

## A Semantic Analysis of *-ne* as a Topic Marker: A Grammaticalization Perspective<sub>1</sub>

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This article explores the origins and functions of the particle *-ne* in Mandarin Chinese. The seven different uses of *-ne* can be related to three different lexical sources. Three of the seven uses of *-ne* were derived from a deictic word meaning “like this/that” in Middle Chinese. I give a formal diachronic semantic analysis to show that such a deictic use can be transferred to the discourse domain and become a topic marker, which can be argued to correspond to the squiggle operator in focus semantics (Rooth 1985, 1992). Such an analysis in terms of the grammaticalization paths of *-ne* lends further support to Constant’s (2014) synchronically-based proposal. I also point out the main differences between my proposal made in this article and Constant’s (2014) arguments.

**Keywords:** sentence-final particles, discourse indexical, grammaticalization, focus semantics, topic marker, contrastive topic, formal diachronic semantics

### 1. Introduction

The particle *-ne* in Mandarin Chinese can be used in a variety of linguistic environments. Examples (1), (2) and (3) illustrate the use of *-ne* as a sentence-final particle in different types of interrogative sentences, such as the fragment question in (1), the wh-question in (2) and the alternative question in (3).

- (1) Zhāngsān xǐhuan hē chá. Lǐsì ne?  
Zhangsan like drink tea Lisi NE  
‘Zhangsan likes to drink tea. What about Lisi?’
- (2) Zhāngsān xǐhuan hē chá. Lǐsì xǐhuan hē shénme (ne)?  
Zhangsan like drink tea Lisi like drink what NE  
‘Zhangsan likes to drink tea. What then does Lisi like to drink?’

<sub>1</sub> I would like to thank the audience at NACCL-30 for their comments, especially Professors Wenjiang Yang (Harvard University and Nankai University), Sze-Wing Tang (The Chinese University of Hong Kong), Zhuo Jing-Schmidt (University of Oregon), and Mark Alves (Montgomery College).

- (3) Lǐsì xǐhuan hē chá (ne), háishi xǐhuan hē kāfēi (ne)?  
 Lisi like drink tea NE or like drink coffee NE  
 ‘Does Lisi like to drink tea or coffee?’

I gloss the particle *-ne* simply as NE here because the exact meanings and functions of *-ne* are the main issues that this article tries to solve. The fragment question, or equivalently, the follow-up question, in (1) can be regarded as an elliptical question the content of which can be retrieved from the context. In this example, the full question is equivalent to the wh-question in (2). The particle *-ne* is optional in wh-questions,<sup>2</sup> as shown by the parentheses in example (2). The sentence is still acceptable as a question without the particle *-ne*. In (3), *-ne* can be used in an alternative question. It can follow either the first alternative, or the second one, or both. It is freely optional, too.

The optionality of *-ne* in fragment questions such as in (1) is highly debatable. Although it is very hard to omit *-ne* in such follow-up questions, Shao (1989, 1996) does argue that the fragment question “Lǐsì ne” in (1) can be achieved just by uttering “Lǐsì?” without *-ne*, but presumably with the correct intonation to compensate for the omission of *-ne*.<sup>3</sup> Here I assume that in ordinary *unmarked* uses, the particle *-ne* cannot be omitted in fragment questions.

There are two other types of questions in Chinese, i.e. the A-not-A and polar questions. The sentence-final particle *-ne* is compatible with A-not-A questions, as shown in (4), but not with polar questions, as shown in (5).

- (4) Lǐsì xǐ-bu-xǐhuan hē chá (ne)?  
 Lisi like-not-like drink tea NE  
 ‘Does Lisi like (or not like) to drink tea?’
- (5) \*Lǐsì xǐhuan hē chá ma ne?  
 Lisi like drink tea Q NE  
 Intended reading: ‘Does Lisi like to drink tea?’

Wang (1967) argues that A-not-A questions share some similarities with alternative questions via a syntactic operation of reduction.<sup>4</sup> Thus there might be syntactic reasons why both types of questions can take the sentence-final particle *-ne*. In contrast, the polar

<sup>2</sup> Note that here the optionality of *-ne* pertains to the interrogative force of the sentences, i.e. of being a question. As Paul (2014) argues, *-ne* is not optional if certain discourse-related meanings are to be expressed. Thus the function of *-ne* cannot be a *bona fide* wh-binder in the sense of Cheng (1991). See Li (2006) for a detailed argument against the claim of *-ne* as a wh-binder.

<sup>3</sup> Dong (2009: 34-38) makes a detailed discussion of this point.

<sup>4</sup> Huang, Li and Li (2009: 244-260) give a more nuanced discussion of the connections between A-not-A questions and alternative questions.

question with the question particle *-ma* cannot take the particle *-ne*, if the order of these two particles is *-ma ne*.<sup>5</sup>

Apart from these uses in different types of questions, the particle *-ne* can be used in declarative sentences, too. For example, in (6) its function is to emphasize the meaning of the statement, i.e. stressing how expensive the TV set is. The abbreviation CL stands for “classifier”. Let’s call this *-ne* the “*emphatic particle*” use of *-ne*. In example (7), the function of *-ne* is to indicate an ongoing situation. It is more precisely speaking an aspect marker, but here I call this the “*stative particle*” use of *-ne*.

(6) Zhège diànshì liǎng qiāng duō kuài ne!  
 this.CL TV two thousand many dollar NE  
 ‘Wow, this TV is more than \$2000!’

(7) Zhāngsān kànshū ne.  
 Zhangsan read.book NE  
 ‘Zhangsan is reading.’

Since the example in (7) is a declarative, it can be turned into a polar question by using the question particle *-ma*, as shown in (8).

(8) Zhāngsān kànshū ne ma?  
 Zhangsan read.book NE Q  
 ‘Is Zhangsan reading?’

Therefore, the example (8) is quite different from example (5). While example (5) shows that *-ne* cannot be used to follow a polar question, example (8) just shows that *-ne* can be used in a declarative sentence, without saying anything about its compatibility in questions.

In the examples (1)-(8) given above, *-ne* is used as a sentence-final particle. On the other hand, *-ne* can be used inside a sentence as well, as shown in (9), where it is used after a topic phrase, and it is optional.

(9) Zhège wèntí (ne), wǒmen hái yào yánjiū yíxià.  
 this.CL issue NE we still need discuss a little

<sup>5</sup> Pan and Paul (2016) argue that syntactically *-ma* is the Force head in the head-final split CP structure, in the framework of Rizzi (1997, 2004), while *-ne* is in the discourse-related AttitudeP above the Force. Their recognition of the discourse function of *-ne* is further supported in section 2 and section 3 in this article, although the kind of discourse function that I propose here is different from Pan and Paul’s (2016). It is interesting to see how their split CP structure can account for the incompatibility of *-ma* and *-ne* if their surface order is *-ma ne*. However, I leave this issue for further research.

‘As for this issue, we still need to discuss a little.’

Jiang and Cao (2005: 288) summarize these different uses and functions of the particle *-ne* in a neat classificatory system, and here I add the use of *-ne* in A-not-A questions to their system to derive the classification in Figure 1.

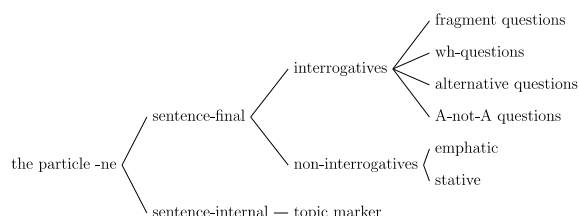


FIGURE 1. Seven uses of the particle *-ne*, modified based on (Jiang and Cao 2005: 288)

As shown in Figure 1, although *-ne* can be used in seven different linguistic environments, it could very well be the case that there are only two or three meanings or functions of *-ne* and they are compatible with different types of sentences. Many scholars (e.g. Li 2006, Paul 2014, Pan and Paul 2016) have tried to reduce the number of core meanings of *-ne* to fewer than seven.

As a first step towards collapsing some of the seven uses of *-ne* in Figure 1 into fewer ones, we see that there is a connection between the functions of *-ne* in fragment questions as shown in (1) and in topicalized sentences as shown in (9). Although the full question form of the fragment question in (1) is a wh-question like in (2), where the *-ne* is used sentence-finally, we can actually continue the fragment question in (1) with the full question, e.g. as shown in (10).

- (10) Zhāngsān xǐhuan hē chá. Lǐsì (ne), tā xǐhuan hē shénme?  
 Zhangsan like drink tea Lisi NE, he like drink what  
 ‘Zhangsan likes to drink tea. Now about Lisi, what does he like to drink?’

In (10), the DP “Lǐsì” has been topicalized from the subject DP position, and a resumptive pronoun, i.e. “tā”, is used.<sup>6</sup> Note here that the particle *-ne* is optional, similar to the situation in (9). Thus to some extent, we may say that the use of *-ne* in fragment questions could be a topic marker of some sort, similar to the function of *-ne* in topicalized sentences. Since the use of *-ne* in fragment questions can be regarded as elliptical forms of full questions, we may very well further propose that the interrogative uses of *-ne* are actually some kind of topic marker, too. Constant (2014) develops a theory of *-ne* as a contrastive topic marker based upon synchronic data and theoretical considerations. In this article, I use historical linguistic data to show that a topic marker

<sup>6</sup> For more discussions on the use of resumptive pronouns in Chinese, see Dong (2002: 32-37), Shen and Dong (2004: 25-27).

use of *-ne* can indeed originate from its lexical source in the process of grammaticalization.

The remaining sections of this article are arranged as follows. Section 2 discusses three lexical sources of *-ne* and points out that there is a natural connection between one of these lexical sources and the use of *-ne* as a topic marker. Section 3 gives a formal diachronic semantic analysis of such a connection. Section 4 compares the proposal made in section 3 and Constant's (2014) proposal. Section 5 makes some methodological notes and concludes this article.

## 2. Three lexical sources of *-ne* in its grammaticalization

The rationale for looking at the lexical sources of *-ne* is to seek connections between these original lexical meanings and their current grammatical functions. Many grammatical morphemes in Modern Chinese can be traced to their original meanings. For example, the perfective aspect marker *-le* can be traced back to the verb *liǎo* ("to finish, to be done") used in texts from the late Tang Dynasty (Norman 1988: 123). Thus if synchronic data cannot completely solve the issues as to the exact meanings of certain grammatical morphemes, a look at their original lexical meanings can give us important clues. In this section, I look at the grammaticalization of the particle *-ne*.

Jiang (2005) gives a comprehensive summary of the historical development of Chinese grammar. Regarding the different functions of *-ne*, a less controversial conclusion is that the stative particle use, as shown in (7), developed from the locative noun *lǐ* 裏<sup>7</sup> (MC: li<sub>35</sub> "inside")<sup>8</sup> in texts from the late Tang Dynasty around the 10<sup>th</sup> century. Early examples were mostly used in non-interrogatives, consistent with how it is used in Modern Chinese as shown in the classification in Figure 1. I use *-li* here to represent this particle. According to Bybee, Perkins and Pagliuca (1994: 128-129), locative expressions are a common lexical source for the progressive aspect maker cross-linguistically. In this sense, the Chinese *-li* > *-ne* development is an instance of the common grammaticalization path *Locative*>>*Aspect*.

Sun (1992) argued that the other non-interrogative use of the sentence-final particle *-ne* in Figure 1, i.e. the emphatic particle, as shown in example (6), can also be related to *-li*. One possible explanation is that the aspectual meaning of *-li* initially focused on the ongoing-ness or the holding of the state. But then a shift in the focus to the state itself can help to emphasize the statement. Thus this development can be regarded as a secondary development after the *Locative*>>*Aspect* change. Let's represent this grammaticalization path as *Aspect*>>*EmphaticParticle*.

<sup>7</sup> The phonological classes of 裏 in Middle Chinese include 止開三上之來. These are given here for reference. There are other variants of this character, including: 里, 俚, 哩.

<sup>8</sup> MC stands for "Middle Chinese". The Middle Chinese pronunciation is based on Pan Wuyun's (2000) system. The tonal reconstructions are based on Zhengzhang's (2003) descriptions. See Dong (2014: 69) for further discussions. In order to distinguish the tonal numerals from the footnotes, I use subscripts for the tonal numerals here.

In terms of the written forms of this particle, Sun (1992) showed that by the Ming Dynasty, *-li* was already used interchangeably with the written form of *-ne*, probably due to their phonological similarity.<sup>9</sup> This merge of phonological and written forms also led to the convergence of their functions into one form, i.e. the particle *-ne* in Modern Chinese.

A second lexical source of *-ne* is the Middle Chinese deictic word *nǐ* 嚢<sup>10</sup> (MC: ɲi<sup>35</sup>, “like this/that”)<sup>11</sup>. Let’s use *-ni* to represent this word. Sun (1992) gave the following example from the Song Dynasty (AD 960–1279).<sup>12</sup>

- (11) 五祖老嚢!  
 Wǔ Zǔ           lǎo nǐ!  
 five patriarch old thus  
 ‘The Fifth Patriarch is old like this!’

In example (11), the phrase “*lǎo nǐ*” means “old like this/that”. Tang (2016) cites Sun’s (1999) explanation of the use of the word *-ni*, which says the typical use of *-ni* is accompanied by some gesture, e.g. pointing, and etc. This is exactly a typical deictic use, and I argue in section 3 from a formal semantic perspective that this deictic meaning can be transferred to the discourse domain to function as some sort of topic marker.

Sun (1992) further argued that *-ni* acquired a function to ask a fragment question, as shown from the following example from the *Zǔ Táng Jí* 祖堂集 [*The Anthology of the Patriarchal Hall*] dated to AD 952.

- (12) 背後底嚢?  
 bèi hòu dǐ nǐ?  
 back behind DE NI  
 ‘What about the one behind you?’

In (12), “*dǐ*” is equivalent to the Modern Chinese nominalizer “*de*”. I gloss “*dǐ*” as DE. The phrase “*bèi hòu dǐ*” can be translated as “the one (person) behind (someone)”. The word “*nǐ*”, or simply *-ni*, is glossed as NI. Therefore the meaning of the sentence in (12) is “what about the one behind you?” This is exactly the same as a fragment question with the particle *-ne* in Modern Chinese. Sun (1992) also gave one example from the *Zǔ Táng Jí* where the same *-ni* is used in a wh-question with *zuòmó* 作麼 (“how”, “why”).

<sup>9</sup> The l-n alteration is still quite common in Modern Chinese dialects.

<sup>10</sup> The phonological classes of 嚢 in Middle Chinese include 止開三上之孃. This morpheme was also written with variant forms such as 你, 尔, 爾, 爾, 尼.

<sup>11</sup> In the *Guǎngyùn* 廣韻, it is defined as 指物兒也.

<sup>12</sup> Note that this is not the earliest example. I cite this example because of its clarity.

Now we see that originally, *-ni* was attached to an adjective, or rather a stative verb, as shown in (11). Then it developed into a fragment question marker, as in (12), via both syntactic analogy and semantic extension. In terms of the syntax, the original use of *-ni* was attached to a short word or phrase, and a simple extension from this to other fragments of phrases could be possible. In terms of the semantic connection, we need to consider the typical context of use of a fragment question such as in (12). Presumably, in the prior context of (12), someone else was mentioned with regard to certain information, and the use of (12) is to ask for the same kind of information about “the one behind you”. This “same kind of information” can be considered to have the same “pointing” function, just like the meaning of *-ni* in (11). A more literal translation of (12) is thus “what about the one behind you with respect to this/that information?” The deictic meaning “like this/that” of *-ni* is transferred from the spatial domain, i.e. the “pointing”, to the discourse domain, i.e. “referring back to the same kind of information”. Tang (2015: 13) also notes the anaphoric function of both *-ni* in earlier texts and *-ne* in Modern Chinese. Also at the same time when *-ni* was used in fragment questions, it was used in full questions as well. Since fragment questions are elliptical forms of full questions, the use of *-ne* in full questions can be similarly explained in terms of semantic extension.

According to Sun (1992), the written form of *-ni* was replaced by the written form of *-ne* in the Yuan Dynasty (AD 1271–1368). The replacement of *-ni* by *-ne* could have been a natural development of *-ni* in terms of its further semantic bleaching and phonological weakening, which are typical processes involved in grammaticalization. The particle *-ne*, both in the written form and in its phonological form, has been retained since then, and this is the origin of the Modern Chinese interrogative use of *-ne* in both the fragment questions and full questions.

Thus we may characterize the development of the interrogative use of *-ne* as from a deictic word to a discourse indexical that refers back to a question that has been asked either implicitly or explicitly in prior contexts. Now recall that in section 1, I mention briefly the connection between the sentence-internal topic marker use of *-ne*, as shown in (9), and the interrogative uses of *-ne*, as shown in (10). I further argue that the interrogative uses of *-ne* are also topic markers, and the semantic function of such a topic marker use is a discourse indexical. Now *DeicticWord* >> *TopicMarker* is another grammaticalization path of the Modern Chinese *-ne*.

There is a third lexical source for *-ne* used in alternative questions. Jiang (2005) points out that this use of *-ne* was derived from the particle *-na* 那<sup>13</sup> (“that”) found in Pre-Modern Chinese texts. Interestingly here, the original meaning of *-na* is also deictic. As for the lexical source of the *-ne* in A-not-A questions, it is still not quite clear. Let’s set this issue aside for now.

In summary, the uses of *-ne* as shown in Figure 1 can be related to three different lexical sources, and they correspond to different semantic functions in Modern Chinese.

<sup>13</sup> The phonological classes of 那 in Middle Chinese include 果開一去歌泥.

In this article, I focus on the second lexical source, i.e. *DeicticWord*>>*TopicMarker*, and argue that such a historical development can help us understand the meaning of its current use. I give a formal diachronic semantic analysis of its grammaticalization next.

### 3. A formal diachronic analysis

The grammaticalization data indicate that some of the functions of the particle *-ne* can be unified in being a topic marker, and there is a connection between the original lexical meaning of *-ni* and the discourse indexical function of a topic marker. This view further strengthens the conclusions drawn from synchronic data by other researchers. For example, Li and Thompson (1981: 306) paraphrase the meaning of *-ne* as “*This is what I say in connection with your previous claim, expectation, or belief*”.

More recently Constant (2014) also argues that there are two major functions of the particle *-ne*. One is the contrastive topic marker, and the other is an aspect marker. Thus he is proposing that one of the two functions of *-ne* is not only a topic marker, but also always a contrastive topic marker. One of the reasons for claiming *-ne* to be a contrastive topic marker is that in non-contrasting contexts, *-ne* is infelicitous. Constant (2014: 314-315) gives the following examples.<sup>14</sup>

- (13) Rèlìxué,           dàbùfen de rén   kěnéng dōu méi tīng-shuō-guo.  
thermodynamics most   DE person possible even not hear-say-EXP  
‘Most people have probably never even heard of thermodynamics.’  
Literally: ‘Thermodynamics, most people...’
- (14) Rèlìxué           ne, dàbùfen de rén   kěnéng dōu méi tīng-shuō-guo.  
thermodynamics CT most   DE person possible even not hear-say-EXP  
‘Thermodynamics ne, most people have probably never even heard of.’

The example in (13) can be the first sentence uttered by a professor in a class on thermodynamics, while example (14) sounds odd as the opening sentence of a class on thermodynamics. It is more felicitously used when there is a prior context that discusses various areas of physics, e.g. astronomy, which most people have heard of, and thermodynamics, which is less well-known. Therefore, the comparison shows that there are genuine non-contrastive topics in Chinese, but the kind of topics marked by *-ne* should always be contrastive, at least in its *unmarked* uses.

Büring (2003) proposes a tree diagram based on Roberts’ (1996)<sup>15</sup> theory of Question Under Discussion (QUD) to model the discourse structure of contrastive topics. I use Figure 2 to illustrate this idea.

<sup>14</sup> EXP stands for experiential aspect marker; CT stands for contrastive focus marker.

<sup>15</sup> Roberts’ (1996) article is revised and formally published as Roberts (2012).



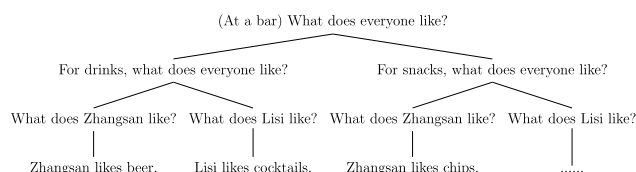


FIGURE 2. Illustration of question under discussion based upon Constant’s (2014: 33)

Suppose we are at a bar ordering drinks and snacks. We have to figure out what drinks each person likes, and then what snacks each person likes before placing the orders. The discourse strategy can proceed from asking about everyone’s favorite drinks first by asking what Zhangsan likes to drink, what Lisi likes to drink, and etc. Then we can ask questions about what snacks one prefers. In each of these sub-questions, “Zhangsan”, “Lisi”, and other individuals in the context are the contrastive topics. With this model of discourse contexts, I propose that the function of the topic marker use of *-ne* can be formally represented as in Figure 3.

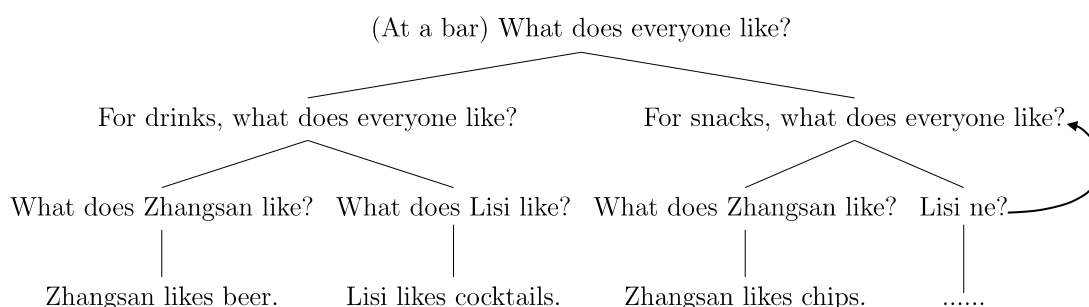


FIGURE 3. The particle *-ne* as a discourse indexical

In Figure 3, the function of *-ne* is to “point” towards the current question under discussion, as shown by the arrow. Thus the original deictic meaning has been transferred from the spatial domain to the discourse domain. It is indeed in this sense that we may also call such particles “discourse indexicals”.

Now based on Büring’s (2003) theory and Rooth’s (1985, 1992) theory of focus interpretation, I give a formal semantic analysis of such discourse indexicals, in terms of the squiggle operator “~” in focus semantics. According to Rooth (1985, 1992), a sentence containing a focus element has both an ordinary semantic value  $\llbracket \cdot \rrbracket_o$ , and a focus semantic value  $\llbracket \cdot \rrbracket_f$ . For example, the sentence in (15) has a focus accent on “John”, while the sentence in (16) has a focus accent on “Mary”.

- (15)        **John**<sub>F</sub> likes Mary.

(16) John likes **Mary<sub>F</sub>**.

To calculate the ordinary semantic values of both (15) and (16), the contribution of the focus accent is ignored, and thus their ordinary semantic values are exactly the same, as shown in (17) and (18).

(17)  $\llbracket \mathbf{John}_F \text{ likes Mary} \rrbracket_o = \lambda w. \text{ John likes Mary in } w.$

(18)  $\llbracket \text{ John likes } \mathbf{Mary}_F \rrbracket_o = \lambda w. \text{ John likes Mary in } w.$

However, the focused element contributes a set of alternatives of the same type when calculating the focus semantic values. For example, both “**John<sub>F</sub>**” and “**Mary<sub>F</sub>**” denote a set of individuals of type  $e$ . Thus the focus semantic values of (15) and (16) are as in (19) and (20) respectively.

(19)  $\llbracket \mathbf{John}_F \text{ likes Mary} \rrbracket_f = \{ \lambda w. x \text{ likes Mary} \mid x \in D_e \}$

(20)  $\llbracket \text{ John likes } \mathbf{Mary}_F \rrbracket_f = \{ \lambda w. \text{ John likes } y \mid y \in D_e \}$

The semantics in (19) yields a set of alternatives, e.g. {John likes Mary, Daniel likes Mary, David likes Mary, ...}, while the set of alternatives in (20) could be {John like Mary, John likes Kate, John likes Alice, ...}. These are clearly very different alternatives.

The usefulness of such sets of alternatives can be shown in a constraint based on discourse structure. For example, the sentence in (15) with its focus accent on “John” is a felicitous answer to the question in (21), but not to the question in (22). The reverse is true with respect to the relation between (16) and the two questions in (21) and (22).

(21) Who likes Mary?

(22) Who does John like?

The questions in (21) and (22) are part of the prior discourse contexts of (15) and (16) respectively. The discourse structure constraints where the focus accent should be. Rooth (1985, 1992) realizes this constraint via indexing as shown in (23) and (24).

(23)  $[\mathbf{John}_F \text{ likes Mary}]_{\sim 5}$

(24)  $[\text{ John likes } \mathbf{Mary}_F]_{\sim 7}$

Correspondingly, the antecedent set  $C$  of (23) and (24) can be represented as (25) and (26), which are actually the semantic values of the two questions in (21) and (22) respectively.

(25)  $C_5 = \{ \lambda w. x \text{ likes Mary} \mid x \in D_e \wedge \mathbf{person}(x) \}$

(26)  $C_7 = \{ \lambda w. \text{ John likes } y \mid y \in D_e \wedge \mathbf{person}(y) \}$

Thus the constraint can be that the antecedent set is a subset of the focus semantic value of the co-indexed sentence. It is easy to check that the set in (25) is a subset of the set in (19), and the set in (26) is a subset of the set in (20).

Similarly with respect to the contribution of topic-marked phrases, Büring (2003) proposes a system of CT-congruence to check the correct accent placements on contrastive topics (CT) and foci within the discourse structure of QUD. To illustrate Büring's (2003) idea very briefly here, let's say that (27) is similar to (16), but with an additional CT accent on "John".

(27)        **John**<sub>CT</sub> likes **Mary**<sub>F</sub>.

The focus semantic value of (27) is still the same as in (20), but the CT semantic value of (27) is a set of sets of alternatives, i.e. a set of questions such as the one in (28).

(28)         $\llbracket \text{John}_{CT} \text{ likes Mary}_F \rrbracket_{CT=}$   
               {who does John like?, who does Daniel like?, who does David like?, ...}

The CT-congruence constraint says that the utterance (27) is felicitous if in the discourse structure there is a set of questions  $Q$  such that for each  $Q' \in Q$ ,  $Q'$  is a member of set (28) that is the CT-value of the utterance (27), and  $Q'$  is either identical to or a sister of the question that immediately dominates the utterance (27). We can approach the function of the topic marker *-ne* in Chinese in a similar fashion.

Let's look at the subtree on the right side in Figure 3 above. The question under discussion is "for snacks, what does everyone like?". The semantic value of this question can be a set of questions, e.g. {what does Zhangsan like?, what does Lisi like?, ...}. The contribution of *-ne* is to point back to this set  $Q$  and stipulate that the semantic value of "Lisi *ne*" is a member of the set of questions  $Q$ . I propose that the semantic function of the topic marker *-ne* is similar to the squiggle operator " $\sim$ ", such as shown in (23) and (24) above. Therefore *-ne* introduces an index pointing towards a set of questions, such as shown in (29). I represent the elliptical part of "Lisi *ne*" as an IP, which is interpreted as a set  $Q'$  of functions, each of which applies to  $l$ , i.e. "Lisi", as shown in (30).

(29)        [ Lisi (IP) ]-*ne*<sub>2</sub>

(30)        [  $Q'(l)$  ]-*ne*<sub>2</sub>

The rule used in (30) is Rooth's (1985) Image Construction Functional Application. Dong (2009: 42) provides more illustrations of how this rule works in Chinese, but here I do not discuss this further. Now we can formulate the discourse indexing as follows:

(31)        Discourse indexing via *-ne*:  
               There is an antecedent set  $Q_2$  of questions such that  $Q'(l) \in Q_2$

This works more straightforwardly if we consider a wh-question with the topic marker *-ne*, such as in (32). The indexing is indicated in (33).

- (32) **Lǐsì**CT xǐhuan **shénme** NE?  
Lisi like what NE  
'What does Lisi like?'

- (33) [ **Lǐsì**CT xǐhuan **shénme** ]-ne<sub>2</sub>

The indexing simply checks that the antecedent set of questions  $Q_2$  contains the question  $Q'$  "Lǐsì xǐhuan shénme?", i.e.  $Q' \in Q_2$ .

Now let's consider a declarative such as the one in (34), where *-ne* is used sentence-internally. I argue that such uses can be considered a Question-Answer pair, i.e. with the fragment question "Lǐsì ne", followed by the answer "(tā) xǐhuan qǔqí". Therefore such cases can be similarly accounted for by resorting to fragment questions, such as illustrated in (29), (30) and (31).

- (34) **Lǐsì**CT ne, (tā) xǐhuan **qǔqí**.  
Lisi NE he like cookies  
'As for Lisi, he likes cookies.'

With this system of discourse indexing, we can explain the function and meaning of the topic marker use of *-ne* in fragment questions, wh-questions, and sentence-internal *-ne*. In terms of the use of *-ne* in alternative questions and A-not-A questions, they may be similarly accounted for, even though their historical origins might be different from the topic marker *-ne*, as discussed in section 2. This is because of the convergence of all three lexical sources into one *-ne* in Modern Chinese. Their functions can merge as well. The topic marking function is therefore transferred to the *-ne* used in other situations.

#### 4. Comparisons with Constant's (2014) proposal

In this section, I compare the analysis that I make in section 3 in terms of discourse indexicality with Constant's (2014: 439-440) compositional semantics in terms of topic raising. Let's look at Constant's (2014) example, cited here as (35).

- (35) (Talking about two busy parents. The mom is always getting home late.)  
Bàba ne, gāncuì jiù bù huí-lái.  
dad CT simply just not return  
'As for the dad, he doesn't even come back home at all.'

The sentence in (35), originally from Shao (1989: 174), can be derived via the structure shown in Figure 4.

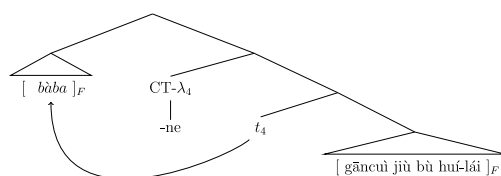


FIGURE 4. Topic-raising analysis by Constant (2014: 440)

As shown in Figure 4, the DP “bàba” moves from within the IP to the position above CT. As for how sentence-final *-ne* is derived, Constant (2014: 446) argues that *-ne* should be phonologically realized at the right edge of an intonation phrase, such as the topicalized phrase, or at the end of a sentence. Thus when there is no overt topic raising, such as in example (36), originally from Chao (1968: 802), cited by Constant (2014: 448), the contrastive topic phrase remains in situ, and *-ne* has to be attached to the whole sentence because of phonological reasons.

- (36) (You understand now)  
**TĀ** dǒng-bù-dǒng **ne**?  
 he understand-not-understand CT  
 ‘(But) does *he* understand NE?’

With the illustration of Constant’s (2014) proposals sketched above, now I point out some differences between my arguments and Constant’s (2014). One difference is that in my analysis the discourse indexicality of *-ne* is formally characterized, which draws a logical connection between its lexical source and its current function, via a cognitive transfer from the spatial domain to the discourse domain in the process of grammaticalization. Constant’s (2014) compositional semantics does not really reference the discourse function of *-ne* directly, although it is described in much detail.

Another difference is that Constant (2014) takes the sentence-internal topic marker *-ne* as the typical example, while it is harder to give a compositional semantics for the sentence-final *-ne*. He does not give a full semantic analysis to such sentence-final uses of *-ne*, and instead resorts to phonological reasons. In my view, the sentence-internal uses of *-ne* are Question-Answer pairs. They are the same as the fragment questions. Moreover I take the sentence-final *-ne* as the typical example to illustrate in terms of the indexing constraint. The elliptical form in a fragment question is simply a special case of a non-elliptical form. Note that although polar questions are not compatible with the particle *-ne*, as shown in (5) in section 1, the elliptical form with *-ne* can be indeed interpreted as a polar question. For example:

- (37) A asks B: Nǐ xǐhuan kànshū ma?  
 you like read.book Q

‘Do you like reading?’

B: Xǐhuan.  
like  
‘I like reading.’

A asks C: Nǐ ne?  
you NE  
‘What about you?’

The question that A asks C is a polar question, i.e. “do you like reading?”. But such a polar question cannot take the topic marker *-ne*. To explain this, we may look at the discourse indexicality constraint in (31) again, and it refers to the semantic values of questions, instead of the forms. Thus polar questions are semantically exactly the same as A-not-A questions. The semantic values of both the polar question in (38) and the corresponding A-not-A question in (39) are exactly the same, i.e. the set in (40).

(38) Zhāngsān xǐhuan kànshū ma?  
Zhangsan like read.book Q  
‘Does Zhangsan like reading?’

(39) Zhāngsān xǐ-bu-xǐhuan kànshū?  
Zhangsan like-not-like read.book  
‘Does Zhangsan like reading?’

(40) {that Zhangsan likes reading, that Zhangsan does not like reading}

In actual usage, polar questions and their corresponding A-not-A questions are often interchangeable. There might be reasons, e.g. syntactic reasons along the lines of Pan and Paul (2016), for why *-ma ne* is not allowed, but the non-elliptical form that corresponds to a fragment question interpreted as a polar question can very well be an A-not-A question.

One more difference lies in multiple readings of *-ne*. Constant (2014) uses haplology to explain the double interpretation of the aspect marker *-ne* and the topic marker *-ne*. For example, in (41), the underlying form would have two different morphemes *-ne*, one corresponding to the aspect marker, and the other to the topic marker. By haplology, *-ne ne* becomes *-ne*.

(41) (Zhangsan is reading a book.)  
Lǐsì zuò shénme ne?  
Lisi do what NE

‘So what is Lisi doing now?’

However, diachronic data suggest that the aspect marker *-ne* was derived from *-li*, and the topic marker *-ne* was derived from *-ni*, and they merged both phonologically and semantically into *-ne*. Therefore both readings are available because they are one and the same particle. As long as they are allowed in the context, both meanings show up. If a context does not allow one reading, then it is simply ruled out because of discourse reasons. Therefore no haplology is needed.

Moreover, Constant (2014) seems to recognize only the aspect marker and topic marker *-ne*, while merging the emphatic use of *-ne* into the topic marker *-ne*. However, as the historical data suggest, the emphatic particle use of *-ne* developed out of the aspect marker and then, together with the aspect marker use, merged into the topic marker. In fact, it is possible to have three readings as long as we have the correct context. Consider a scenario where we are waiting for Zhangsan and Lisi to come downstairs to go to a party together. Zhangsan is talking on the phone. So that’s why he is not coming downstairs yet. But as far as we know, Lisi should be ready a long time ago. Now if we ask the question in (42), there are indeed three readings.

- (42) Lǐsì dàodǐ            zuò shénme ne?  
 Lisi in the world do what NE  
 ‘Well then, what in the world is Lisi doing?’

The use of the word “dàodǐ” makes the meaning of the emphatic use more salient.

## 5. Methodological notes

One new contribution of this article is the use of historical linguistic data to study the meanings and functions of particles in Modern Chinese by looking at their lexical sources. Issues with respect to the particle *-ne* in Chinese have always been highly debated. The three grammaticalization paths that I discuss in section 2 above, i.e. *Locative* >> *Aspect*, *Aspect* >> *EmphaticParticle* and *DeicticWord* >> *TopicMarker*, show that there are at least three meanings of *-ne*. The deictic origin of *-ne* directs us towards the proposal that *-ne* is a topic marker or a discourse indexical, which can be formally characterized by using the QUD theory and focus semantics via the squiggle operator. Since von Stechow’s (1995) proposal to study historical semantic change from a formal perspective, in more recent years a new field called formal diachronic semantics has emerged, especially with works by Eckardt (2006) and Deo (2015). Such a methodological innovation can help us understand semantic change more rigorously and precisely, and it can also shed light on difficult issues in synchronic semantics, as I have shown in this article. The historical data not only lend strong support to certain proposals that are based on synchronic data, but also inform new directions of inquiry.

Some remaining issues are still to be addressed in further research. One issue is whether *-ne* always marks a contrastive topic. Although Constant (2014) gives strong arguments, it seems to me that in certain cases it is possible to use *-ne* to mark a non-contrastive topic.<sup>16</sup> If so, how can my proposal be extended to non-contrastive topics?

Another issue is that there have been suggestions, e.g. by Ohta (1958), to connect *-ni* 嚮 to Old Chinese *ěr* 爾 (OC: njelʔ)<sup>17</sup>, with meanings ranging from the second person pronoun, a deictic word that can be translated as “like this”, to a sentence-final particle. I think that we could even connect 爾 with *ěr* 邇 (OC: njelʔ, “close-by”). If this is so, the deictic function of *-ne* is probably more precisely “like this”, rather than “like that”, i.e. being a proximal deictic, which can further help us understand the discourse indexicality, because *-ne* needs to be indexed with its closest QUD, but not a farther away QUD.

I leave these interesting topics for further research. Here I summarize the main contribution of this article. Starting from the distributions of the particle *-ne*, I use historical linguistic data to show that the core meanings of these different uses can be reduced to three. The lexical source of *-ne* tell us that some of its uses are very much likely a topic marker because it can be cognitively transferred from being a spatial deictic to a discourse indexical. This process can be formally characterized via the squiggle operator and the semantics of foci and contrastive topics.

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<sup>16</sup> Thanks to Professor Wenjiang Yang for pointing this out to me.

<sup>17</sup> Old Chinese (OC) pronunciation is Zhengzhang’s (2003) system of reconstruction.



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