

# *On mei ‘every’ and dou ‘all’ in Mandarin Chinese\**

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## **Abstract**

This paper concentrates on the syntactic and semantic behaviours of *mei* ‘every’ and *dou* ‘all’ in Mandarin Chinese, in which preverbal *mei* must co-occur with *dou*. I argue that *dou* is adjunct to either I or Pr in Tang’s (1990, 2001) non-specifier analysis on Chinese adverbials. The choice (between I or Pr) is made to make a shortest *dou* chain, which explains *dou*’s distribution with PPs and light verb constructions. On their semantic interaction, *mei* sets the distributive unit for the distributive operator *dou* and preverbal *mei*-phrases have to be quantified by *dou* to be interpreted discourse-anaphoric.

## **1 Introduction**

Chinese universal differs from English in its obligatory co-occurrence between preverbal *mei* ‘every’ and *dou* ‘all’. See the contrast in (1) and (2):

Chinese vs English:

- (1) a. *mei-ge ren \*(dou) chidao-le.*  
*every-CL person \*(all) late-ASP*  
Every person was late.  
b. Every person was late.
- (2) a. *wo mei-tian \*(dou) qu xuexiao.*  
*I every-CL \*(all) go school*  
I went to school every day.  
b. I went to school every day.

In (1)a and (2)a, *dou* is obligatory for pre-verbal *mei*. Post-verbal *mei* does not have this requirement. See (3).

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- (3) wo xihuan mama zuo-de mei-dao cai.  
*I like mum make-of every-CL dish*  
 I liked every dish made by mum.

This paper will focus on this distinction between Mandarin and English. It will discuss how the adverb *dou* connects to *mei* syntactically and how they interact semantically. I propose that *dou* forms a chain with its “antecedent” which explains the distribution of *dou* with PPs and light verbs. Semantically, *mei* sets the distributive unit for the distributive operator *dou*, and *dou* presupposes *mei*-phrases discourse-anaphoric, which satisfies the syntax-external requirement.

The paper is organized as follows: part two explores the syntax of *dou*; the distributivity of *mei* and *dou* is discussed in part 3; their co-occurrence is explained in part four; and a conclusion is given in the last part.

## 2 The Chain of *dou*

### 2.1 *dou* as an adverb

*Dou*'s adverbial status is widely acknowledged (Li and Thompson 1981, Lee 1986, Cheng 1996, etc). It is fixed between the subject and predicate and has free order with a number of adverbials, for instance, *cengjing* ‘once’.

- (4) a. tamen dou cengjing lai-guo wo jia.  
*They all once come-ASP I home*  
 b. tamen cengjing dou lai-guo wo jia.  
*They once all come-ASP I home*  
 They all came to my house the other day.

As a universal quantifier, *dou*<sup>1</sup> quantifies over elements to its left that have sub-parts for its predicate. Examples are given in (5) to (8), in which *dou* quantifies over topicalized DP, subject DP, adverbial phrase, and propositions.

- (5) naxie dianying, wo (dou) xihuan. (topicalized object)  
*those film, I (all) like*  
 I liked (all) those films.

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<sup>1</sup>*dou* can also be a focus marker as in (i). For detailed discussions on *dou* as a focus marker, see Shyu 1995.

i. tian zhen leng, lian ta dou shou-bu-iao.  
*weather very cold, lian he dou bear-not*  
 It was very cold. Even he could not bear it.

- (6) women (dou) xihuan naxie dianying. (subject)  
*we (all) like those film*  
 We (all) liked those films.
- (7) wo zuotian (dou) zai xuexiao. (adverb)  
*I yesterday (all) at school*  
 I stayed at school (all day) yesterday.
- (8) ta qu-bu-qu, wo (dou) wusuowei. (propositions)  
*he go-not-go, I (all) not care*  
 I did not care whether he would go or not.

(9) is degraded because 'those films' is not to the left of *dou* and (10) is ungrammatical because 'he went' is a single proposition, lacking a plural reading.

- (9) \*wo dou xihuan naxie dianying.  
*I all like those film*  
 I liked all those films.
- (10) \*ta qu, wo dou wusuowei.  
*he go, I all not care*  
 I did not care that he would go.

## 2.2 The chain of *dou*

2.2.1 *The phenomena*<sup>2</sup>. *Dou* does not have to be adjacent to what it connects to. Some adverbial phrases can sit between them. For example, in (11), the beneficent phrase 'for me' locates between *dou* and the subject, and it can interchange with *dou* as well.

- (21) a. tamen wei-le-wo dou jie-yan-le.  
*they for-PART-me all quit-cigarette-ASP*
- b. tamen dou wei-le-wo jie-yan-le.  
*they all for-PART-me quit-cigarette-ASP*  
 They all quit smoking for me.

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<sup>2</sup> The phenomena are observed and discussed in Cheng (1995) as well.

But some expressions<sup>3</sup> can “block” *dou*’s quantification. For instance, (12)a is ungrammatical, and *dou* has to be adjacent to what it quantifies in (12)b.

- (32) a. \*women ba ta dou da-le.  
           *we hold he all hit-ASP*  
       b. women dou ba ta da-le.  
           *we all hold he hit-ASP*  
           We all hit him.

However, these expressions can be quantified by *dou*. In (13), *dou* quantifies the object.

- (13) wo ba tamen dou da-le.  
       *I hold they all hit-ASP*  
       I hit all of them.

2.2.2 *Dou chain*. The contrast between (11) and (12) raises the question that why some phrases can sit between *dou* and the subject, and some cannot. To account for this, I borrow Tang’s non-specifier analysis of adverbials in Chinese. Tang (1990, 2001) compared the syntactic and semantic behaviour of adverbials between Chinese-type and English-type languages, and showed that a non-specifier analysis of adverbials as given in Chomsky (1986, 1995), and Travis (1988) seem to better account for the distribution of adjuncts. Her main claims are in (14):

- (14) a. Adjuncts are hierarchically rather than linearly ordered.  
       b. XP and X’ may be recursive to generate adjuncts. An adjunct licensed by X may be projected under recursive XP or X’.  
       c. For different distributions exhibited by adjuncts, they do not result from the movement of adjuncts.  
       d. Manner adverbs are generated under Pr<sup>4</sup>, temporal and locative expressions under I and Pr. Different PPs are under different heads. For example, beneficent PP can be licensed by C, I, or Pr.

(Tang, 2001, p206)

Under this analysis of adverbials, *dou* can be adjunct to I because it can locate between the subject and modals.

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<sup>3</sup> It is generally accepted that these expressions are light verb constructions, in which *ba* ‘hold’ is a light verb/ coverb..

<sup>4</sup> Tang’s (1990, 2001) analysis is based on four-level sentence structure CP-IP-PrP-VP. For a discussion of the postulation of functional projection Predicate Phrase (PrP), see Bowers (1993).

- (15) tamen (dou) yinggai (dou) hui lai.  
*they (all) should (all) will come*  
 All of them would come.

Then the next question is: can *dou* be adjunct to Pr? We can do an experiment to testify it and the reasoning is as follows:

- (16) a. Manner adverbs (*zixide* 'carefully' in 17) can only generate under Pr. They cannot have free order with modals, but must be lower than modals. See (17).  
 b. Both manner adverbs and locative expressions ('on the three tables' in 18) can generate under Pr. They can interchange. See (18).  
 c. If *dou* can locate between or lower than 'on three tables' and 'carefully', it shows that *dou* can also generate under Pr. Otherwise, *dou* can be licensed only by I.
- (17) a. \*ni zixide yinggai ba shu kan-wan.  
*You carefully should hold book read-finish*  
 b. ni yinggai zixide ba shu kan-wan.  
*you should carefully hold book read-finish*  
 You should read the book carefully.
- (18) a. ta zai san-zhang zhuozi shang zixide zuo-le jihao.  
*he at three-CL table above carefully make-ASP mark*  
 b. ta zixide zai san-zhang zhuozi shang zuo-le jihao.  
*He carefully at three-CL table above make-ASP mark*  
 He marked on three tables carefully.

The test is done in (19): no problem arises after inserting *dou* between the locative and manner adverbials, and *dou* can be lower than them as well.

- (19) a. ta zai san-zhang zhuozi shang dou zixide zuo-le jihao.  
*he at three-CL table above all carefully make-ASP mark*  
 b. ta zixide zai san-zhang zhuozi shang dou zuo-le jihao.  
*he carefully at three-CL table above all make-ASP mark*  
 He marked on all of the three tables carefully.

Therefore we have (20):

- (20) *dou* can be adjunct to Pr and I.

Since *dou* can be adjunct to two nodes, is it adjunct randomly to either position? We have a negative answer to this question. Because *dou* is always connected to a phrase under its quantification, I argue that a chain is formed between *dou* and its “antecedent”. If the chain is defined by the distance between the node licensing *dou* and the node of its “antecedent” in a tree, economy may require the chain to be as short as possible. Considering this, we formulate that:

- (21) *Dou* Chain: *dou* can be adjunct to Pr or I. The choice of its base-generation site is made to guarantee a shortest *dou* Chain, which is defined by the distance between the node licensing *dou* and the node of what it quantifies in a tree.

This is shown in (22). *Dou* can be adjunct to Pr or I, but if it quantifies the subject as in (22), it has to be adjunct to I, to make the distance between the node licensing *dou* and the subject the shortest one, which is indicated by the shorter chain. It cannot be adjunct to the predicate, which would make the distance longer.

- (22) [IP subject [I' dou modal [XP light verb [X' dou [VP]]]]]
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This proposal can explain the distribution of *dou* in the previous part, here repeated as (23), (24), and (25). In (23), *dou* is licensed by I, and according to Tang (2001), the beneficent phrase ‘for me’ can also be licensed by I, so they can interchange, and meanwhile, satisfy the *dou* chain. (24)a is ungrammatical because it violates the chain, which is exactly the ungrammatical case in (22). (25) is grammatical because *dou* connects to the object, but not the subject.

- (23) a. tamen wei-le-wo dou jie-yan-le.  
*they for-PART-me all quit-cigarette-ASP*  
 b. tamen dou wei-le-wo jie-yan-le.  
*they all for-PART-me quit-cigarette-ASP*  
 They all quit smoking for me.
- (24) a. \*women ba ta dou da-le.  
*we hold he all hit-ASP*  
 b. women dou ba ta da-le.  
*we all hold he hit-ASP*  
 We all hit him.

- (25) wo ba tamen dou da-le.  
*I hold they all hit-ASP*  
 I hit all of them.

### 3 Distributivity of *dou* and *mei*

In the last part, we see that how *dou* links to what it quantifies syntactically. In this part, we explore the semantic interactions between *dou* and *mei*.

*Dou* is an overt distributive operator in Mandarin. Unlike English, in which plural subjects may get both collective and distributive reading to the predicate in one sentence, Chinese plural subjects get only the collective reading. The distributive reading is unavailable until *dou* is inserted. See (26) and (27).

- (26) Jane and Mary bought a car.  
 a. Both Jane and Mary bought a car.  
 b. Jane and Mary jointly bought a car.
- (27) a. Zhangsan he Lisi mai-le yi-liang che.  
*Zhangsan and Lisi buy-ASP one-CL car*  
 Zhangsan and Lisi (jointly) bought a car.  
 b. Zhangsan he Lisi dou mai-le yi-liang che.  
*Zhangsan and Lisi dou buy-ASP one-CL car*  
 Zhangsan and Lisi each bought a car.

(27)b shows that *dou* is an overt distributive operator. *Mei* is distributive as well, as we see in (28).

- (28) jingli hui jiejian mei-ge yuangong.  
*manager wil meet every-CL employee*  
 The manager would meet every employee.

(28) has the reading that 'the manager would meet each employee'. If *mei* was not distributive, it would have the interpretation that 'the manager would meet all employees together'.

Then when the distributive *mei* and *dou* co-occur, will they have effects on the distributive mode of the sentence? (29) serves as an example.

- (29) Imagine that a teacher is talking about two groups of students and each group has five students.  
 a. zhe liang zu tongxue hua-le yi-fu hua.

*this two group student draw-ASP one-CL picture*

These two groups of students drew one picture. (collective: one picture was drawn)

b. *zhe liang zu tongxue dou hua-le yi-fu hua.*

*this two group student all draw-ASP one-CL picture*

These two groups of students drew one picture. (distributive: two or ten pictures were drawn)

c. *mei zu tongxue dou hua-le yi-fu hua.*

*Mei group student all draw-ASP one-CL picture*

Every group of students drew one picture. (distributive: two pictures were drawn)

d. *zu-li de mei-ge tongxue dou hua-le yi-fu hua.*

*group-inside of every-CL student all draw-ASP one-CL picture*

Every student in the groups drew one picture. (distributive: ten pictures were drawn)

The distributivity mode becomes complex when *mei* and *dou* co-occurs. In the scenario of (29), there are ten students in all. In a, where the distributive marker is absent, the sentence has a default collective reading, that the two groups jointly drew one picture.

In b, where *dou* is inserted, two distributive readings are available: if *dou* distributes over two groups, it has the reading that each group drew one picture and two pictures were drawn in total; but *dou* can also distribute over a smaller unit, that is the students that made up the group—in this case, it has the reading that each student draw a picture and ten pictures were drawn. So two readings are available and both of them are distributive.

However, in c, where *mei* and *dou* co-occurs, the ‘ten pictures’ reading is unavailable because of *mei* make ‘GROUP’ the standard unit to distribute over. Thus *dou*’s further distribution over singular student is blocked and the only available reading is ‘each group drew a picture’.

In d, when *mei* modifies student, the singular student becomes the standard distributive unit. Therefore, the only available reading is ‘each student drew a picture’ and *dou* can no longer distribute over group.

*Dou* is known to be able to distribute over molecules that make up sub-lattices of singular atoms, plurals, or masses. In this part I propose that *mei* sets the unit of a singular atom, and defines the unit of *dou*’s distribution

#### 4. Co-occurrence of *mei* and *dou*

In the last part, we see that *dou* is a strong distributive operator and *mei* sets the distributive unit. One may speculate that *dou* is obligatory for pre-verbal *mei*

because of its distributivity. This proposal is challenged by (28) that shows *mei* is also distributive. Another piece of evidence is that *dou* is needed even *mei* co-occurs with a distributive predicate. In (30), the predicate 'fell asleep' is distributive in nature, but *dou* is still a must for *mei*. This helps us rule out distributivity playing a role in the co-occurrence of *mei* and *dou*.

- (30)      *mei-ge ren \*(dou) shuizhao le.*  
*every-CL person \*(all) fall-asleep PART*  
 Every person had fallen asleep.

Therefore we have to look at *dou*'s other properties. An obvious function of *dou* is that it presupposes its "antecedent" discourse-anaphoric. The indefinites in (31) and (32) quantified by *dou* are both known in the discourse. In other words, both the speaker and hearer know what the indefinites refer to.

- (31)      *san-ge xiaohai dou qu titu le.*  
*three-CL child all go play-football PART*  
 Three particular children all went to play football.

- (32)      *wo he san-jia gongsi dou qian-le-yue.*  
*I with three-CL company all sign-ASP-contract*  
 I signed contract with all three particular companies.

In the cases without *dou*, Chinese indefinites do not get a discourse-anaphoric reading. For instance, in (33) and (34), 'three old friends' and 'three students' are not known to both speaker and hearer.

- (33)      *wo jintian lushang yudao-le san-ge lao pengyou.*  
*I today way meet-ASP three-CL old friend*  
 I met three old friends on my way today.

- (34)      *you san-ge xuesheng jintian chidao.*  
*have three-CL student today late*  
 Three students were late today.

*Dou*'s presupposition of what it quantifies discourse-anaphoric is consistent with Enç's claim (1991) that

- (35)      All universal quantifiers are specific. (p.22)

Enç noted that universal quantifiers in natural languages quantify over contextually given sets. In his example, ‘Sally danced with every man’ does not entail that Sally danced with every man on earth, but only that she danced with every contextually relevant man. Therefore, it is equivalent to ‘Sally danced with every one of the men’. So it is reasonable to assume that contextually relevant means ‘already in the domain of discourse’, since the contextually relevant individuals are those that have been previously established or implied in the discourse. If universal quantification is over contextually relevant sets of individuals, it follows that DPs that are quantified universally are specific.

Mandarin universal quantifier *dou* supports Enç’s claim. But the case of *mei* is different. *Mei* does not satisfy (35). It cannot make what it modifies specific. Post-verbal *mei* needs extra modifiers to fix its set. For instance, (36)a and b are not grammatical and one cannot tell the set of films though it is modified by *mei*.

- (36) a. ??wo xihuan mei-bu dianying.  
           *I like every-CL film*  
           I liked every film.
- b. ??wo xihuan yi-ge daoyan de mei-bu dianying.  
           *I like one-CL direct of every-CL film*  
           I liked every film directed by one director.
- c. wo xihuan ta daoyan de mei-bu dianying.  
           *I like he direct of every-CL film*  
           I liked every film directed by him.

(36)c saves a by adding modifiers to fix the set of films. But c is rare in conversations compared to (37), in which the object is shifted pre-verbally and get *dou*’s quantification. Under *dou*’s effect, the set of films is discourse-anaphoric.

- (37) a. wo mei-bu dianying dou xihuan.  
           *I every-CL film all like*
- b. mei-bu dianying wo dou xihuan.  
           *every-CL film I all like*  
           I liked every film.

Thus I propose that pre-verbal *mei* requires *dou* because *dou* helps to satisfy the syntax-external requirement of universals. *Mei* is not a legitimate universal quantifier. It encodes the idea about every member in a set, but cannot define this set in context. It needs *dou* to make its set definite.

It is also worth to note in some modal constructions, for *mei*, *dou* is not obligatory<sup>5</sup>.

- (38) a. *mei-ge bubing keyi dai jiu-fen kouliang.*  
*every-CL soldier able carry nine-CL ration*  
 Every soldier is allowed to carry nine rations.  
 b. *mei-zhang chuang gou san-ge ren shui.*  
*every-CL bed enough three-CL person sleep*  
 Every bed is able to contain three persons.

But this cannot challenge the proposal because *mei*-phrase is a number expression in (38). It cannot refer to individuals, but denote the quantity of one. Quantity expressions cannot bind its anaphor or pronoun (Li, 1998). See (39):

- (39) a. *\*mei-ge bubing keyi dai ziji de jiu-fen kouliang.*  
*every-CL soldier able carry self of nine-CL ration*  
 Every soldier is allowed to carry self's nine rations.  
 b. *\*mei-ge bubing keyi dai jiu-fen kouliang. tamen yiding hen gaoxing.*  
*every-CL soldier able carry nine-CL ration. They must very happy.*  
 Every soldier is allowed to carry nine rations. They must be very happy.

This is consistent with the assumption that *mei* is not specific, because otherwise, *mei*-phrase should be able to bind its anaphor and pronoun.

According to our analysis of *dou*'s effects on *mei*-phrases, we predict that if *dou* is inserted in (39), *mei*-phrase should be interpreted as discourse-anaphoric, and the anaphor and pronoun can be bound. (40) proves this prediction.

- (40) a. *mei-ge bubing dou keyi dai-shang ziji de jiu-fen kouliang.*  
*every-CL soldier all able carry self of nine-CL ration*  
 Every solidier is allowed to carry self's nine rations.

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<sup>5</sup> The specialty of those modal constructions was discovered by Tsai (2001). He found that Chinese indefinites do not need the licenser *you* 'have' in those modal constructions. Compare i and ii:

- i. *\*(you) yi-ge bubing zai kan shu.*  
*have one-CL soldier ASP read book*  
 A soldier was reading.  
 ii. *yi-ge bubing keyi dai jiu-fen kouliang.*  
*one-CL soldier able carry nine-CL ration*  
 One soldier is allowed to carry nine rations.

In (38) *dou* is not needed for *mei*. This could be a parallel phenomenon to *you* 'have' and indefinites.

- b. mei-ge bubing dou keyi dai jiu-fen kouliang. tamen  
*every-CL soldier all able carry nine-CL ration. they*  
 yiding hen gaoxing.  
*must very happy*  
 Every soldier is allowed to carry nine rations. They must be very happy.

## 5. Conclusion and Implication

In this paper we explore that how *dou* connects to *mei* syntactically: *dou* is adjunct to either Pr or I to make a legitimate *dou* chain, depending on the position of *mei*. We also see that both *dou* and *mei* are distributive, and when they co-occur, *mei* sets the distributive unit for *dou*. We borrow Enç's (1991) claim that universals must be specific to explain their co-occurrence. *Mei*, though entails a set, cannot make the set known in discourse. So when *mei* is inside *dou*'s quantification area, which is above the predicate, it requires *dou* because *dou*'s presupposition of discourse-anaphoric antecedents helps *mei*-phrase to meet the requirement that universals must be specific.

In our analysis, *mei...dou* are 'lexicalized' in the word 'every' in English. In Chinese 'every' is expressed by separate morphemes. The meanings analytically expressed by *mei* and *dou* are synthesized into 'every' in English. Huang (2005) proposed that Chinese is a more analytic language than synthetic language with the analyticity and synthesis being seen at three different levels: lexical categories, functional categories, and argument structure. Following Huang's definitions in the "isolating—analytic—synthetic—polysynthetic" scale, I propose the analyticity and synthesis can also be seen at the quantification level.

The synthetic property of Chinese on quantification may contribute to explain the lack of quantifier raising in Chinese. In Chinese, the scope of universal quantifiers is decided by the surface structure. See the contrast between English and Chinese in (41) and (42).

- (41) A (different) boy bought every book.
- (42) \*you yi-ge (bu-tong-de) nanhai mei-ben shu dou mai-le.  
*Have one-CL (different) boy every-CL book all buy-ASP*  
 A (different) boy bought every book.

In (41), 'every' has a wider scope than the indefinite, but (42) cannot not have that reading. It seems that *mei* cannot raise to a higher position at LF. I speculate if it is relate to *mei*'s inadequacy to be a universal quantifier considering it introduces

variables which need to be bound by *dou*. I leave this question to my further research.

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