

THE SYNTAX AND SEMANTICS OF MANDARIN ASSERTION MODIFIERS *DIQUE* AND *ZHENDE**

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1. Introduction

Mandarin adverbs *dique* ‘indeed’ and *zhende* ‘really’ can occur in two syntactic positions. As shown in (1), *dique* and *zhende* can either precede or follow a noun phrase in an utterance.

- (1) a. *Dique/Zhende*, Lan qu Riben le.
indeed/really Lan go Japan PERF
‘Indeed/Really, Lan has gone to Japan.’
b. Lan *dique/zhende* qu Riben le.
Lan indeed/really go Japan PERF
‘Lan has indeed/really gone to Japan.’

One analysis of (1) could be that *dique/zhende* which precedes the noun phrase is one lexical item, but *dique/zhende* that follows the noun phrase is another lexical item. When preceding the DP *Lan* in (1-a), *dique* and *zhende* are TP adjuncts. When following the DP *Lan* in (1-b), *dique* and *zhende* are VP adjuncts. Another analysis is that *dique/zhende* in (1-a) and in (1-b) are the same item. The different positions of *dique/zhende* relative to the DP can be derived from other factors.

In this study, we argue for the second analysis and provide an explanation for the flexible distribution of these two adverbs. The main claim is that *dique* and *zhende* are TP adjuncts. The noun phrase following the adverbs in (1-a) occupies a subject position, whereas the noun phrase preceding the adverbs in (1-b) occupies a topic position.

This paper is organized as follows: in section 2, we review the study of Yuan and Hara (2012) on the semantics of *dique* and *zhende*. Based on this semantic analysis, we analyze *dique* and *zhende* as TP adjuncts in section 3. In section 4, in order to explain structures with a DP preceding *dique/zhende* as in (1-b), we propose that the DP position preceding *dique/zhende* is a topic position, and provide arguments to support this proposal. Section 5 concludes the study.

2. The Semantic Analysis of *Dique* and *Zhende*

According to the Principle of Compositionality, syntactic and semantic rules work in parallel when forming a complex expression. Therefore, in order to provide an appropriate syntactic

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analysis for *dique* and *zhende*, we should be clear of the semantics of these two adverbs. This section summarizes the semantic analysis of *dique* and *zhende* in Yuan and Hara (2012).

Let us first discuss *dique*. The combination of *dique* with a proposition *p* is represented as *dique(p)*. Yuan and Hara (2012) propose that *dique(p)* imposes two requirements on the previous context, as shown in (2).¹

- (2) The requirements of *dique(p)* on the previous context:
- a. The proposition *p* has been suggested by some individual.
 - b. All of the discourse participants believe that ‘*p* has been suggested’ and recognize that they share this belief.

These requirements are motivated by the fact that one cannot begin a dialogue with an assertion modified by *dique* such as *Dique, Li chuguo le* ‘Indeed, Li went abroad’. *Dique* can only be used when ‘Li went abroad’ has been suggested by some individual, e.g., A in (3).

- (3) A: Li chuguo le. B: *Dique*, ta chuguo le.
 Li go-abroad PERF indeed he go-abroad PERF
 ‘Li went abroad.’ ‘Indeed, he went abroad.’

The adverb *dique* modifies the assertion of *p* in a certain way so that the modified assertion presupposes that *p* has been suggested. For example, in (3), B’s use of the assertion modified by *dique* presupposes that someone, i.e., A, suggested *p* ‘Li went abroad’.

In contrast, *zhende(p)* imposes three requirements on the previous context, as shown in (4). In addition to the two requirements shared with *dique(p)*, *zhende(p)* imposes a third requirement: at least one participant remains uncommitted to *p* in the previous context.

- (4) The requirements of *zhende(p)* on the previous context:
- a. The proposition *p* has been suggested by some individual.
 - b. All of the discourse participants believe that ‘*p* has been suggested’ and recognize that they share this belief.
 - c. At least one discourse participant remains uncommitted to *p* even after knowing that *p* has been suggested.

Take (5) as an example. In (5), even though B recognized that A suggested *p* ‘It rained last night’, B was not committed to *p* initially. B being uncommitted to *p* satisfies requirement (4-c), making the use of *zhende* felicitous in (5). If instead, B had heard the sound of raining last night and he already knew that it had rained, i.e., B was already committed to *p* before A’s suggestion, *zhende* could not be used. This is because all the discourse participants would have already been committed to *p*, and therefore, requirement (4-c) would not have been met.

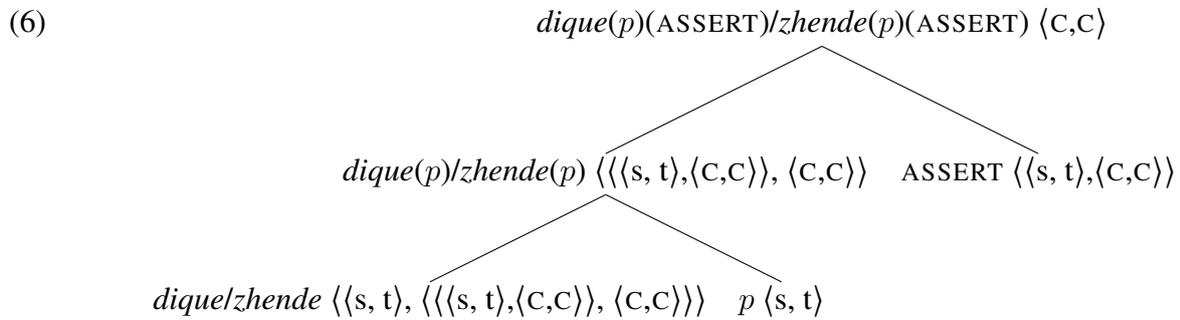
- (5) A: Zuowan xiayu le.
 last-night rain PERF ‘It rained last night.’
 (B is not sure. He opens the window and sees that the ground is wet.)
 B: *Zhende*, zuowan xiayu le.
 really last-night rain PERF ‘Really, it rained last night.’

Therefore, *dique* and *zhende* are assertion modifiers. An assertion modified by *dique* or *zhende* expresses 1) the meaning of the assertion, 2) the presupposition added by *dique/zhende*.

¹ All the examples and definitions in this section are from Yuan and Hara (2012), unless otherwise noted.

Within the dynamic semantics framework, Yuan and Hara (2012) hold that an assertion affects the context by adding the content of the assertion to what is presupposed in the context (see Stalnaker, 1978) and interpret an assertion as a context change potential (CCP), a function from an input context to an updated context (see Heim, 1982).

In summary, the semantic computation of assertions containing *dique* or *zhende* is executed based on the typed tree in (6). In (6), s represents world type, and a proposition is of type $\langle s, t \rangle$. C represents context type, and an assertion is of type $\langle C, C \rangle$, i.e., a CCP. An assertion is composed of an assertive operator ASSERT (Ross, 1970; Jacobs, 1984) and a proposition. The semantic computation is carried out in two steps. Let us illustrate these two steps using *dique* as an example.² First, *dique* combines with a proposition p to yield $dique(p)$, which is a function from a force head to a CCP. *Dique* must first attach to the proposition, because *dique* introduces a presupposition that the proposition has been suggested. If *dique* were not combined with p at the beginning, *dique* would not be able to introduce this presupposition. Second, $dique(p)$ combines with the assertive operator ASSERT to give a CCP, i.e., an assertion. The combination of $dique(p)$ and ASSERT imposes presuppositions on the previous context of the assertion.



Another possible order of computation is that the operator ASSERT combines with p first, and then $\text{ASSERT}(p)$ combines with *dique* to yield $dique(\text{ASSERT}(p))$. According to this order, the proposition p is embedded and thus is not associated with *dique* directly. *Dique* cannot introduce the presupposition that the proposition p has been suggested. Therefore, we did not adopt this way of computation.

In summary, in the semantic computation, *dique* or *zhende* first attaches to a proposition p , and then $dique(p)$ or $zhende(p)$ combines with the assertive operator to modify the assertion. This order of semantic computation motivates the syntactic analysis in section 3.

3. Syntactic Position of *Dique* and *Zhende*

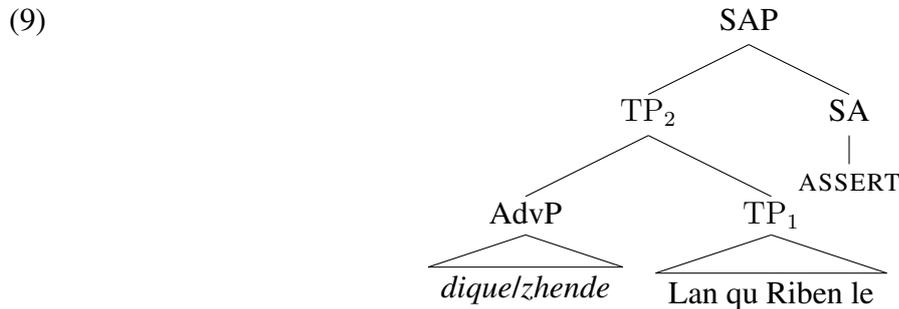
Our proposal regarding the syntactic structure of an assertion modified by *dique/zhende* is summarized in (7).

- (7)
- a. *Dique* and *zhende* are TP adjuncts.
 - (i) First, *dique* or *zhende* attaches to a TP_1 to form a TP_2
 - (ii) Then, TP_2 combines with the assertive operator ASSERT.
 - b. The operator ASSERT is the head of a Speech Act Phrase (SAP).

For example, we propose (9) as the structure for (1-a), repeated here as (8).

² *Zhende* works exactly the same as *dique*.

- (8) *Dique/Zhende*, Lan qu Riben le.
indeed/really Lan go Japan PERF
‘Indeed/Really, Lan has gone to Japan.’



Let us now motivate the proposals in (7). (7-a) first says that *dique* and *zhende* are adjuncts. *Dique* and *zhende* are analyzed as adjuncts because these two adverbs are not lexically selected by a predicate and are syntactically optional in a sentence. This analysis also corresponds to the traditional analysis of adverbs as adjuncts (Zubizarreta, 1982, Sportiche, 1988, among others).

Moreover, (7-a) says that *dique* or *zhende* is first adjoined to a TP, and then the modified TP combines with ASSERT. This analysis is consistent with the two-step semantic computation discussed in section 2. The first step in the semantic computation is the combination of *dique/zhende* with a proposition *p*. The proposition *p* is represented syntactically by a TP. Thus, as stated in (7-a-i), *dique* and *zhende* should be TP adjuncts. The second step in semantic computation is the combination of *dique(p)/zhende(p)* with ASSERT. Therefore, ASSERT must take the modified TP as its complement, as claimed in (7-a-ii). Syntactic structure-building and semantic computation are performed in parallel, which accords with the Principle of Compositionality.

(7-b) proposes that ASSERT is the head of a Speech Act Phrase (SAP).³ First, let us see why the assertive operator ASSERT should have a syntactic representation. As discussed in section 2, in dynamic semantics, ASSERT combines with a proposition to yield a CCP, i.e., an assertion. Therefore, an assertion can be represented as ASSERT(*p*). This is based on Lewis’ (1970) two-tiered sentence meaning, in which truth conditions are combined with a marker of sentential force. Lewis (1970) claims that sentences in (10) share a common sentence radical, i.e., ‘You be late’, but they have different markers of force/mood, as in (11).

- (10) a. You are late. (declarative)
b. Be late! (imperative)
c. Are you late? (interrogative) (Lewis, 1970, 55)



In (11), the assertive operator ASSERT, the interrogative operator INTER and the imperative operator IMP combine with the same sentence radical to yield sentences with different moods. These three operators all have semantic contributions and, thus, should have a corresponding

³ The analysis of ASSERT as the head of a Speech Act Phrase is inspired by the analysis of mood markers in Indo-European languages in Cinque (1999).

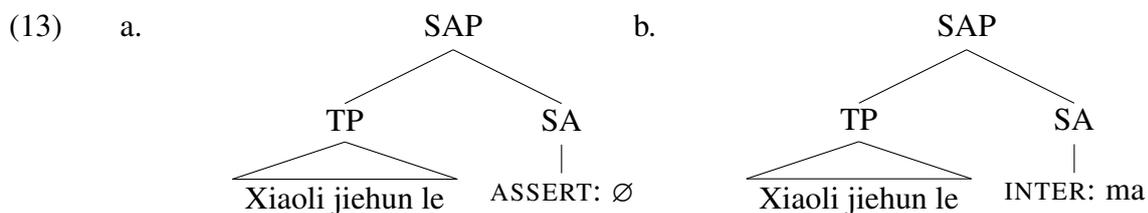
syntactic representation. Since these operators indicate the speech act of an utterance, they can be taken as the head of a Speech Act Phrase (SAP).

Now, let us see how ASSERT is represented in Mandarin, i.e., what element occupies the head of SAP in Mandarin. Different languages use distinct markers to mark the speech act. In Indo-European languages, the speech act mood is most often manifested as affixes on the verb (Cinque, 1999, 84). Therefore, the affixes occupy the head position of SAP in these languages.

Mandarin lacks inflectional morphology and generally uses sentence-final mood particles to mark the illocutionary force of an utterance (Lü, 1982, 257). These particles occupy the head position of SAP in Mandarin. For example, in Mandarin, an interrogative can be marked by particles such as *ma*, *ba*, *ne*, etc, an imperative can be marked by the particle *ba*. Therefore, in an interrogative, SAP is headed by the operator INTER, manifested overtly as the particles *malbalnel*...etc. In an imperative, SAP is headed by the operator IMP, expressed by the particle *ba*. Assertion in Mandarin is not marked. We assume that ASSERT is a phonologically null operator in Mandarin, occupying the same position occupied by *malbalnel*... and *ba*. Since the particles that mark interrogatives and imperatives occur in sentence-final position in Mandarin, following Gasde and Paul (1996),⁴ we analyze SAP as head-final.

For example, (13-a) is an assertion and (13-b) is an interrogative. They can be analyzed as a Speech Act Phrase, as in (14-a) and (14-b). In (14-a), the SAP is headed by the covert operator ASSERT. In (14-b), the SAP is headed by the operator INTER, manifested overtly by *ma*.

- (12) a. Xiaoli jiehun le. b. Xiaoli jiehun le ma?
 Xiaoli get-married PERF Xiaoli get-married PERF INTER
 ‘Xiaoli got married.’ ‘Did Xiaoli get married?’



This section provided a syntactic analysis of *dique* and *zhende* that accords with the semantic computation and the syntactic structure of Mandarin. *Dique* and *zhende* adjoin to TP, and then the modified TP combines with the phonologically null operator ASSERT. ASSERT is the head of a Speech Act Phrase.

4. A Topic Position Preceding *Dique* and *Zhende*

The analysis of *dique* and *zhende* as TP adjuncts in section 3 corresponds to the semantic computation. However, when *dique* or *zhende* follows a noun phrase, the surface structure appears to be inconsistent with the semantic computation. In particular, when the subject precedes *dique/zhende*, it is still semantically a part of the proposition in the scope of *dique/zhende*. This section explains the discrepancy between syntax and semantics by arguing for a topic position preceding *dique/zhende*.

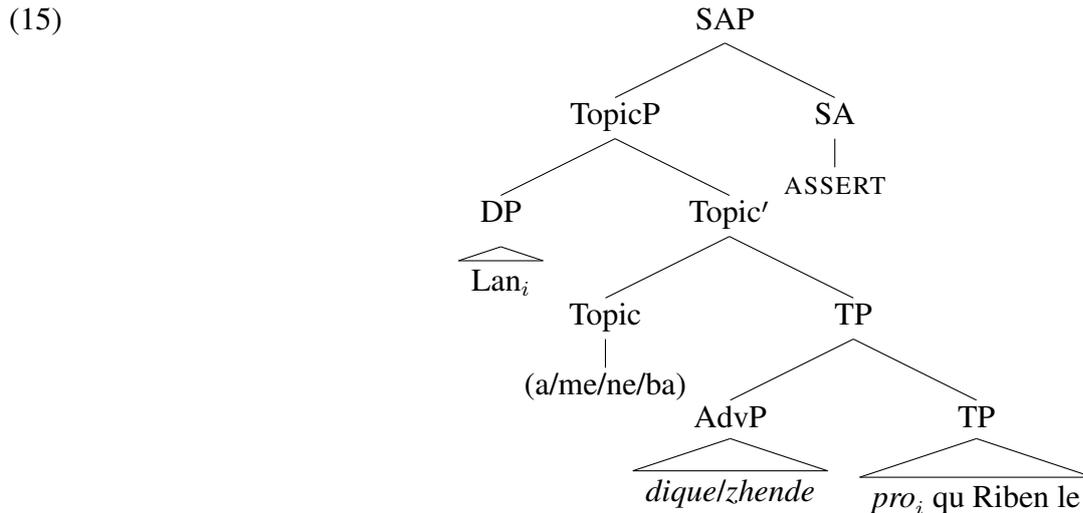
A noun phrase can occur before *dique* or *zhende*, as shown in (1-b), repeated here as (14).

⁴ Gasde and Paul (1996) first propose that CP is head-final in Chinese. In their analysis, mood particles that mark different sentence types are taken as complementizers. Since these particles occur at the end of the sentence, CP should be head-final at the surface structure. See also Erlewine (2010) and Paul (2010).

- (14) Lan *dique/zhende* qu Riben le.
 Lan indeed/really go Japan PERF
 ‘Lan has indeed/really gone to Japan.’

In (14), the adverbs *dique* and *zhende* occur after the noun phrase, *Lan*. According to the surface structure, it appears that *dique* or *zhende* does not combine with TP, *Lan qu Riben le*, but combines with VP, *qu Riben le*. However, in the semantic computation, *dique* or *zhende* must combine with the entire proposition ‘Lan has gone to Japan’.

To explain the discrepancy between syntax and semantics, we propose that the DP position preceding *dique/zhende* is a topic position. The structure of (14) should be like (15).⁵



According to this structure, if a noun phrase occurs to the left of *dique* or *zhende*, it occupies the specifier position of a topic phrase, i.e., TopicP. If a noun phrase occurs to the right of *dique* or *zhende*, it occupies the specifier position of TP, as in (9). In either case, *dique* or *zhende* has only one position, i.e., the adjunct position of TP.

When a noun phrase occurs in the topic position before *dique/zhende*, there would be a covert pronoun, i.e., a *pro* inside the TP which is co-indexed with the noun phrase (see Huang, 1984). For example, in (15), a *pro* inside the TP is co-indexed with the topic *Lan*. Thus, ‘*pro* qu Riben le’ ‘(Lan) has gone to Japan’ is still a proposition. This syntactic structure is consistent with the semantic combination of *dique/zhende* with the proposition *p*. The existence of the topic position keeps the syntactic structure in correspondence with the semantic computation.

In subsection 4.1, we briefly review previous work on Chinese topic. In subsection 4.2, we show that noun phrases preceding *dique* or *zhende* exhibit topic properties.

4.1. The Structure and Properties of Chinese Topics

4.1.1. Topic and Subject are Different Syntactic Positions

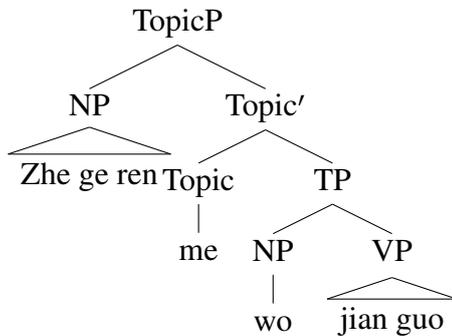
The notion of topic has different interpretations. For example, topic can be a syntactic position, or a pragmatic notion that has no representation in syntax. Since we argue for a topic position preceding *dique/zhende*, we adopt Gasde and Paul’s (1996) analysis of topic and subject as two syntactic positions.

⁵ The four particles *alme/nelba* in (15) are topic markers (Li and Thompson, 1981, 86), which separate the topic from the rest of the sentence. Topic markers are optional after a topic and thus do not appear in (14).

Gasde and Paul (1996) treat both topic and subject as notions in syntax. In this structure, topic position is the specifier of a Topic Phrase (noted here as TopicP), and the topic markers in Chinese, i.e., particles *a*, *me*, *ne* and *ba*, occupy the head position of this topic phrase. The subject occupies the specifier of TP. Therefore, the structure of (16) will be like (17).

- (16) Zhe ge ren me, wo jian guo.
 this CL person TM I see EXP
 ‘As for this person, I have already met him.’ (Gasde and Paul, 1996, 268)

- (17) (modified from Gasde and Paul, 1996, 268)



Xu and Liu (1998) adopt the topic structure of Gasde and Paul (1996), and claim that topics are base-generated. Xu and Liu (1998) oppose Huang's (1982) idea that topic structure in Chinese is derived from a deep structure through *wh*-movement. There are two arguments against the movement hypothesis: 1) Chinese style topics (Chafe, 1976, Xu and Langendoen, 1985) are not related to any syntactic gap inside the comment. 2) topics in Chinese do not obey island conditions. In (18), the relative clause island *du guo de ren* forbids *wh*-movement. If the DP *zhe ben shu* was generated after *du guo* within the clause, it could not have been moved out of the island.

- (18) Zhe ben shu, du guo de ren bu duo.
 this CL book read EXP GEN people not much
 ‘As for this book, a few people have read (it).’ (Xu and Liu, 1998, 46)

In summary, topic and subject are two distinct positions, and topics are base-generated. The next subsection discusses the question of how to identify a topic position.

4.1.2. Topic Properties

If a position is a topic position, the noun phrase in the position is expected to have the properties of topic. In order to see whether noun phrases before *dique/zhende* have the properties of topic, we summarize the properties of topic that were discussed in past studies in this subsection.

Since researchers have characterized topic from various perspectives, many different properties of topic have been discussed. Here, we will only focus on the following properties of topic.

- (19) Properties of Chinese topics
- a. A topic can be followed by a pause or pause particles (i.e., topic markers).
 - b. Topics cannot be focalized.
 - c. There is a strong tendency for topics to be definite.

Let us illustrate these three properties. The first property was discussed by Li and Thompson (1981). In Chinese, a topic can be followed by topic markers, as in (16).

topic position. The indefinite noun phrase *yi zhi gou* does not occur as a topic, as in (23-b).

- (23) a. Gou Wo yijing kan guo le.
 dog I already see EXP PERF
 ‘As for the dog/dogs/*a dog, I have already seen (it/them).’
 b. *Yi zhi gou wo yijing kan guo le.
 A CL dog I already see EXP PERF
 ‘*As for a dog, I have already seen (it).’
 (modified from Li and Thompson, 1981, 86)

In summary, noun phrases occupying topic position share the properties in (19). In the next subsection, we show that the DP position preceding *dique/zhende* has these properties.

4.2. The DP Position before *Dique/Zhende* is a Topic Position

In this subsection, we argue that the DP position preceding *dique/zhende* is a topic position by showing that noun phrases in this position exhibit the three properties of topic in (19).

First, noun phrases preceding *dique/zhende* can be followed by a pause or topic markers. For example, *Xiaoli* in (24-a) can be marked by the four topic markers, as in (24-b).

- (24) a. Xiaoli *dique/zhende* shi ge hao ren.
 Xiaoli indeed/really is CL good person
 ‘Xiaoli is indeed/really a nice person.’
 b. Xiaoli a/me/ne/ba, *dique/zhende* shi ge hao ren.
 Xiaoli TM indeed/really is CL good person
 ‘As for Xiaoli, (he) is indeed/really a nice person.’

Second, noun phrases preceding *dique/zhende* cannot be focalized. As shown in (25), without *dique/zhende*, *Li* in the subject position can be focalized in two ways: either replace *Li* with the *wh*-word *shei* ‘who’ or add a focus marker *shi* before *Li*.

- (25) a. Li mei zou. b. Shei mei zou? / Shi Li mei zou.
 Li not leave who not leave / is Li not leave
 ‘Li didn’t leave.’ ‘Who didn’t leave?’/‘It is Li who didn’t leave.’

However, when preceding *dique* or *zhende*, *Li* cannot be replaced by the *wh*-word *shei*, as shown in (26-b).

- (26) a. Li *dique/zhende* mei zou.
 Li indeed/really not leave
 ‘Li indeed/really didn’t leave.’
 b. *Shei *dique/zhende* mei zou?
 who indeed/really not leave
 ‘Who indeed/really didn’t leave?’
 c. *Shi Li *dique/zhende* mei zou.
 is Li indeed/really not leave
 ‘It is Li who indeed/really didn’t leave.’

This is not because that *dique* and *zhende* are not compatible with *wh*-words. *Dique* and *zhende* can precede *wh*-words in Mandarin, as in (27).

- (27) *Dique/Zhende*, shei mei zou?
indeed/really who not leave
'Indeed/Really, who didn't leave?'

(26-b) is infelicitous because the DP *Li* preceding *dique* or *zhende* is not a subject but a topic, which cannot be focalized by replacing it with a *wh*-word. Also, the DP *Li* preceding *dique/zhende* cannot be marked by *shi*, as shown in (26-c). This indicates that the DP preceding *dique/zhende* is a topic, which cannot be focalized.

Finally, non-referential indefinite noun phrases cannot occur in the DP position preceding *dique/zhende*.⁷ As discussed in 3.1, indefinite DPs can hardly occur in the topic position. These indefinite DPs include modified numerals, quantificational indefinites, non-specific indefinites and some quantified noun phrases. Let us illustrate them one by one.

First, modified numerals are excluded from the DP position preceding *dique/zhende*. For example, in (28), the DP *chaoguo liushi ge xuesheng* 'more than sixty students' can occur in sentence-initial position in A's utterance, or occur after the adverb *dique* in C1. This is because these two positions are subject positions, which impose no restrictions on indefinite noun phrases. However, *chaoguo liushi ge xuesheng* cannot occur in the DP position in front of *dique*, as shown in C2 in (28). This can be explained by the fact that this DP position is a topic position, which excludes such indefinite noun phrases.

- (28) chaoguo + numeral (N) 'more than N'
- A: Chaoguo liushi ge xuesheng zhuce le zhe men ke.
more-than sixty CL student register PERF this CL course
'More than sixty students registered in this course.'
- B: Shi ma?
is Q
'Is it?'
- C1: *Dique*, chaoguo liushi ge tongxue zhuce le.
indeed more-than sixty CL student register PERF
'Indeed, more than sixty students got registered.'
- C2: *Chaoguo liushi ge tongxue *dique* zhuce le.
more-than sixty CL student indeed register PERF
'More than sixty students indeed got registered.'

Similarly, other modified numerals cannot precede *dique* and *zhende*, as in (29) and (30).

⁷ Sometimes, these indefinite DPs can occur before *zhende*. However, this *zhende* is a VP modifier, which differs from the TP modifier *zhende* we discussed in this paper. The VP modifier *zhende*, e.g., *zhende* in (i-b), can occur within the scope of negation, and its meaning is truth-conditional. The TP modifier *zhende*, e.g., *zhende* in (i-a), is higher than negation operators and does not affect truth conditions. (i-b) means 'it seems that Li left but in fact he didn't leave', indicating that there are signs of Li's leaving, such as Li was witnessed entering the airport, etc. If Li did not leave and there was no sign of Li's leaving, (i-a) is true but (i-b) is false. The VP modifier *zhende* can be focalized, and can occur after indefinite DPs such as modified numerals, etc.

- (i) a. *Zhende*, Li mei zou. / Li *zhende* mei zou. b. Li mei *zhende* zou.
really Li not leave / Li really not leave Li not really leave
'Really, Li didn't leave.' / 'Li really didn't leave.' 'Li didn't really leave.'

- (29) zhishao + numeral ‘at least N’
- a. *Zhende*, zhishao sanshi ge yuedui canjia le zheci yanchu.
really, at-least thirty CL band attend PERF this performance
‘Really, at least thirty bands attended this performance.’
- b. *Zhishao sanshi ge yuedui *zhende* canjia le zheci yanchu.
at-least thirty CL band really attend PERF this performance
‘At least thirty bands really attended this performance.’
- (30) zuiduo + numeral ‘at most N’
- a. *Dique*, zuiduo liang ge xuesheng mei jige.
indeed at-most two CL student not pass
‘Indeed, at most two students failed.’
- b. *Zuiduo liang ge xuesheng *dique* mei jige.
at-most two CL student indeed not pass
‘At most two students indeed failed.’

Second, referential indefinites can precede *dique* and *zhende*, whereas quantificational indefinites cannot. Fodor and Sag (1982) propose that indefinite noun phrases are semantically ambiguous. For example, *a student* in (31) can be interpreted in two ways: 1) some particular student, e.g., John, cheated on the final exam. With this reading, *a student* is called a referential indefinite, as it is interpreted as a referring expression. 2) there exists a student who cheated, i.e., the set of students in the syntax class who cheated is not empty. Here, *a student* is called a quantificational indefinite, since it is interpreted as a quantified expression.

- (31) A student in the syntax class cheated on the final exam. (Fodor and Sag, 1982, 355)

Quantificational indefinites obey normal scope constraints, which means that when a quantificational indefinite and another quantified DP co-occur in a sentence, the preferred reading is the one on which the first quantifier takes wide scope over the second (Fodor and Sag, 1982, 365). However, when co-occurring with a quantified DP, referential indefinite only have wide scope readings. For example, if *a student* is interpreted referentially in (32), the sentence only means that there is one certain student and every professor met him.

- (32) Every professor met a student in the syntax class. (Fodor and Sag, 1982, 355)

Chinese indefinite noun phrases also exhibit such an ambiguity. In (33), the indefinite *san ge xuesheng* can be interpreted referentially, i.e., it refers to three particular students which the speaker can identify. It can also be interpreted quantificationally, i.e., we only know that there are three members in the set of students who cleaned the classroom.

- (33) San ge xuesheng dasao le jiaoshi.
three CL student clean PERF classroom
‘Three students cleaned the classroom.’

When the indefinite DP *san ge xuesheng* occurs in front of *dique* or *zhende*, it can only have the referential interpretation, as in (34-a). Interpretation (34-b) is not available. In other words, quantificational indefinites cannot occur before *dique/zhende*.

- (34) San ge xuesheng *dique/zhende* dasao le jiaoshi.
 three CL student indeed/really clean PERF classroom
 a. ‘Three (particular) students indeed/really cleaned the classroom.’
 b. Unavailable: ‘There exist three students who indeed/really cleaned the classroom (, but I don’t know which).’

Furthermore, modifiers like *certain*, *particular* and relative clauses strongly favor the referential interpretation (Fodor and Sag, 1982, 361, 362). Thus, we can replace *san ge xuesheng* in (34) with *mou san ge xuesheng* ‘three certain students’ or *zuobian de san ge xuesheng* ‘the three students sitting on the left’. In contrast, modifiers like *altogether* or *exactly* emphasize the quantity of the referents, and thus favor the quantificational interpretation. Therefore, replacing *san ge xuesheng* with *yi gong san ge xuesheng* ‘altogether three students’ or *zhenghao san ge xuesheng* ‘exactly three student’ would make the sentence ungrammatical.

In short, referential indefinites can occur before *dique* or *zhende*, but quantificational indefinites cannot. This is because the DP position preceding the adverbs is a topic position, which favors definite noun phrases. Referential indefinites resemble definites in that they both denote specific, particular referents. Therefore, referential indefinites can occupy the topic position. On the other hand, quantificational indefinites do not denote specific referents and are thus excluded from the topic position.

Third, non-specific indefinites cannot precede *dique/zhende*. In (35), *yi ge Minzhudangren* receives a specific reading, i.e., Li believes that a certain individual (who is in fact a Democrat) will win the election. With this reading, the indefinite DP can precede *dique/zhende*. When *yi ge Minzhudangren* has a non-specific reading, i.e., Li believes that whoever will be the winner will be a Democrat, the indefinite DP cannot precede *dique* or *zhende*. The reading in (35-b) is not available.

- (35) Li xiangxin yi ge Minzhudangren *dique/zhende* hui yingde xuanju.
 Li believe a CL Democrat indeed/really will win election.
 a. ‘Li believes that a (certain) Democrat indeed/really will win the election.’
 b. Unavailable: ‘Li believes that a Democrat (any Democrat) indeed/really will win the election.’

Specific indefinites denote particular referents, whereas non-specific do not. The position preceding *dique* or *zhende* allows for specific indefinites but excludes non-specific indefinites, supporting the argument that this position is a topic position.

Fourth, noun phrases with the quantifier *meiyou* ‘no’ or *henshao* ‘few’ cannot occur before *dique* or *zhende*, as in (36-b). This is because these quantified noun phrases do not denote specific referents. Therefore, they are excluded from the topic position in front of *dique/zhende*.

- (36) a. *Dique*, meiyou ren / henshao ren neng shuo shi zhong yuyan.
 indeed no person / few person can speak ten CL language
 ‘Indeed, nobody/few people can speak ten languages.’
 b. **Meiyou* ren / *Henshao* ren *dique* neng shuo shi zhong yuyan.
 no person / few person indeed can speak ten CL language
 ‘Nobody/few people indeed can speak ten languages.’

In summary, we propose that the DP position preceding *dique/zhende* is a topic position. Thus, noun phrases occurring before *dique/zhende* have shown the properties of topic as predicted.

5. Conclusion

In this study, we provided a syntactic analysis of Mandarin adverbs *dique* and *zhende* that corresponds to the semantic analysis given by Yuan and Hara (2012). Semantically, the assertion modifiers *dique* and *zhende* first combine with a proposition *p*, and then *dique(p)* and *zhende(p)* modify the assertive operator ASSERT by adding presuppositions to the assertions. Syntactically, adverbs *dique* and *zhende* are TP adjuncts. *Dique* or *zhende* is first adjoined to a TP, and then the modified TP combines with the phonologically null operator ASSERT to form a Speech Act Phrase.

In order to explain the different positions of *dique/zhende* relative to a noun phrase, we propose that the DP position preceding *dique/zhende* is a topic position. This proposal is supported by the fact that noun phrases occurring in this position can be marked by topic markers and cannot be focalized, and non-specific, non-referential indefinites are excluded from this position.

References

- Büring, D. (1999). Topic. In P. Bosch and R. van der Sandt (Eds.), *Focus – Linguistic, Cognitive, and Computational Perspectives*, Chapter 8, pp. 142–165. Cambridge University Press.
- Chafe, W. L. (1976). Givenness, contrastiveness, definiteness, subjects, topics, and point of view. In C. N. Li (Ed.), *Subject and Topic*, pp. 25–55. New York: Academic Press.
- Chao, Y. (1968). *A grammar of spoken Chinese*. Berkeley: University of California Press.
- Cinque, G. (1999). *Adverbs and Functional Heads, A Cross-Linguistic Perspective*. New York: Oxford University Press.
- Erlwine, M. Y. (2010). Sentence-final *only* and the interpretation of focus in Mandarin Chinese. In L. E. Clemens and C.-M. L. Liu (Eds.), *The Proceedings of the 22nd North American Conference of Chinese Linguistics (NACCL-22) and the 18th Annual Meeting of the International Association of Chinese Linguistics (IACL-18)*, Volume 2, pp. 18–35. Harvard University, Cambridge.
- Fodor, J. D. and I. A. Sag (1982). Referential and quantificational indefinites. *Linguistics and Philosophy* 5, 355–398.
- Gasde, H.-D. and W. Paul (1996). Functional categories, topic prominence, and complex sentences in Mandarin Chinese. *Linguistics* 34(2), 263–294.
- Heim, I. (1982). *The semantics of definite and indefinite noun phrases*. Ph. D. thesis, University of Massachusetts, Amherst.
- Huang, C. T. J. (1982). *Logical relations in Chinese and the theory of grammar*. Ph. D. thesis, MIT, Cambridge, Massachusetts.
- Huang, C. T. J. (1984). On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15(4).
- Jacobs, J. (1984). Funktionale satzperspektive und illokutionssemantik. *Linguistische Berichte* 91, 25–58.
- Lewis, D. (1970). General semantics. *Synthese* 22, 18–67.
- Li, C. N. and S. A. Thompson (1981). *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.
- Lü Shuxiang (1982). *Outlines of Chinese Grammar*. Beijing: Commercial Press. reprinted edition.
- Paul, W. (2010). Why particles are not particular: sentence-final particles in Chinese as heads of a split CP. *Studia Linguistica* to appear.
- Ross, J. R. (1970). On declarative sentences. In R.A.Jacobs and P.S.Rosenbaum (Eds.), *Readings in English transformational grammar*, pp. 222–272. Washington: Georgetown University Press.

- Sgall, P., E. Hajicova, and Janevova (1986). *The meaning of the sentence in its semantic and pragmatic aspects*. Dordrecht: Reidel.
- Shi, Y. (2001). The distinction between subject and topic in Chinese. *Studies in Language and Linguistics* 2.
- Sportiche, D. (1988). A theory of floating quantifiers and its corollaries for constituent structure. *Linguistic Inquiry* 19, 425–449.
- Stalnaker, R. (1978). Assertion. *Syntax and Semantics* 9, 315–332.
- Xu, L. and D. T. Langendoen (1985). Topic structures in Chinese. *Language* 61(1), 1–27.
- Xu, L. and D. Liu (1998). *Topic: structural and functional analyses*. Shanghai: Shanghai Education Press.
- Yuan, M. and Y. Hara (2012). The semantics of Mandarin assertion modifier *dique* and *zhende*. To appear in the proceedings of *Sinn und Bedeutung* 17.
- Zubizarreta, M. L. (1982). *On the relationship of the lexicon to syntax*. Ph. D. thesis, MIT, Cambridge, Massachusetts.