Quantificational DPs and *Dou*: Yang (2001), Chapter 4

1. More Data on *Dou* with Quantificational DPs

- We have seen that, unlike English *all* or *each*, *dou* must or can co-occur with quantificational DPs.

(1) The obligatory co-occurrence of *dou* and QDPs (Lin 1998:219)

a. **Meige ren** *(dou) mai-le shu
every man DOU buy-ASP book
Everyone (*all / *each) bought a book.
b. **Suoyou-de ren** *(dou) mai-le shu
all men DOU buy-ASP book
All the people bought a book.
c. **Dabufen de ren** *(dou) mai-le shu
most men DOU buy-ASP book
Most people (*each / *all) bought a book.

(2) The optional co-occurrence of *dou* and QDPs (Lin 1998:220)

a. **San-fen-zhi-er yishang de ren** (dou) mai-le shu
two-third above man DOU buy book
More than two-thirds of the people bought a book.
b. **Henduo ren** (dou) mai-le shu.
many men DOU buy-ASP book
Many people bought a book.

- We were wondering what would happen if a QDP was a direct object rather than a subject!

(3) Preverbal *versus* postverbal QDPs (Yang 2001:119-120)

Mei can get a distributive reading without *dou* when it occurs in an *in-situ* object position, while *dou* is obligatory when an object *mei* NP is preposed.

a. Wo yao baifang **mei-yi-wei pengyou**.
I will visit every-1-CL friend
'I will visit every friend.'
b. **Mei-yi-wei pengyou** wo *(**dou)** yao baifang.
every-1-CL friend I all want visit
'Every friend, I will visit.'

➢ *Note*: The only possible position of *dou* in (3a) is between the subject *wo* 'I' and the modal verb *yao* 'will'. According to my Chinese consultant, if *dou* is

used in (5a), it only gives rise to the "even" reading since the subject is singular.

- (Universal quantifier-like) *Suoyou* 'all' and *mei* 'every' show a contrast in distributivity in their interactions with *dou*.

(4) Difference between *suoyou* and *mei* (Yang 2001:99)
The *mei* NP doesn't allow a collective reading, while the *suoyou* NP does.

a. **Mei-**yi-ge ren **dou** kang-zhe yi-ge xiangzi. - distributive only
every-1-CL man all carry-Asp 1-CL box
'Every person was carrying a box.'
b. **Suoyou**-de ren **dou** kang-zhe yi-ge xiangzi. - distributive/collective
all-DE man all carry-Asp 1-CL box
i. 'All the people were carrying a box (together).'
ii. 'All the people were carrying a box (each).'

❖ **Three key questions on the interactions between quantificational DPs and *dou***

a. Why are quantificational DPs in Chinese compatible with *dou*, unlike in English?
b. Where does the difference between the quantifiers *suoyou* and *mei* come from?
c. How can a postverbal QDP have a distributive reading without the distributive operator *dou*?

➢ *Note*: Unfortunately, there will be no explanation about the difference between QDPs in their interactions with *dou* that are shown in (1-2).

2. The Nature of Quantificational *DPs* and *Dou*

2.1 Non-quantificational account for quantifier-like elements

2.1.1 *Mei*-NPs as Definite plurals: Lin (1998)

- **Lin's (1998) Proposal:** "*m*ei denotes a function with takes a predicate of type <e,t> as its argument and returns the maximal collection of the individuals denoted by the predicate", i.e. <<e,t>e>.

(5) [[*mei*]] = that function f such that for all P∈ $D_{<e,t>}$, *f*(P) = ∪||P|| (Lin 1998: 238)

- **Differences between definite plurals and QDPs 1 (Yang 2001):** *Mei* NPs obligatorily derive a distributive reading with *dou.*

(6) a. **Naxie ren** dou kang-zhe yi-ge da xiangzi shang-le lou. *distributive/collective*
those man all carry-Asp 1-CL big box up-Asp stairs
i. 'Those people each carried a big box upstairs.'
ii. 'Those people together carried a big box upstairs.'
b. **Mei-ge ren** dou kang-zhe yi-ge da xiangzi shang-le lou. *distributive only*
every-CL man all carry-Asp 1-CL big box up-Asp stairs
'Every one carried a big box upstairs.'

(7) Obligatorily distributive reading even in a postverbal position without *dou*

a. Wo songgei **neixie ren** yi-ben shu. - collective/distributive
I give those man one-CL book
'I gave those people a book.'
b. Wo songgei **mei-ge ren** yi-ben shu. - distributive only
I give every-CL man one-CL book
'I gave every one a book.'

- **Differences between definite plurals and QDPs 2 (Yang 2001):** Only *Mei* NPs can have a generic reading.

(8) a. **Naxie gou** dou you yi-tiao weiba. - generic reading impossible
those dog all have one-CL tail
'Those dogs all have a tail.'
b. **Mei-zhi gou** dou you yi-tiao weiba. - generic reading possible
every-CL dog all have one-CL tail
i. '(In general) every dog has a tail.'
ii. 'Each of the dogs has a tail.'

2.1.2 A variable-based approach: Lee (1986)

- **Lee's (1986) Proposal**: Chinese quantificational DPs are "variables that need to be bound by operators as *dou*", as *wh*-indefinites. And *dou* functions as "a genuine natural language equivalent of an unselective quantifier in the sense of Lewis 1973" like a conditional operator.

(9) *Wh*-indefinites bound by an operator *dou*

a. Shei lai-le ? - as an interrogative
who come-Asp
'Who came?'
b. **Shei dou** lai-le. - as an indefinite
who all come-Asp
'Everybody came.'

(10) Preverbal QDPs bound by an operator *dou*

a. Mei-ge ren *(dou) lai-le.
every-CL man all come-Asp
'Every man came.'
b. Wo jiandao-le mei-ge ren.
I see-Asp every-CL man
'I saw everybody.'

- **Yang's (2001) challenge 1**: Only *wh*-indefinites derive the quantificational variability in combination with *dou*, as illustrated in (11).

(11) a. In the case of *wh*-indefinites:

shei 'who' + *dou* 'all'	=> Quantificational force: ∀ 'anybody'
shenme 'what' + *dou* 'all'	=> Quantificational force: ∀ 'anything'
shenmeshihou 'when' + *dou* 'all'	=> Quantificational force: ∀ 'anytime'

b. In the case of quantified NPs:

mei 'every' + *dou* 'all'	=> Quantificational force: every
dabufen 'most' + *dou* 'all'	=> Quantificational force: most
henduo 'many' + *dou* 'all'	=> Quantificational force: many
suoyou 'all' + *dou* 'all'	=> Quantificational force: all

- **Yang's (2001) challenge 2**: Only *wh*-indefinites can be bound by other unselective operators, as in (12).

(12) a. A conditional operator
Ruguo shei zhao wo, qing gaosu wo yixia.
if who look.for me, please tell me once
'If anybody looks for me, please let me know.'

b. A Modal operator
Keneng shei zhao-guo ni.
maybe who look.for-Asp you
'Perhaps somebody looked for you.'

c. A yes-no operator
Shei kanjian ni le **ma**?
who see you Asp Q
'Did anybody see you?'

(12) No other operators but *dou* for QDPs

a. Ruguo mei-ge ren *(dou) zhao wo, qing gaosu wo yixia.
if every-CL man all look.for me, please tell me once
'If everybody looks for me, please let me know.'
b. Keneng mei-ge ren *(dou) zhao-guo ni.

maybe every-CL man all look.for-Asp you
'Perhaps everybody looked for you.'

c. Mei-ge ren *(dou) kanjian ni le ma?
every-CL man all see you Asp Q
'Did everybody see you?'

2.2 Yang's (2001) solution: A quantificational approach

- **The analysis**:
  a. Chinese quantified DPs are actually generalized quantifiers that introduce plural individuals, and thus they can combine with a distributive operator, as plural NPs in English.
  b. Since QDPs lack the inherent distributivity, unlike *every* in English, distributivity is derived only when QDPs combine with *dou*.

(13) The Semantics of *mei* NP

a. [[*mei* 'every']] = $\lambda P \lambda Q\ [\exists X(\forall x(x \in X \leftrightarrow P(x)) \wedge Q(X))]$

: "a function from a property P to a generalized quantifier introducing the maximal sum individual X such that its atomic parts each has the property P and the sum X is contained in the set of Q-denoting individuals"

b. **Classifiers individuate instantiations of kinds**

[[*yi-ben shu*]] = $\lambda x[^{\cup}BOOK(x) \wedge CL'(x)=1]$

: the set of objects that contain exactly one atom that are instantiations of the book-kind

c. [[*mei-yi-ben shu*]] = $\lambda Q[\exists X(\forall x(x \in X \leftrightarrow (^{\cup}BOOK(x) \wedge CL'(x)=1)) \wedge Q(X))]$

: "the set of properties of being the greatest sum of books", and the number of 'object unit' is exactly one.

(14) The Semantics of *dou*

Dou is like a standard D-operator except that there's a free variable X_2 that gets bound by an appropriate antecedent.

[[*dou*]] = $\lambda P[\forall y(y \in X_2 \rightarrow P(y))]$
cf. D $\Rightarrow \lambda P \lambda X[\forall y(y \in X \rightarrow P(y))]$ (Link 1987)

(15) Scope interaction between QPs

Scope of a quantifier is determined by the position of *dou* rather than the position of a quantifier itself.

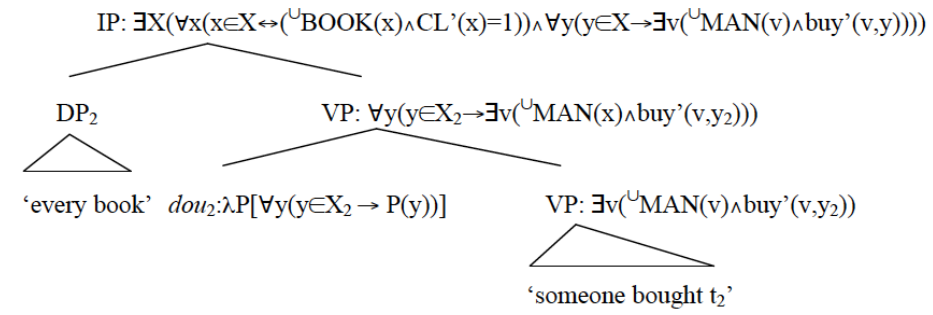
a. Meiyi-ben shu **dou you yi-ge ren** mei mai ∀>∃
every-Cl book all have one-Cl man not buy
'Every book is such that someone did not buy it.'

b. Mei-yi-ben shu **you yi-ge ren dou** mai-le. ∃ >∀
every-1-CL book have 1-CL man all buy-Asp

'Someone is such that he bought every book.'

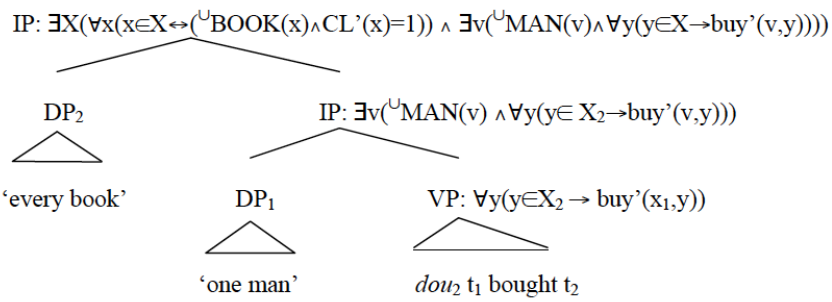
(16) The Semantic Derivations

(11) a.



(∃max> ∀book> ∃man)

b.



(∃max> ∃man >∀book)

3. Contrasts in distributivity: *Mei* vs. *Suoyou*

- **Yang's (2001) Question**: Where does the variation in quantificational force among Chinese D-quantifiers come from, as shown in (4)?

(4) Difference between *suoyou* and *mei*

a. **Mei-yi-ge ren** dou kang-zhe yi-ge xiangzi. - distributive only
every-1-CL man all carry-Asp 1-CL box
'Every person was carrying a box.'

b. **Suoyou-de ren** dou kang-zhe yi-ge xiangzi. - distributive/collective
all-DE man all carry-Asp 1-CL box
i. 'All the people were carrying a box (together).'
ii. 'All the people were carrying a box (each).'

- **Yang's (2001) Answer**: All the Chinese quantifiers introduce a plural individual, but they can vary in internal structures: *suoyou* only combines with a bare nominal, while *mei* combines with a full-fledged NP that contains a numeral classifier complex, i.e. 'one CL NP'.

(17) The semantics of *mei* and *suoyou*
a. [[*mei* 'every']] = λPλQ [∃X(∀x(x∈X ↔ P(x)) ∧ Q(X))]
b. [[*suoyou* 'all']] = λPλQ [∃X(∀Y(Y⊆X ↔ P(Y)) ∧ Q(X))]

(18) Revised semantics of *dou* adapted from Lin (1998)
[[*dou*]] = λP[∀y((y∈||cov|| ∧ ||cov||⊆X_2) → P(y))]

(19) a. *Truth-conditions of (4a)*:
∃X (∀x(x∈X ↔(∪MAN(x) ∧ CL'(x)=1)) ∧ ∀u((u∈||cov|| ∧ ||cov||⊆X → ∃v(∪BOX(v) ∧ carry'(u, v))))

b. *Truth-conditions of (4b)*:
∃X (∀Y(Y⊆X ↔∪MAN(Y)) ∧ ∀u((u∈||cov|| ∧ ||cov||⊆X → ∃v(∪BOX(v) ∧ carry'(u, v))))

- *Mei* NPs would allow a cover like Cov-1 because of the *yi* 'one' classifier compelx. Hence, a collective reading is impossible with *mei* NPs.

(20) Cov-1 = {{a}, {b}, {c}}
Cov-2 = {{a b c}}
Cov-3 = {{a b}, {c}}…
in a situation where [[*ren* 'man']] = {a, b, c}.

- <u>The important function of classifiers</u>: Individual-level vs. sel-level classifiers.

(21) a. **Mei-yi-tao shu** dou you yi-ge ren mai-le.
every-1-CLset book all have 1-CL man buy-Asp
'<u>For every set of books</u>, there is someone who bought that set.'
b. **Mei-yi-ben shu** dou you yi-ge ren mai-le.
every-1-CLcopy book all have 1-CL man buy-Asp
'<u>For every book</u>, there is someone who bought that book.'

(22) a. ∃X (∀x(x∈X ↔(∪BOOK(x) ∧ $CL^{set'}$(x)=1)) ∧ ∀u((u∈X → ∃v(∪MAN(v) ∧ buy'(v, u))))
b. ∃X (∀x(x∈X ↔(∪BOOK(x) ∧ $CL^{copy'}$(x)=1)) ∧ ∀u((u∈X → ∃v(∪MAN(v) ∧ buy'(v, u))))

(23) The D-operator can look into the unit denoted by the classifier with a demonstrative NP.

a. **Nei-yi-tao shu** dou you yi-ge ren mai-le.
that-1-CLset book all have 1-CL man buy-Asp
'For every book in that set, there is someone who bought that book.'

b. ∀u(u≤ιX.(∪BOOK(X) ∧ $CL^{set'}$(X)=1) → ∃v(∪MAN(v) ∧ buy'(v, u)))
: "one of the sets is the unique set of books that is salient in the context, and each book in that set is bought by someone."

4. Overt and Covert D-operators in Chinese

- **Yang's (2001) Question**: How can a postverbal QDPs have a distributive reading without the distributive operator *dou*?

(23) D-on-V and D-on-VP (Lasersohn 1998)

a. The boys built a raft. - *Covert D-on-VP*
   i. The boys built a raft together.
   ii. The boys each built a raft.
b. That boy kissed the three girls. - *Covert D-on-V*
   i. That boy kissed the three girls together as a group.
   ii. That boy kissed the three girls individually.

- **Yang's (2001) Answer 1**: Chinese doesn't allow a covert D-operator at the VP level.

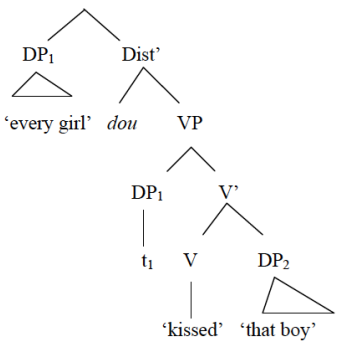
(24) Lack of a covert D-operator:
Dou is the overt D-operator at the VP level.

a. Yuehan he Mali mai-le yi-ben shu. *-distributive reading impossible*
   John and Mary buy-Asp 1-CL book
   'John and Mary (together) bought a book.'
b. Yuehan he Mali dou mai-le yi-ben shu. *-only distributive reading*
   John and Mary all buy-Asp 1-CL book
   'John and Mary (each) bought a book.'

(25) The requirement of *dou* with QDPs (following Beghelli and Stowell 1997, Lin 1998)

a. Mei-yi-ge nuhai dou qin-guo nei-ge nanhai. - *Overt D-on-VP*
   every-1-CL girl all kiss-Asp that-CL boy
   'Every girl kissed that boy.'

b. DistP - *feature-checking via a spec-head relation (cf. Lin 1998)*



- Note: It seems like there are some cases where a quantificational DP in a preverbal position can derive a distributive reading without *dou*, i.e. with an indefinite or reflexive object.

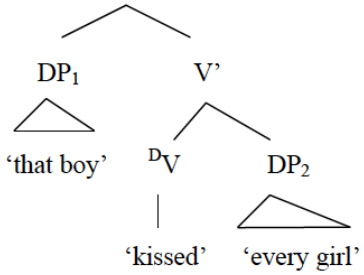
(26) a. Mei-yi-ge nuhai chang le **yi-ge ge**.
every-one-CL girl sing LE one-CLsong
'Every girl sang a song.' (Huang 1996:33)
b. Mei-yi-ge houxuanren tan-le-tan **ziji**.
every--one-CL candidate talk-LE-talk self.
'Every candidate talked about himself/herself.' (Huang 1996:34)

- **Yang's (2001) Answer 2**: Unlike at the VP level, Chinese (only) allows a covert D-operator at the V level so that a QDP can derive a distributive reading without *dou* at a postverbal position.

(27) A covert D-operator at the V level - *collective/distributive*
Zuotian ta baifang-le Yuehan he Mali.
yesterday he visit-Asp John and Mary
i. 'Yesterday he visited John and Mary together.'
ii. 'Yesterday he visited John and Mary individually.'

(28) a. Nei-ge nanhai qin-guo mei-yi-ge nuhai. *Covert D-on-V*
that-CL boy kiss-Asp every-1-CL girl
'That boy kissed every girl.'

b. - *feature-checking via a head-complement relation*



- Prediction: Unlike in English, when there are two plural NPs on the subject and object position without *dou*, only object distributive reading would be possible.

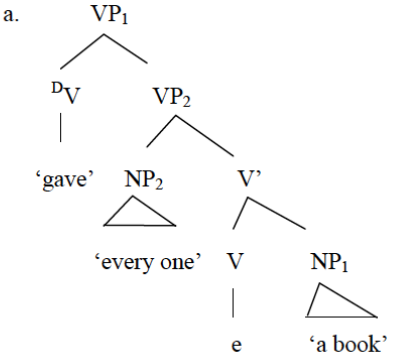
(29) a. The three boys bought two cars.
b. Nei-san-ge nanhai mai-le liang-bu che.
that-3-CL boy buy-Asp 2-CL car
'The three boys together bought two cars.
* 'The three boys each bought two cars.'

- When there is more than one object with a VP-shell structure, a covert D-operator posits on a verb that is local to a quantifier, and a scope relation is, again, determined by the position of a D-operator.

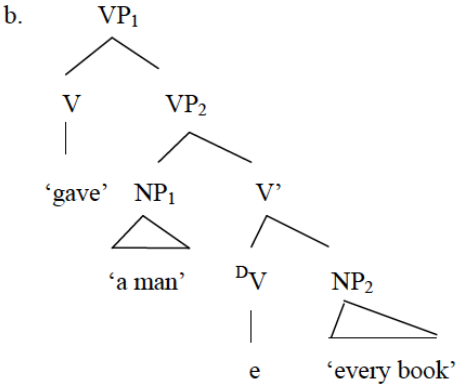
(30) a. Wo song-le mei-ge ren yi-ben shu. ∀>∃
I give-Asp every-CL man 1-CL book
'Every one is such that I gave him/her a book.'
b. Wo song-le yi-ge ren mei-ben shu. ∃>∀
I give-Asp 1-CL man every-CL book
'A man is such that I gave him every book.'

(31) a.

(29) a.



b.



5. Summary

- A quantifier-like element in Chinese like *mei* that require *dou* is not a definite determiner or a variable, but a quantifier that introduce plural individuals.
- Quantificational DPs in Chinese lack inherent distributivity, and thus they can occur with the distributive operator *dou*.
- The classifier phrase plays an important role in deriving obligatorily distributive reading of *mei yi* NPs.
- Chinese only allows an overt distributive operator *dou* at the VP level and a covert D-operator at the V level.