFPs that interact with the properties of the TP-internal extended verbal projection and in certain cases are obligatory. SFPs all occupy a position in the (right) sentence periphery (CP) and are construed with the entire clause, leading to a transparent syntax/semantics mapping in terms of scope relations. More precisely, SFPs realize heads in a three-layered split CP in the spirit of Rizzi (1997):[1]

(1) Split CP in Mandarin Chinese (Paul 2009):
[Attitude-CP [Force-CP [ClowP [TP NP V NP] Clow°] Force°] Attitude°]]]

Rizzi (1997) demonstrated in great detail that the sentence periphery above TP, the sentence proper, does not consist of a single CP hosting e.g. the fronted *wh*-phrase (and the "dummy" verb *do*, in the absence of an auxiliary verb) in English sentences such as *[CP Whati [C' [C° did] [TP he buy ti]]]?*. On the contrary, the sentence periphery is "split up", i.e. divided into numerous subprojections displaying a rigid order, among them projections for topic phrases and focus phrases. As for the heads present in the left periphery, i.e. complementisers, he likewise argued that they are of different types and hence occur in different projections within the split CP. Complementisers indicating the type of clause (declarative "force", interrogative "force" etc., e.g. *that, whether* in English; *che* in Italian) head the projection ForceP *preceding* the topic and focus projections; by contrast, prepositional complementisers in Romance such as Italian *di* introducing infinitivals realize the head of FinitenessP, a projection immediately above TP and *below* topic and focus projections:

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[1] Given the complex nature of finiteness in Chinese, Rizzi's (1997) Finiteness Phrase is replaced by ClowP as the lowest level in the Chinese split CP.

(2) a. *Penso (*a Gianni) che, a Gianni, gli dovrei parlare*
think.1SG to Gianni that to Gianni him should speak
'I think that to Gianni, I should speak to him.'

b. *Penso, a Gianni, di (*a Gianni) dovergli parlare*
think.1SG to Gianni that to Gianni him.should speak
'I think, to Gianni, 'of' to have to speak to him.' [sic]
(Rizzi 1997: 304, [61], [62])

Subsequent studies of mostly Romance and Germanic languages extended this approach to *matrix* clauses and analysed as different types of complementisers those items at the sentence periphery that had so far been called "particles", for want of a precise categorial status (cf. among others Munaro and Poletto 2002). Importantly, these studies also provided evidence for the existence of an additional, discourse-related projection *above* ForceP, equivalent in function to the projection labelled *AttitudeP* by Paul (2009) in (1) for Chinese (cf. a.o. Benincà 2001 for Romance languages, Haegeman 2014 and Haegeman and Hill 2013 for West-Flemish):

(3) DiscourseP > ForceP > FiniteP > TP (Split CP for Germanic and Romance languages)

(Note that (3) concentrates on the projections within the split CP that are exclusively realized by heads, to the exclusion of topic and focus phrases.) The hierarchy in (3) thus extends Rizzi's (1997) original hierarchy where the highest projection had been ForceP. Comparing (3) with (1) for Chinese, we see that they only differ in the directionality, head-initial for Rizzi (1997), head-final in Chinese.[2]

The split CP for Chinese in (1) in fact recasts into modern terms the observations by the eminent Chinese scholar Zhu Dexi (1982: 207-213). He identified three distributional classes of SFPs whose relative order is fixed. The SFPs belonging to the first class, SFP_1, occur nearest to the sentence proper (TP) and are said to "express tense/aspect"; they comprise SFPs such as *le* and *láizhe* (cf. (6a) below) and realize LowCP in (1). The SFPs of the second class, SFP_2, to the right of the position for SFP_1, convey notions such as *yes/no* question (*ma*) and imperative (*ba*) (cf. (5a) and (7a) below) and thus illustrate the ForceP in (1). The third, "outermost" class of SFP_3, finally, is explicitly stated to be different from the two other classes, because it involves the speaker's attitude or feelings (hence the label AttitudeP in (1)); SFPs belonging to this class are e.g. *a*, *ou* etc. (cf. (7a), (8a) below). Zhu Dexi (1982: 208) emphasizes that co-occurring SFPs belong to hierarchically different levels, while SFPs of the same class are mutually exclusive, such as e.g. *le* and *láizhe*, which both belong to the innermost class, SFP_1 (cf. (6b) below).

(4) [S …..] SFP_1] SFP_2] SFP_3]

The ordering restrictions underlying the configuration in (4) are illustrated below:

(5) a. [CP2 [CP1 [TP Tā bù chōu yān] le] ma]?
3SG NEG inhale cigarette SFP1 SFP2
'Does he no longer smoke?'

[2] Conjunctions in adverbial clauses also instantiate Cs and project a head-initial CP: *rúguǒ* 'if', *jíshǐ* 'even if', *jiùsuàn* 'even though', *jìrán* 'since', *suīrán* 'although', *yīnwèi* 'because' (cf. Pan & Paul 2018: 147). By contrast, Chinese lacks an embedding C equivalent to English *that* (cf. Paul 2015: 305 for further discussion).

b. *[CP1 [CP2 [TP Tā bù chōu yān] ma] le]?
3SG NEG inhale cigarette SFP2 SFP1

(6) a. [CP1[TP Wǒ chī wǎnfàn] le / láizhe].
1SG eatdinner SFP1/ SFP1
'I (just) had dinner.'

b. *[CP1[TP Wǒ chī wǎnfàn] {le láizhe}/{láizhe le}]
1SG eat dinner SFP1 SFP1 / SFP1 SFP1

(7) a. [CP3 [CP2 [TP Jìnlái] b'ou (=ba +ou)]]! (Zhu Dexi 1982: 212;
enter SFP(fusion) SFP2+SFP3 bracketing added)
'Hurry, come in!'

b. *[CP2 [CP3 [TP Jìnlái] ou] ba]!
enter SFP3 SFP2

(8) a. [CP3 [CP1 [TP Bù zǎo] l'ou (= le + ou)]]!
NEG early SFP (fusion) SFP1+SFP3)
'Hey, it's already late!'

b. *[CP1 [CP3 [TP Bù zǎo] ou le !
NEG early SFP3 SFP1

Starting with examples (8a) and (7a), an SFP_3 such as *ou*, which expresses the speaker's impatience, must follow the SFP_2 *ba* (expressing a "softened" imperative) in (7a) and the SFP_1 *le*. Since it consists of a single vowel, *ou* fuses phonetically with the preceding SFP into a single syllable.[3] Likewise, the innermost SFP_1 *le* must always precede SFP_2 such as the interrogative *ma* (cf. (5a)), as shown by the unacceptability of the opposite order in (5b). (8a) further illustrates that Zhu Dexi (1982) basically uses the same reasoning in order to determine the relative order of SFPs as the cartographic approach does when establishing the hierarchy of functional projections.[4] Since for semantic reasons it is rather difficult to construe and find sequences where all the three classes co-occur, Zhu (1982: 208) applies the notion of *transitivity*: if a given SFP *A* is shown to precede the SFP *B* and the SFP *B* precedes the SFP *C*, then necessarily *A* likewise must precede *C*. This same notion of transitivity also underlies Zhu Dexi's (1982: 208) statement that the relative order always holds, i.e. also when a given SFP position remains empty, as in the combination of the SFP_1 *le* with the SFP_3 *ou* in (8a).

The article is organized as follows. Section 2 provides the general background for the analysis of SFPs as C-heads in Chinese. No exhaustive presentation is intended nor possible here. (For systematic overviews, cf. Paul 2015, ch. 7; Victor Junnan Pan 2015, 2019a; Paul & Pan 2017). Instead, we choose to highlight some aspects of SFPs which have either not received enough attention so far or have not been sufficiently spelt out. Section 2.1 on ClowP argues that the low Cs *le,* ne_1 and *láizhe* contribute to the temporal interpretation, but themselves do *not* encode tense or aspect themselves. They are thus *not* on a par with the TP-*internal* aspectual heads, as also evidenced by their co-occurrence. Section 2.2 turns to the SFPs in ForceP

[3] This phonetic fusion only applies to spelt-out SFPs in the correct linear order (cf. the unacceptability of (7b), (8b)). It is limited to SFP_3 simply because only the latter consist of a single vowel.
[4] For example, Cinque's (1999: 41) complete hierarchy of the functional projections hosting adverbs relies on the stepwise application of the relative order established for a given pair of adverbs, the full hierarchy not being attested.

realizing sentence types such as interrogative and imperative. Given that these SFPs have been extensively studied, claims in the literature that Chinese lacks such Force heads (cf. Li Boya 2006, Bailey 2015, Del Gobbo et al. 2015) are very surprising and shown not to be borne out by the data. Section 2.3 examines the third, highest layer in the split CP, i.e. AttitudeP. Section 3 briefly addresses the issue of acquisition. Importantly, by the age of two years, children have basically acquired all three types of SFPs, including Attitude heads, which are subject to rather complex semantic-pragmatic constraints. These data challenge Friedmann et al.'s (2021) hypothesis of an incremental step-by-step acquisition, both with respect to the relative order of TP and CP and the order within the periphery. Section 4 concludes the article and emphasizes the importance of the low Cs for future studies on tense and finiteness in Chinese.

2. *The three-layered CP in Chinese: Overview and some in-depth case studies*

The analysis of SFPs as complementisers goes back to Thomas Hun-tak Lee (1986) who was the first to claim C-head status for the yes/no question particle *ma*. The analysis of *ma* as C became the standard analysis and was confirmed by subsequent studies, which also introduced another C, i.e. *ne* (cf. L.-S. Lisa Cheng 1991). Tang Ting-chi (1989: 541) extended the C-analysis to SFPs in general. The architecture of the Chinese sentence periphery was developed in more detail within Rizzi's (1997) split CP approach by Paul (2005) and subsequent work, where an additional projection AttitudeP *above* Rizzi's ForceP was motivated (cf. Paul 2009, 2014).

(9) The split root CP (based on Paul 2014; cf. Victor Junnan Pan 2015, 2019a; Paul & Pan 2017 for a more fine-grained picture)

C_1 (Low C)	C_2 (Force)	C_3 (Attitude)
le currently relevant state	ba_{Imp} (advisative *ba*)	*a* softening *láizhe*$_3$ what did you just say?
láizhe$_1$ recent past *ne*$_1$ continuing sit.	$ba_{Qconfirmation}$	*ei* gentle reminder
	ma$_2$ yes/no question	*ou* impatience, surprise
		ma$_3$ dogmatic assertion
		zhene intensifier *ne*$_3$ exaggeration

(N.B. The semantic values indicated for each SFP can give a rough approximation only.)

Importantly, there are several cases of homonymy between low C-heads and Attitude-heads, hence our indexing the low C-heads *ne*$_1$ and *láizhe*$_1$ with 1 and the Attitude-heads *ne*$_3$ and *láizhe*$_3$ with 3. The two force heads *ba*, advisative *ba* (softening the imperative) and the question confirmation *ba*, are likewise homonyms, but can be told apart by the associated semantics and sentence intonation. Finally, the yes/no question force head *ma* and the dogmatic assertion attitude head *ma* (where the speaker insists on her/his opinion) can be easily distinguished by the resulting interpretation and different intonational contours. Although homonymy is a widespread phenomenon in Mandarin Chinese, the homonymy between SFPs belonging to different projections has led to quite a confusion in the literature and must be carefully controlled for. Finally, the table in (9) foremost captures the relative hierarchy between SFPs and is not meant to imply that they can all co-occur, given the semantic constraints observed for each SFP further discussed below.

2.1. Low CP

2.1.1. The C-heads *láizhe*$_1$, *ne*$_1$, *le* as "expressing tense" (Zhu Dexi 1982)

Zhu Dexi (1982: 208) characterized the three SFPs *ne*$_1$, *le*, *láizhe* as "expressing tense", based on the different interpretations obtained in the triple below, where the (bare) lexical predicate

xià yǔ ‘fall rain’ remains constant and only the SFPs vary. Note that the SFPs are obligatory here, a fact not explicitly mentioned by Zhu Dexi (1982).[5]

(10) a. [$_{ClowP}$ [$_{TP}$ Xià yǔ] ne Zhu Dexi (1982: 209)
fall rain CLOW
‘It’s (still) raining.’
(Zhu Dexi’s comment: It was raining before.)

b. Xià yǔ le
fall rain CLOW
‘(Look), it’s raining (now).’
(Zhu Dexi’s comment: It didn’t rain before.)

c. Xià yǔ láizhe
fall rain CLOW
‘It (just) rained.’
(Zhu Dexi’s comment: It rained a moment ago.)

On the basis of these examples, Zhu Dexi (1982: 209) proposes the following interpretative values for the three SFPs. *Láizhe* indicates that the event has occurred in the recent past. *Le* signals that the situation at hand is (conceived of as) new.[6] *Ne1* expresses a continuing situation or state. Importantly, this is not tantamount to postulating *tense* as a *verbal* category for Chinese. Instead, these characterizations rather attempt to capture the semantic import of the SFPs, which is also reflected in the constraints observed for the type of TP each SFP can select, to be examined in detail further below.

As reflected in Zhu’s comments and the translations provided, the low Cs *inter alia* differ in whether or not the event held in the past, and in whether the event holds at speech time or not. While these two values are obvious in the translations of (10a) and (10b), i.e. ‘It’s (still) raining.’ and ‘(Look), it’s raining (now).’, (10c) with the low C *láizhe* requires a further comment. More precisely, for *láizhe* the default interpretation is that the event no longer holds at the speech time, as evidenced by the following mini-dialogue (but cf. (15) below):

(11) A: Wàimiàn dì zěnme shī le?
outside ground how humid CLOW
‘How come the ground is humid outside?’

B: Wàimiàn xià yǔ láizhe.
outside fall rain CLOW
‘It (just) rained outside.’

The second triple provided by Zhu Dexi (1982) with *mén kāi* ‘door open’ as lexical material allows us to further sharpen the differences between the three low Cs. We elaborate on (i) the interaction of low Cs with TP-internal properties as illustrated by certain incompatibilities, (ii) the difference between the low Cs and aspect as a verbal category, and (iii) thus make more precise the import and role of the SFPs.

[5] Unlike statives, activity predicates must bear aspect markers for a non-habitual, episodic reading (cf. Kong Lingda 1994, Sun Hongyuan 2014). Otherwise, a low C is required (cf. Paul 2018).

[6] “Conceived of as new” refers to the subjective perception of the speaker, i.e. (10b) is also compatible with a situation where it might have rained before, but that the speaker notices it only at this moment (hence Li & Thompson’s (1981: 238) label “currently relevant state”).

We again start with the low C *ne* as the most straightforward case:

(12) Mén kāi -zhe ne. Nǐ wèishénme qiāo mén?
door open-IMP CLOW 2SG why knock door
'The door is (standing) open. Why do you knock?'

As stated for *ne* in (10) above, the eventuality holding now, i.e. state of standing open, already held in the past, as explicitly mentioned by Zhu Dexi (1982: 209).

This contrasts with *le* in (13), as shown by Zhu's comment enclosed in square brackets:

(13) Mén kāi le. [Yuánlái guān-zhe.] Wǒmen jìnqù ba.
door open CLOW before close-IMP 1PL enter FORCE
'The door is open (now). [It was closed before.] Let's go in.'

As expected, *(mén) yuánlái guān-zhe* '(the door) was closed before' would be unfelicitous as a continuation for (12) *Mén kāi-zhe ne* 'The door is (still) open'.

Turning now to *láizhe*, we first illustrate (in a mini-dialogue) the default reading where the eventuality holding in the past no longer holds at the speech time.

Context: A says that B just went to C's office for some documents, but couldn't get in.
(14) C answers: Shì ma? Mén kāi -zhe láizhe, tā wèishénme jìn -bù-lái?
be FORCE door open-IMP CLOW 3SG why enter-NEG-come
'Is that so? The door was open, (so) why couldn't he get in?'

While in the default reading the eventuality holding in the past no longer holds at the speech time, it is not excluded for the eventuality to still hold at speech time; as a result, both continuations in (15) are felicitous:

(15) Mén kāi -zhe láizhe, xiànzài guān-shàng -le / xiànzài yě kāi -zhe ne.
door open-IMP CLOW now close-ascend-PERF/ now also open-IMP CLOW
'The door was (standing) open, now it's closed/ and it's still open now.

To wrap up our results so far, the crucial differences between the three low Cs consist in whether the event holds at speech time or not and whether the event held before or not. For *ne1*, the event still holds at speech time and likewise held in the past. For *le*, the event holds at speech time and did not hold in the past. For *láizhe*, the event held in the past and may or may not hold at speech time (with the latter as default case).

2.1.2. The selectional properties of the low Cs

Against this backdrop, we now examine the selectional properties of each low C, which at the same time highlight that the low Cs themselves can *not* be analysed as aspect markers (*pace* a.o. Niina Zhang 2019).[7]

[7] Niina Zhang (2019) concentrates on the finiteness issue in *complement* clauses and claims that when a complement clause does not allow for a low C (her "sentence-final aspect particles"), then it is automatically non-finite. This claim is too simplistic and incorrect and not borne out by the data. Many matrix clauses are perfectly grammatical without any SFPs (cf. (18c), (19b), (26a)), and likewise acceptable in the same form as complement clauses. Furthermore, the SFPs *le*, *ne*, *láizhe* are mechanically tested by Niina Zhang in all kinds of sentences, without their associated semantic constraints being taken into account. Accordingly, in many cases, the SFP in question is simply incompatible with the TP-internal predicate in both the complement clause and the corresponding matrix clause; accordingly, this incompatibility cannot be taken as a diagnostic for the non-finite status of the clause at hand.

As demonstrated by Yan Shanshan (2017: §3.2.2, §7.2.2), *ne1* only allows for atelic activity predicates in the TP-complement (cf. (18a-c)), and excludes telic (cf. (16)) as well as stative predicates (i.e. stative verbs in (17b) and adjectives in (17a)):

(16) a. *[ClowP[TP Xiǎo Wáng *líkāi* gōngchǎng] ne]
Xiao Wang leave factory CLOW
('Xiao Wang is leaving the factory.')

b. *Xiǎo Wáng *xuéhuì* hànyǔ ne.
Xiao Wang acquire Chinese CLOW
('Xiao Wang is acquiring/mastering Chinese.')

(17) a. Tā hěn cōngmíng (*ne).
3SG very intelligent CLOW
'She is bright.'

b. Tā hěn xǐhuān shùxué (*ne).
3SG very like mathematics CLOW
'She likes mathematics.'

(18) a. [ClowP[TP Xiǎo Wáng *cānguān* gōngchǎng] ne]
Xiao Wang visit factory CLOW
'Xiao Wang is visiting the factory.'

b. Xiǎo Wáng *xuéxí* hànyǔ ne.
Xiao Wang learn Chinese CLOW
'Xiao Wang is learning Chinese.'

c. Tā zhèng zài tiē -zhe biāoyǔ (ne). (Zhu Dexi 1982: 210)
3SG just PROGR paste-IMP poster CLOW
'He is pasting posters right now.'

The presence of the progressive aspect auxiliary *zài* in (18c) demonstrates that aspect as a verbal category is distinct from the low C *ne*. Importantly, *ne* in (18c) is optional, confirming our point just made. This contrasts with (18a-b) and with Zhu's (1982) (10a) above where *ne* is obligatory, given the bare nature of the activity predicate.

With respect to the alleged status of low Cs as aspect markers, the low C *le* has caused quite some confusion, due to its homonymy with the perfective aspect verb suffix *-le* . Although the distinctness of the SFP *le* and the aspectual suffix *-le* was established a long time ago (cf. a.o. Chao Yuen Ren 1968: 246, Teng Shou-hsin 1973, Marjorie K. M. Chan 1980, Li and Thompson 1981: 296, Zhu Dexi 1982), claims that both items instantiate one and the same category regularly make their reappearance in the literature (like the famous Loch Ness monster). This seems particularly futile given the many cases provided in the literature where the aspectual suffix *-le* and the SFP *le* co-occur (cf. Paul 2015: 276-277 for further discussion):

(19) a. Wǒ zài zhèr zhù -le wǔ nián le. (Zhu Dexi 1982: 209)
1SG at here live -PERF 5 year CLOW
'I have been living here for five years now.'

b. Wǒ zài zhèr zhù -le wǔ nián.
1SG at here live -PERF 5 year
'I lived here for five years.'

Zhu Dexi's example (19a) nicely illustrates both the very common co-occurrence of the aspectual suffix *-le* and the SFP *le* and the semantic import of *le.* Given that *le* relates the event to the speech time, (19a) with *le* unambiguously states that my living here still obtains at the speech time. By contrast, as pointed out by Zhu Dexi (1982: 209), (19b) without the SFP *le* implies my no longer living here.[8]

(20) illustrates that the meaning of a sentence with an SFP is derived in a clearly compositional way, with *le* as C having scope over the entire TP:

(20) [ClowP[TopP Nà [Top'[TP wǒ jiù bù děng tā] le]]]
in.that.case 1SG then NEG wait 3SG CLOW
'In that case I will no longer wait for him.'

Le signals that the proposition 'I won't wait for him' obtains at the speech time (in the absence of any other reference time), which leads to 'I will no longer wait for him'.

Finally, when an explicit reference time (different from the speech time) is provided ('as soon as I rang the bell'), *le* relates the event to that time:

(21) [CPlow[TopP[TP Wǒ yī ān mén-líng] [Top'[TP tā jiù lái kāi mén] le]]]
1SG once ring door-bell 3SG then come open door CLOW
'As soon as I rang the door bell, he came and opened the door.'
(slightly modified example from Chao Yuen Ren 1968: 799)

Unlike *le*, *láizhe* by default indicates that the event that held in the past no longer holds at speech time. Accordingly, *le* in (22a) is unacceptable, because *gāngcái* 'just now, a moment ago' explicitly locates the event in the past, whereas *le* relates the very same event to the speech time. This is not the case for *láizhe*, hence its acceptability.

(22) a. Tā gāngcái hái zài bàngōngshì láizhe / *le. (Paul & Pan 2017: 58, (24))
3SG just.now still at office CLOW / CLOW
'He was in his office just now.'

b. [ClowP[TP Xiǎo Wáng cānguān/*líkāi gōngchǎng] láizhe].
Xiao Wang visit / leave factory CLOW
'Xiao Wang visited/left the factory.'

c. Tā yǐqián xǐhuān wǒ láizhe
3SG before like 1SG CLOW
'She liked me before.'

d. Tā qùnián hěn pàng láizhe.
3SG last.year very fat CLOW
'He was overweight last year.'

[8] For some speakers (19b) might be ambiguous and then also has the reading in (19a).

As shown in (22b-d), *láizhe*, like *ne,* excludes telic activity predicates (cf. (22b)), but is compatible with stative predicates (cf. (22c-d)).

The approximate, "shorthand" characterization of *láizhe* as 'recent past' makes it very tempting to consider it as a genuine tense marker. However, there are at least two pieces of evidence challenging this idea. First, in a sentence with *láizhe*, the presence of (past) temporal adverbs and of aspect is in fact preferred:

(23) a. Wàimiàn gāngcái xià-guo yǔ (láizhe).
outside just fall-EXP rain CLOW
'It just rained a moment ago.'

b. Tā {zuìjìn / shàng ge yuè} qù-guo gùgōng (láizhe).
3SG recently/last CL month go-EXP imperial.palace CLOW
'She went to the imperial palace recently/ a month ago.'

This shows that the temporal interpretation of the event is based on the TP-internal material, a fact confirmed by the optionality of *láizhe* in (23a-b). Also note that "recent past" is a flexible notion and not limited to adverbs such as *gāngcái* 'just now' and *zuìjìn* 'recently'; instead, what counts as "recent past" also depends on the speaker's judgement of the immediacy of the event at hand, as witnessed by the acceptability of 'last month' in (23b) (cf. Song Yuzhu 1981: 272).

Secondly, in addition to the "recent past" feature, *láizhe* asserts that the event has taken place (cf. Song Yuzhu 1981: 275, Lü Shuxiang 2000: 348-349). As a result, *láizhe* is incompatible with a TP whose predicate is negated. This well-known observation from the literature was confirmed by the acceptability judgement test with eight native speakers (average age around 28 years) who uniformly rejected negation in *láizhe* sentences (cf. the first clause in (25b) and fully accepted the assertion strengthening function of *láizhe* in (24b):[9]

(24) A: Nǐ shì bù shì qù kàn diànyǐng le?
2SG be NEG be go watch movie CLOW
You went to the movies, didn't you?
(Literally: 'Is it the case or not that you went to the movies?')

B: Wǒ zài jiā zuò zuòyè láizhe, méi qù kàn diànyǐng.
1SG at home do homework CLOW NEG go watch movie
'(In fact) I did my homework at home, I didn't go to the movies.'

(25) A: Nǐ shì bù shì zài jiā zuò zuòyè le?
2SG be NEG be at home do homework CLOW
'You did your homework at home, didn't you?'

B: *Wǒ méi zài jiā zuò zuòyè láizhe. (Wǒ qù kàn -le diànyǐng.)
1SG NEG at home do homework CLOW 1SG go watch-PERF movie
'(In fact) I didn't do my homework at home. (I went to the movies.)'

In B's response in (24b), *láizhe* strengthens the assertion and thereby corrects A's wrong assumption. In (25b), the first clause is unacceptable, due to the conflict between the assertion strengthening component of *láizhe* and the negated predicate.

[9] This observation seemed worthwhile checking, given that the relevant literature is from 40 years ago (the first edition of Lü (2000) dating back to 1980).

2.1.3. Low CP: Interim summary

The low Cs *láizhe*$_1$, *le* and *ne*$_1$ all interact with TP-internal material and impose constraints on the properties of the extended verbal projection, including its aktionsart. However, they clearly occupy a TP-external position in the left periphery (contra Erlewine (2017); cf. Victor Junnan Pan (2019b) for a critical review).

The low Cs themselves do neither encode aspect nor tense, as evidenced *inter alia* by their co-occurrence with aspect markers on the verb. Instead, low Cs indicate whether the event in question holds at the speech time and/or whether it held before. In joint ongoing work with Gillian Ramchand (University of Tromsø), this is taken to indicate that – roughly speaking – the low Cs are overt versions of the (non-default) anchor, the default anchor being NOW, a moment. Low Cs thus contribute to the finiteness of a sentence in the absence of aspect markers, which either turn the event into a state (able to be true at a moment) or indicate a temporal precedence relation (as in the case of *-le*).[10] The temporal interpretation of a sentence obtains as resulting from the interaction between the properties of the TP-internal predicate (bare or not bare, state or non-state**)**, on the one hand, and the precise nature of (the stative intermediate reference situation introduced by) the low C.

2.2. SFPs realizing ForceP

2.2.1. The *yes/no* question Force head *ma*$_2$

The SFP *ma*$_2$ indicating the *yes/no* question status of a sentence (cf. (26b)) was the first SFP to be analysed as a complementiser (cf. Lee Hun-tak Thomas 1986, Tang Ting-chi 1989: 540):

(26) a. Tā huì shuō zhōngwén.
3SG can speak Chinese
'He can speak Chinese.'

b. [$_{CPforce}$ [$_{TP}$ Tā huì shuō zhōngwén] ma]?
3SG can speak Chinese FORCE
'Can he speak Chinese?'

Since *ma* turns a declarative sentence into a *yes/no* question, it must have scope over the entire sentence, whence the analysis of *ma* as a C-head taking a clausal complement (TP or ClowP, cf. (28) below). The complement status of TP and the head status of *ma* are confirmed by the fact that *ma* imposes selectional restrictions: it can only select a non-interrogative TP and is therefore incompatible with *wh*-questions (cf. (27a)) and TP-internal yes/no questions in the 'A-*bù* 'not'-A' form (cf. (27b)).

(27) a. [$_{TP}$ Nǐ wèn-le *shéi*] (*ma)?
2SG ask-PERF who FORCE
'Whom did you ask?'

b. [$_{TP}$ Tā *dǒng* *bù* *dǒng* wèntí] (*ma)?
3SG understand NEG understand problem FORCE
'Does he understand the problem?'

The Force head status of *ma* is confirmed by its position above, i.e. to the right of, low Cs such as *le* (cf. (28a)) and *ne* (cf. (28b)):

[10] Assertability in a root context is the most language general and theory neutral definition of *finiteness*. Furthermore, habituals and negation of events can be likened to states, as widely assumed in the literature.

(28a) [$_{ForceP}$[$_{ClowP}$[$_{TP}$ Tā bù chōu yān] le] ma]?
3SG NEG inhale cigarette CLOW FORCE
'Does he no longer smoke?'

(28b) [$_{ForceP}$[$_{ClowP}$[$_{TP}$ Tā hái méi zǒu] ne$_{1}$] ma] ?!
3SG still NEG leave CLOW FORCE
'Hasn't he left yet?!'

(28c) Kuài le , kuài le , tā ná -wán shū mǎshàng jiù zǒu.
quick CLOW quick CLOW 3SG take-finish book immediately then leave
'Almost there, almost there (i.e. 'He's nearly ready to leave), he finishes taking his books and then leaves at once.'

As indicated by the question-plus-exclamation mark, (28b) requires an angry or surprised intonation and can be continued by another speaker's uttering (28c).

2.2.2. The Force head *ba*$_{Qconfirmation}$: confirmation request or conjecture
A *yes/no* question with *ba*$_{Qconfirmation}$ is not neutral, but implies the speaker's expectation to receive a positive answer to her/his request:

(29) Jīntiān xīngqīsān ba? (Zhu Dexi 1982 : 211)
today Wednesday FORCE
'It is Wednesday today, correct?'

(30) Nǐ xiànzài míngbái le ba ? (Yang-Drocourt 2007: 312)
2SG now understand CLOW FORCE
'You understand now, don't you?'

It is this component of confirmation request which explains why *ba*$_{Qconfirmation}$ is incompatible with *wh* questions and *yes/no* question in the 'A-not-A' form, both being genuine information seeking questions.

(31) a. *Shéi míngbái ba?
who understand FORCE

b. *Nǐ míngbái bù míngbái ba?
2SG understand NEG understand FORCE

Lü Shuxiang (2000: 57) provides neat minimal pairs where either both *ba*$_{Qconfirmation}$ and *ma* are possible (*modulo* the associated meaning differences) or where only *ba*$_{Qconfirmation}$ is acceptable:

(32) a. Zhèi zuò fángzi shì [xīn gài de] ma?
this CL house be new build SUB FORCE
'Is this house a new one?

b. Zhèi zuò fángzi shì [xīn gài de] ba ?
this CL house be new build SUB FORCE
'This house is a new one, isn't it?'

While (32a) with *ma* is a genuine information request, this is not the case for (32b) where a positive answer is expected. Accordingly, only *ba*$_{\text{Qconfirmation}}$, but not *ma* is compatible with adverbs such as *dàgài* 'probably', *yěxǔ* 'perhaps', *shuōbùdìng* 'possibly, perhaps':

(33) [Tā dàgài yǐjīng zǒu -le] ba /*ma?
3SG probably already leave-PERF FORCE/ FORCE
'She has already left, I guess?'

(34) [Xiànzài shuōbùdìng jìngguò-le shí'èr diǎn] le {ba /*ma}?
now perhaps pass -PERF 12 o'clock CLOW FORCE/ FORCE
'It might very well be past twelve o'clock now?'

When *ba*$_{\text{Qconfirmation}}$ occurs with declarative sentences, its conjecturing component results in a weakening of the assertion (cf. Hu Mingyang 1981: 416):

(35) Nǐ tīngcuò-le ba.
2SG mishear-PERF FORCE
'You must have misheard.'/ 'You probably have misheard.'

Being a Force head, *ba* - be it as question confirmation or conjecture - occurs above low Cs such as *le* and *ne*$_{1}$:

(36) a. [$_{\text{ForceP}}$[$_{\text{ClowP}}$[$_{\text{TP}}$ Sānshí nián qián hái méi yǒu shǔbiāo] ne$_{1}$] ba].
30 year ago still NEG exist mouse CLOW FORCE
'Thirty years ago there probably didn't exist any computer mice yet.'
(Paul &Pan 2017 : 67, (50))

b. [$_{\text{ForceP}}$[$_{\text{ClowP}}$[$_{\text{TP}}$ Èrshí nián qián fāmíng-le shǔbiāo] {le /*ne$_{1}$ }] ba].
20 year ago invent -PERF mouse CLOW/ CLOW FORCE
'Twenty years ago they had probably invented the computer mouse.'

(36a) is read in a low contour, in accordance with *ba* expressing a conjecture rather than asking for a confirmation. The default stress lies on *sānshí nián qián* '30 years ago', but stressing *méi yǒu* 'not exist' or even *shǔbiāo* 'mouse' might also be possible. The analysis of *ne* as a low C here is confirmed by its unacceptability in (36b) with the telic predicate *fāmíng-le* 'have invented', given that *ne* requires atelic predicates in its TP-complement (cf. (16) – (18) above).

2.2.3. The Force head *ba*$_{IMP}$: advice or suggestion

The SFP *ba*$_{\text{IMP}}$ is called "advisative" by Chao Yuen Ren (1968: 807) because of its "softening" effect. Accordingly, an imperative containing *ba*$_{\text{IMP}}$ is understood as less harsh an order than the corresponding imperative sentence without *ba*$_{\text{IMP}}$ (also cf. Hu Mingyang 1981: 416):

(37) a. [Kuài diǎnr zǒu] ba! (Chao Yuen Ren 1968: 807)
quick a.bit go FORCE
'Better hurry up and go!'

b. [[[Bié chàng] le] ba]! (Hu Mingyang 1981: 416)
NEG sing CLOW FORCE
'Better stop singing.'

Again, the rigid ordering with respect to the low C *le* (cf. (37b) above) and the Attitude head *ou* (cf. (38) below) confirms the status of *ba*$_{\text{IMP}}$ as a Force head in the second CP-layer:

(38) Zǒu b'ou [= ba + ou] (Zhu Dexi 1982: 208)
go SFP(fusion) FORCE+ATT.
'You better go!'

Finally, (39) below illustrates the role the semantic (in)compatibility plays, in addition to the hierarchy in the split CP. While the order 'low C > Force' in itself is correct, the sequence '*ne*$_{1}$ *ba*$_{\text{advis}}$' is ruled out for semantic reasons: an event in the future, whence neither holding in the past nor ongoing in the present is incompatible with the low C *ne*$_{1}$, while this type of event is fine for the imperative advisative *ba*. This conflict leads to an unacceptable sentence:

(39) *[$_{\text{ForceP}}$ [$_{\text{ClowP}}$ [$_{\text{TP}}$ Wǒmen qù diànyǐngyuàn kàn diànyǐng] ne] ba]!
1PL go movie.theatre watch movie CLOW FORCE

This semantic incompatibility is a very robust phenomenon confirmed by all of the eighteen native speaker participants, who stated they could *not* assemble a correct sentence by using *all* of the lexical items provided, as required in this sentence assembly task.

2.2.4. ForceP: interim summary

The observations in this section, mainly based on widely used grammars and grammar manuals, straightforwardly invalidate Li Boya's (2006: 171) claim that the clause-typing heads always remain covert in Mandarin and Cantonese (whereas they may be realized overtly in Wenzhou). Given the semantically transparent and extremely well-documented *yes/no* question Force head *ma*$_{2}$ this is a very surprising statement. In particular, Li Boya (2006: 64-65) doesn't see that there are two SFPs *ma,* the *yes/no* question Force head *ma*$_{2}$ and the Attitude head *ma*$_{3}$ (cf. section 3 immediately below), despite the well-established difference between the two (cf. a.o. Chao Yuen Ren 1968: 801). Both del Gobbo et al. (2015) and Bailey (2015) adopt Li Boya's (2006) incorrect claim that Chinese has no SFPs realizing Force such as imperative and interrogation. While Del Gobbo et al. (2015: 378) see this as a parallel with sentential particles in Romance, Bailey (2015: 420) considers it a general characteristic of final question particles in VO languages that they are in fact markers of "something other than interrogative force".

2.3. Attitude Phrase

The SFPs instantiating AttitudeP involve both speaker and hearer, via the speaker's assumptions concerning the beliefs of the hearer. Again, Chinese is not unique in this respect, given that e.g. Japanese (cf. Endo 2007: 175–198) as well as Romance and Germanic languages likewise display particles in the sentence periphery encoding properties of the speaker-hearer interaction. Examining Romanian and West-Flemish, Haegeman and Hill (2013) postulate the projection DiscourseP, equivalent in function to AttitudeP in Chinese. Importantly, the characteristics of SFPs realizing DiscourseP established by Haegeman and Hill (2013) also hold for Attitude SFPs in Chinese.

First, AttitudeP does not concern nor affect the truth value of the proposition at hand. This contrasts with the SFPs instantiating ForceP, where as we have seen *ba*$_{\text{Qconfirmation}}$ conveys the speaker's belief that the proposition is true, and *ma* is a request as to the truth value of the proposition (*yes/no*). It is correct that an SFP such as the advisative *ba*$_{\text{IMP}}$ also conveys the speaker's (friendly) attitude, but at the same time this SFP is linked to a particular sentence type, i.e. the imperative. Furthermore, its status as Force head is confirmed by its obligatorily preceding Attitude SFPs such as *ou* (cf. (7a) above). As for low C, *láizhe* 'recent past' was shown to be incompatible with TP-internal negation, due to its event assertion feature (cf.

section 2.1.2 above). Attitude SFPs are thus fundamentally distinct from both low C and Force heads, an observation already made by Zhu (1982: 208), although not further elaborated upon.

Second, Attitude SFPs indicate the speaker's commitment to the sentence content; they are interactional and imply the obligatory presence of a hearer (hence infelicitous in broadcasts).

Third, Attitude SFPs are deictic, i.e. they are directly correlated with the speech act, but do not require a preceding utterance as "trigger". Finally, Haegeman and Hill (2013) concede that it is difficult to determine exactly the interpretive properties of Attitude SFPs, even though their semantic import is clearly discernible when comparing sentences with and without them. This leads to the fourth characteristic, which is the "optionality" of Attitude heads. A *caveat* is necessary here, though; if one wants to signal the discourse function associated with a particular Attitude SFP, then the presence of this SFP is evidently required.

2.3.1. The Attitude heads *ne₃* and *bàle*

Note first of all that *ne₃* is *not* a "wh-question particle", i.e. it is *not* a Force head indicating the sentence-type (*pace* L.-S. Lisa Cheng 1991), a fact again well-documented in the literature (cf. a.o. Hu Mingyang 1981: 418; Paris 1981: 389; Li and Thompson 1981: 305; Lin William C. 1984: 220; also cf. Pan & Paul 2016). In other words, in a *wh* question (cf. (40)) or in an A-*not*-A polar question (cf. (41)), the Attitude head *ne₃* is not obligatory, for the simple reason that *ne₃* does not encode the interrogative force. However, if one wants to signal the discourse function associated with *ne₃*, which *inter alia* is to solicit the co-speaker's attention, rendered here by "listen, and you…", it is evidently obligatory (cf. a.o. Wu Guo 2005; Li Boya 2006; Victor Junnan Pan 2011):

(40) a. Nǐ zuì xǐhuān hē nǎ ge páizi de déguó píjiǔ?
2SG most like drink which CL brand SUB German beer
'Which brand of German beer do you like most?'

b. Nǐ zuì xǐhuān hē nǎ ge páizi de déguó píjiǔ ne?
2SG most like drink which CL brand SUB German beer ATT
'Listen, and you, which brand of German beer do you like most?'

(41) a. Tā huì bù huì shuō bāfálìyàyǔ?
3SG can NEG can speak Bavarian
'Can he speak Bavarian?'

Tā huì bù huì shuō bāfálìyàyǔ ne?
3SG can NEG can speak Bavarian ATT
'And he, can he speak Bavarian?'

Ne₃ also occurs in rhetorical questions:

(42) Wǒ zěnme bù jìde ne?! (Zhou & Shen 2006: 121)
1SG how NEG remember ATT
'How would I not remember [it]?!'

Being an Attitude head, *ne₃* can naturally also combine with a non-interrogative complement, further invalidating its alleged status as a "clause typer" for *wh*-questions. It then expresses an exclamation/exaggeration or conveys a boasting tone (cf. (43)) and is obligatory in the presence of the speaker-oriented emphatic adverb *kě* 'really' (cf. (44)):

(43) [Tā huì kāi fēijī] ne! (Zhu Dexi 1982: 213)
3SG can drive airplane ATT
'(Imagine) he can fly an airplane!'

(44) Déguó yǔyánxuéjiā kě duō *(ne)! (Paul and Pan 2017: 55, (14))
German linguist really many ATT
'There really are a lot of German linguists!'

Zhu (1982: 213) also provides the neat minimal pair below (slightly changed) where *ne₃* alternates with *bàle*, the latter being paraphrasable as 'that's all there is to it' and having the effect of "downplaying", which is exactly the opposite of the boasting tone mediated by *ne₃*:

(45) Tāmen yào wǔbǎi kuài qián ne! Bù shì ge xiǎo shùmù!
3SG want 500 CL money ATT NEG be CL small sum
'They want (as much as) 500 dollars! That's not a small sum!'

(46) Tāmen yào wǔbǎi kuài qián bàle! Méi yǒu shénme liǎobùqǐ!
3SG want 500 CL money ATT NEG have what extraordinary
'They (only) want 500 dollars! That's nothing extraordinary!'

Finally, *ne₃* as an Attitude head can co-occur with low Cs such as *le* and must follow them :

(47) [$_{AttP}$ [$_{ClowP}$ [$_{TP}$ Shànghǎi de gōngyuán kě dà] le] ne]!
Shanghai SUB park really big CLOW ATT
'Shanghai's parks are really extremely big!

The semantics of *ne₃* and its being able to co-occur with low Cs clearly distinguishes it from the low C *ne₁* and warrants the status of the former as an Attitude head. This result also challenges a uniform analysis of *ne*1 and *ne*3 (cf. a.o. Hu Mingyang 1981, Wu Guo 2005).[11]

2.3.2. The Attitude head *ma*

The Attitude head *ma* (henceforth *ma$_{Att}$*) implies that the speaker presupposes the hearer *not* to be up to date and provides a correction of the hearer's belief, conveying something like 'this is self-evident', 'you should know' (cf. Chao Yuen Ren's 1968: 801 term "dogmatic assertion"):

(48) Tā bù shì Lǎolǐ ma? Ràng tā jìnlái ma$_{Att.}$ (Lü Shuxiang 2000: 375)
3SG NEG be Laoli FORCE let 3SG come.in ATT
'Isn't that Laoli? Let him come in. (Why do I have to tell you?)'

---

[11] Constant (2014) goes even further and incorrectly conflates the Attitude head *ne₃* with the topic head *ne* (cf. (i)). More precisely, both are claimed to be instances of the *contrastive topic* (CT) and realizations of the CT operator (distinct from the "aspectual" SFP *ne₁*) (p. 438). Cf. Paul (2014; 2015, ch. 6) for showing that the allegedly inherent contrastive value of the topic head *ne* is not borne out by the data; *inter alia*, Top° *ne* can host sentential adverbs (where [± contrast] does not apply) in its specifier, and Top° *ne* can co-occur in the same sentence with *ne₃*:

(i) [$_{TopP}$ Quèshí/ qíshí [$_{Top'}$ [$_{Top°}$ ne] [$_{TP}$ tā de nénglì shì bǐ wǒ qiáng]]]
indeed/ in.fact TOP 3SG SUB ability be compared.to 1SG strong
'Indeed/In fact, his abilities *are* greater than mine.'

(ii) [$_{AttP}$ [$_{ClowP}$ [$_{TopP}$ Nǐ [$_{Top'}$ [$_{Top°}$ ne] [$_{TP}$ nǐ wèn shéi] le] ne]?
2SG TOP 2SG ask who CLOW ATT
'And you, whom have you asked?'

Constant's (2014) conflation also glosses completely over the well-known fact that TopP is head-*initial*, while AttP is head-*final*, and over the associated consequences. Furthermore, Wei & Li (2018: 206) highlight an important tonal difference between the Top° *ne* and the Att° ne$_3$, which holds regardless of the tone of the preceding syllable; while the Top° *ne* is always pronounced in a high tone, the Att° *ne₃* is always pronounced in a low tone.

(49) Wǒ shuō jīntiān shì xīngqīsān ma$_{Att}$! Nǐ shuō bù shì!
1SG say today be Wednesday ATT 2SG say NEG be
'I say it's Wedndesday today! You say it isn't!'
(Zhu Dexi 1982: 213)

The Attitude head *ma$_{Att}$* is clearly distinct from the Force head *ma* encoding *yes/no* questions, as generally acknowledged in the literature (cf. a.o. Chao Yuen Ren 1968: 800–801, Zhu Dexi 1982: 211–213, Lü Shuxiang 2000: 375–376) and nicely illustrated by (48) with both SFPs in successive sentences. This invalidates Li Boya (2006: 64–65) who postulates a single *ma* "mark[ing] a high degree of the strength of the assertive or directive force".[12]

2.3.3. The Attitude head *láizhe*
As shown by Pan (2019a: 109), in addition to the low C *láizhe* 'recent past', there is also an Attitude head *láizhe*:

(50) [$_{AttP}$ [$_{TP}$ Tāmen liǎ shénme shíhou jié hūn] láizhe] ? (Pan 2019a: 109, (40a);
3PL two what time join marriage ATT bracketing simplified)
'By the way, when will they get married?' [13]

While Pan (2019a: 109) renders this *láizhe* as 'by the way', we think it rather refers to a former state of knowledge and accordingly can be paraphrased as 'What did you say' or 'What was + sentence', indicating that the speaker no longer exactly recalls the sentence or prior knowledge. This is particularly neat in (51a) below:

(51a) [Nǐ xìng shénme] láizhe? (Chao Yuen Ren 1968: 810)
2SG call what ATT
'What (did you just say) is your family name?'
'What was your family name?' (I forgot.)
(NOT: What was your family name before?')

(51b) [Wǒ yǐqián xìng Zhāng] (láizhe), xiànzài xìng Bāo.
1SG before call Zhang CLOW now call Bao
'My family name used to be Zhang, now it's Bao.'

This interlocutive *láizhe* is clearly different from the low C *láizhe*; accordingly, (51a) is not a question concerning somebody's family name in the past. The latter requires a temporal adverb such as *yǐqián* 'before, earlier' as in (51b), where the low C *láizhe* is optional.

Importantly, being an Attitude head, the interlocutive *láizhe* can co-occur with, i.e. follow the low C *le*, something completely excluded for the low C 'recent past' *láizhe* (cf. (6b) above):

(52) [$_{AttP}$ [$_{CLOWP}$ [$_{TP}$ Xiǎo Wáng qù nǎr mǎi cài] le] láizhe]?
Xiao Wang go where buy vegetables CLOW ATT
Wǒ xiǎng-bù- qǐlái le.
1SG think-NEG-rise CLOW

[12] Li Boya (2006) also glosses over the intonational difference observed by Chao (1968: 801). While the Force had *ma* is associated with a fairly high intonation ending in a slight drawl, the Attitude head *ma* is always short.

[13] Implementing the generalization in Paul (2015: 285) that only low Cs may occur in non-root clauses, to the exclusion of Force and Attitude heads, Pan (2019a: 109) substantiates the Attitude head status of *láizhe* in (50) by showing its unacceptability in embedded contexts such as relative clauses:
(i) *[$_{DP}$ [$_{AttP}$ [$_{TP}$ Tāmen liǎ shénme shíhou jié hūn] láizhe] de wèntí] bù qīngchǔ.
3PL two what time join marriage ATT SUB question NEG clear
('The question (*by the way) when will they get married is not really clear.') (Pan 2019a: 109, (40b))

‘Where was it/did you say that Xiao Wang went buying groceries?
I (simply) cannot recall.’

As to be expected, the inverse order ‘*láizhe le’* is ruled out. This also holds for those speakers who only marginally accept (52); they categorically reject ‘*láizhe le’*, given that there is no Attitude head *le* and that accordingly, ‘*láizhe le’* can only be parsed as the illegitimate sequence of two low Cs. Finally, note that the examples illustrating the interlocutive *láizhe* are all questions, showing that they involve the hearer, either a real or an imaginary one, because (52) can also be a self-directed question or musing.

2.3.4.The Attitude head *a*

The SFP *a* has rather complicated morphophonemics depending on the preceding word, which is often reflected in different transliterations: *ia*, *(u)a*, *(n)a*, *(ng)a* etc. (cf. Chao Yuen Ren 1968: 803, Zhu Dexi 1982: 212, Yang-Drocourt 2007: 192–195 for detailed discussion). For ease of exposition, we gloss over these phonological alternations and use the transliteration *a* throughout.

The SFP *a* is rather ubiquitous and occurs with all kinds of sentence types (declaratives, questions, imperatives, exclamatives), which makes its semantic characterization very difficult. Scholars agree that *a* conveys the personal implication of the speaker and has a general softening effect; the different interpretations observed for *a* are then due to the different sentence types it combines with (cf. a.o. Chao Yuen Ren 1968: 803–806; Zhu Dexi 1982: 212, Li and Thompson 1981: 313–317). For example, Chao Yuen Ren (1968: 804) observes that a question with the SFP *a* is less blunt than one without it, an effect which can be paraphrased as ‘by the way’ or ‘excuse me’ etc.

(53) Nǐ míngtiān chūqù bù chūqù a?
2SG tomorrow go.out NEG go.out ATT
‘(By the way) are you going out tomorrow?’

Likewise, an imperative with the SFP *a* has less the flavour of a command than an imperative without it (though according to Chao Yuen Ren [1968: 804] the softening effect with *a* is less strong than with the advisative *ba*IMP discussed above):

(54) Shuō a, bié hàipà a!
say ATT NEG be.afraid ATT
‘Say it, don’t be afraid!

In an exclamative, *a* expresses the emotion of the speaker which, depending on the sentence meaning, can be anger, astonishment, enthusiasm etc.:

(55) Nǐ kàn a, biànhuà duō dà a! (Yang-Drocourt 2007: 311)
2SG see ATT change much big ATT
‘Look, how much everything has changed!’

Finally, *a* is also compatible with rhetorical questions (cf. Victor Junnan Pan 2015: 855, (66)):

(56) Shéi bù xǐhuan chī tílāmǐsū a?!
who NEG like eat tiramisu ATT
‘Oh, who doesn’t like tiramisu?! = Everyone likes tiramisu!’

2.3.5. Wrap-up

The strict ordering observed by Zhu Dexi (1982, ch. 16) for the three classes of SFPs can be easily recast as a split CP à la Rizzi, *modulo* the addition of the projection AttitudeP (absent from Rizzi's original hierarchy) above ForceP. Importantly, studies on Romance and Germanic languages within Rizzi's split CP approach independently argue for the necessity of such a speaker/hearer related Discourse projection.

SFPs are clearly heads, because they impose selectional restrictions on their clausal complement (such as declarative or interrogative sentence type). Low Cs as (non-default) anchor interact with the properties of the extended verbal projection; depending on the (non-) bare nature of the predicate and its aktionsart (state vs non-state), they may be obligatory to make the sentence finite.

The detailed study of *ne* and *láizhe* has illustrated several problems encountered in the analysis of SFPs in general, among them the homonymy between C-elements instantiating different projections (here LowCP and AttitudeP). The SFPs *ba*$_{\text{IMP}}$ and *ba*$_{\text{Qconfirmation}}$ reveal yet another analytic difficulty, namely the homonymy between SFPs belonging to the same projection, in this case ForceP.

The decision to be made for homonymous SFPs is further complicated by the interaction between the properties of each SFP, the sentence meaning itself, the sentence intonation and the context, all of which contribute to the interpretation obtained. As a consequence, it is not always easy to pin down the meaning component provided by the SFP itself. Besides, the use of SFPs, especially those realizing AttitudeP, is also subject to individual and regional differences which still remain to be elucidated. (In general, Northern speakers seem to use SFPs more frequently than Southern speakers.) These caveats notwithstanding, it is evident that SFPs are an integral part of the syntax and as such subject to syntactic constraints, the most visible being the hierarchy of the different projections reflected in their rigid order.

3. *The cartographic approach and the acquisition of SFPs*

Having recast Zhu Dexi's (1982) three SFP-classes into a split CP à la Rizzi (1997), one might wonder whether another tenet of the cartographic approach likewise holds for Chinese, *viz.* that acquisition is "incremental" and proceeds layer by layer "up the tree", i.e. first the TP and then the periphery (cf. Friedmann/Belletti/Rizzi 2021: §5.2.1). The left periphery in Hebrew is said to be acquired in two steps "defining two zones: first a lower LP zone including Fin, Mod, and Q and then a higher LP zone that includes Force, Int, and Top." (page 37) Note that neither a head nor an entire zone can be "skipped". At the same time, the authors concede that the two zones do not form natural classes characterizable by a common feature, "because it includes topics, force markers (embedding markers), and operators such as yes/no operators (in embedded questions), relative clause operators, and *why*".

Although we concentrate on SFPs here only and abstract away from the acquisition of Topic Phrase (included in Friedmann et al.'s study), the Chinese data might nevertheless shed some light on their hypothesis. In particular, we will see that low C, Force head and Attitude heads are more or less acquired simultaneously. Since Chinese is a *pro*-drop language, on the surface a TP often simply consists of a bare VP. It is therefore difficult to decide whether indeed the full structure of the TP (including aspect, auxiliaries and negation) is acquired before the CP. Given that the child data also include utterances consisting of NPs plus the Attitude head *a* (cf. (65c) below), it is equally plausible to postulate the simultaneous acquisition of TP *and* CP (something which has to be assumed for the acquisition of Germanic V2 languages with V-to-C movement in any case).

Tao Yu (2012) sets the onset for the productive use of SFPs at the age of 01;07 and reports the spontaneous use of the following SFPs before the age of two years by the four children examined: the low C *ne*$_1$ and the Attitude *ne*$_3$, the Force head *ma* (*yes/no* question) and the dogmatic assertion Attitude head *ma*, the two Force heads *ba*, i.e. advisative *ba* in imperatives and the confirmation request question *ba*.

(57) – (61) show a sample of the sentences produced by the children (cf. Tao Yu 2012: 29-34):

(57) Chī táng ba (ZTX 01;08; 18)
eat candy FORCE
'(Let me) have some candy.'

(58) XXX, wǒ zài nǎr ne? (CY 01; 11; 17; playing hide and seek with the interviewer XXX)
XXX 1SG be.at where ATT
'XXX, where am I?'

(59) a. Adult: Béng wán'r le!
NEG play CLOW
'Do no longer play!' = 'Stop playing.'

b Child: Hē shuǐ ne. (SJQ 01; 07; 16)
drink water CLOW
'I'm drinking water.'
(i.e. the child is not playing with her water cup as implied by the adult's admonition.)

(60) a. Adult: Nǐ kàn bù shì huǒchái.
2SG see NEG be match
'You see, it is not the matches (that set the fire).'

b. Child: Shì huǒchái ma (SJQ 01/ 10; 22)
be match ATT
'It is the matches (that set the fire).'

(61) a. Adult: Bù xǐhuān chī táng, shì bù shì?
NEG like eat candy be NEG be
'You don't like to eat candies, do you?'

b. Child: Chī táng ma ! (ZTX 01;08; 24)
eat candy ATT
'(Naturally) I eat candies!'

The children distinguish between the low C *ne1* in (59b) and the Attitude head *ne3* in (58), with both sentences exactly corresponding to the target adult grammar. Their mastering of the Attitude head *ma* is particularly noteworthy, because this implies their contradicting the previous adult utterance and insisting on their own utterance as the only truthful statement.

Guo (2016) and Peng Lulu (2016) report similar results from three Beijing Mandarin-speaking children aged between 1;3 and 3;1; in general, SFPs are acquired by the age of 2 years. For reasons of space, we only illustrate phenomena not included in Tao Yu's sample.

(62) Méi diàn. Méi diàn la ! [= le + a]! (ZZC 1;10;13)
NEG electricity NEG electricity SFP-fusion CLOW + ATT
'There is no electricity. There is no electricity!' (Peng Lulu 2016: 118-119)

According to Peng Lulu (2016), this fused form of the low C *le* and the Attitude head *a* is the first SFP acquired by the children in her sample. Given that the same children also produce sentences with the low C *le* (cf. (64a) below), they clearly know the difference between the two.

(63) a. Māma zài zhè ma ? （WYF 1;10;16）
mum be.at here FORCE
'Is mum here?'

b. Hǎo chǒu a ! (WYF 1;09;15)
so be.ugly ATT
'(This) is so ugly!'

(64) Wǒ zhǎodào māma le. (ZZC 2;00;21)
1SG find mum CLOW
'I have found mum.'

(65) a. Child: Yǒu jīmù. (ZZC 1;10;20)
exist toy.bricks
'There are toy bricks.'

b. Father: Jīmù
toy.bricks

c. Child: Jīmù a!
toy.bricks ATT
'Ha, toy bricks!'

(63) illustrates the Force *yes/no* question head *ma*, distinct from the homonymous Attitude head *ma* in (60b) and (61b) above. ZZC's sentence of the form 'NP *a*' is rather intriguing, because unlike her/his father in (65b), ZZC does not use a one word utterance, but adds *a*. (Note that ZZC starts out with the complete sentence (65a)).Whether (65c) indeed represents an AttP (whose TP complement consists of an NP only) or rather an NP followed by the homonymous pause particle *a* must be left open here.

To summarize, by the age of 2-3 years, children have in principle acquired all the three types of SFPs, with their often very subtle semantics/pragmatics and the selectional restrictions on their complements. There is no real evidence for the "first TP, then CP" incremental acquisition hypothesis postulated by Friedmann et al. (2021). Upon further reflection, this is in fact a desirable result, because TP and CP delimit each other; for the child to acquire the TP projection requires the knowledge about the periphery beyond.

4. Conclusion

SFPs in Mandarin Chinese have been demonstrated to be complementisers and to realize the heads of three projections in the rigidly ordered head-final CP 'Low CP < ForceP < AttitudeP'. Importantly, this split CP only exists in root contexts, whereas in non-root contexts at most one C is allowed, if at all. More precisely, C-elements acceptable in non-root contexts are restricted to low C (*láizhe*$_1$*, le, ne*$_1$), to the exclusion of the Force and Attitude heads.

All SFPs display a complex feature make-up (among them the specification for [± root]), thus challenging Huang, Li and Li's (2009: 35) view that such complex feature bundles are a characteristic of functional categories in Indo-European languages, but do not exist in Chinese.

Importantly, low Cs, by virtue of their acting as (non-default) anchors, have been shown to play an important role in determining the temporal interpretation and finiteness in Chinese,

and can therefore no longer be neglected by studies addressing these issues, as has been the case so far (cf. a.o. Sun Hongyuan 2014, Lin Jo-wang 2012).

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