

Unifying Universal and Existential *wh*'s in Mandarin*

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Abstract The paper aims at a unified account of Mandarin non-interrogative *wh*'s that have both universal and existential uses. *Wh*'s are argued to uniformly denote existentials obligatorily triggering alternatives, exhaustifying different types of alternatives strengthens the existentials into either universal or existential free choice items corresponding to the two uses of *wh*'s, as is in the framework of Chierchia 2013b. Distribution and interpretation of the two types of *wh*'s follow from their interaction with an *even*-like particle *dou* and competition between the two.

Keywords: *wh*-items, universal/existential free choice items, alternatives, exhaustification

1 Introduction

Mandarin *wh*-items are versatile. A simple *wh shei* 'who' can act as an interrogative word as in (1a) and an existential indefinite in (1b) (Li 1992; Lin 1998b); it can also contribute universal quantificational force in combination with *dou* 'even/all' in (1c) (Cheng 1995), and receive what seems to be a bound variable interpretation in a so-called *wh*-conditional (1d) (Cheng & Huang 1996; Chierchia 2000).

- (1) a. Lisi qing.le shei?
Lisi invite.ASP who
“Who did Lisi invite?” Interrogatives
- b. Lisi kending qing.le shei.
Lisi must invite.ASP who
“Lisi must have invited someone.” Existential
- c. Lisi shei dou qing.le.
Lisi who DOU invite.ASP
“Lisi invited everyone.” Universal

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- d. Zhangsan qing.le shei, Lisi jiu qing.le shei.
 Zhangsan invite.ASP who, Lisi then invite.ASP who
 ‘‘If Zhangsan invited X, Lisi invited X.’’ Wh-conditionals

This paper offers a unified account of Mandarin existential and universal *wh*'s as in (1b-c), in which both denote existential quantifiers underlyingly (see also Chierchia & Liao 2015). \exists -*wh*'s however can be strengthened into \forall -*wh*'s via exhaustification over the domain alternatives, independently needed for free choice disjunction and free choice items across languages (Fox 2007; Chierchia 2013b). On the other hand, *wh*'s are not strengthened everywhere: universal *wh*'s always co-occur with *dou* while *wh*'s without *dou* are interpreted existentially. The distribution is explained by (i) the presence of *dou* which requires *wh*'s with *dou* be strengthened into universals to satisfy its EVEN-presupposition, and (ii) the competition between *wh* with and without *dou*, which blocks the latter from expressing a universal statement.

By assigning Mandarin universal *wh*'s an \exists -semantics, the paper aims at maintaining a unified \exists -semantics for all Mandarin *wh*'s, in combination with Karttunen's (1977) \exists -semantics of interrogative *wh*'s in question. A further extension of the \exists -idea to *wh*-conditionals like (1d) is also possible if we follow Liu (2016) in taking (1d) to be an interrogative conditional where the antecedent and the consequent both embed questions and the *wh*'s to be interrogative *wh*'s in disguise.

2 Universal *wh*'s with *dou*

2.1 Basic Facts

As mentioned in the introduction, universal *wh*'s need the adverbial focus particle *dou*. Specifically, as shown in (1c), a universal *wh* is dislocated to a pre-*dou* position, with the combination of the *wh* and *dou* roughly equivalent to a universal quantifier. Universal *wh*'s can also appear before the syntactic subject as in (2), which I assume for concreteness is due to an optional movement of the *wh* to a sentence-initial topic position (Shyu 1995). In cases where the *wh* itself is the subject as in (3), I adopt the VP-internal subject hypothesis and assume the subject-*wh* moves from a VP-internal position to the left of *dou* (Shyu 1995; Lin 1998a).

- (2) shei_i Lisi dou neng qing *t_i*. (3) shei_i dou neng *t_i* qing Lisi.
 who Lisi DOU can invite *t_i* who DOU can *t_i* invite Lisi
 ‘‘Everyone can be invited by Lisi.’’ ‘‘Everyone can invite Lisi.’’

Predicates participating in the *wh-dou* construction can be positive episodic, negated, \diamond or \square -modalized, as in (4). Furthermore, the domain of a universal *wh*

can be further restricted by a demonstrative phrase to a contextually salient set of individuals, as illustrated by *zhexie laoshi* ‘these teachers’ in (4).

- (4) (Zhexie.laoshi) Lisi shei_i dou qing.le/mei.qing/neng.qing/bixu.qing *t_i*.
 these.teacher Lisi who DOU invite.ASP/not.invt/can.invt/must.invt *t_i*
 ‘Everyone (of these teachers) is such that Lisi has/didn’t/can/must invite her.’
 a. Bill read any book *(he found).
 b. *Bill read any of these books he found.

The demonstrative fact is worth noting since universal *wh*’s are often compared with free choice items such as English *any* (Giannakidou & Cheng 2006), and FC *any* with an episodic predicate as its nuclear scope can be *subtriggered* (Dayal 1998); that is, episodic *any* can be saved by a post-*any* phrasal modifier — the *he found* in (4a). Crucially, a subtriggered modifier is claimed to always contain a (possibly covert) modal element that allows the set of individuals denoted by the restrictor of *any* to vary across possible worlds in order to satisfy certain requirements of *any* (e.g., *viability* in Dayal 2013). The claim is further supported by the cross-linguistic fact that a subtriggered modifier tends to have subjunctive rather than indicative mood (Quer 1998; Dayal 2013), presumably because the former but not the latter is clearly modalized. This also explains why (4b) is bad with a demonstrative phrase in the modifier, since the interpretation is restricted to a contextually salient set of individuals in the *actual* world. The fact that *wh-dou* is possible in episodic positive contexts even with a demonstrative phrase shows that universal *wh*’s are different from free choice *any*: while *any* requires the presence of a modal element, either in its scope or in the restrictor, *wh-dou* can appear in *bona fide* episodic contexts.

2.2 Analyzing universal *wh*’s with *dou*: *dou* as EVEN

The analysis has three main ingredients. First, *dou* is EVEN, which requires (as a presupposition) its prejacent to be stronger than all the other alternatives (Liu 2017). Next, just as interrogative-*wh*’s in constituent questions as in Karttunen 1977 and indefinite-*wh*’s in negative and modal contexts discussed in Chierchia & Liao 2015, universal *wh*’s denote \exists -quantifiers as well, and as many polarity-sensitive items (and indefinites in general) across languages do, they trigger subdomain alternatives (Chierchia 2013b). Finally, free choice effects that usually accompany disjunctions/indefinites enter the scene, turn these \exists -*wh*’s into \forall by utilizing the subdomain alternatives, and thus help satisfy *dou*’s strongest prejacent presupposition. All three components are independently motivated. We start our discussion with *dou*.

Mandarin *dou* is extensively discussed in the literature (Lee 1986; Lin 1998a; Pan 2006; Xiang 2008; Liao 2011; Xiang to appear, a.o.). The current paper adopts

the view that takes *dou* to be EVEN (Liu 2017, see also Liao 2011). As EVEN, *dou* is truth-conditionally vacuous but carries a presupposition that its prejacent is the strongest among its alternatives (cf. Karttunen & Peters 1979 on English *even*). Different 'uses' of *dou* are analyzed by conceptualizing strength differently.

To see how the analysis works, consider two main uses of *dou*: its *even*-use in (5) and distributive use in (6). The two uses correspond to two ways of understanding strength between propositions: (*un*)likelihood vs. entailment. In (5) with focus on *Lisi*, *dou* presupposes that the prejacent *that Lisi bought a Tesla* is unlikely than all other alternatives such as *that Zhangsan bought a Tesla*, *that John bought a Tesla*, and thus we have the observed *even*-flavor. In (6) (under the relevant reading, see fn.1), *dou* presupposes that its prejacent entails all the other alternatives. Assume that the alternatives to the prejacent are *that Zhangsan bought a Tesla* and *that Lisi bought a Tesla*; the requirement can be satisfied only if the prejacent is understood distributively (*that Zhangsan and Lisi each bought a Tesla* \subset *that Zhangsan/Lisi bought a Tesla*). In other words, entailment-based *dou* forces distributive readings of plural predication, giving rise to *dou*'s apparent distributive effect¹.

- (5) Lisi dou mai.le yi liang Tesla.
 Lisi DOU buy.ASP one CL Tesla
 'Even Lisi bought a Tesla.' *Even-dou* ←Likelihood
- (6) Zhangsan he Lisi dou mai.le yi liang Tesla.
 Zhangsan and Lisi DOU buy.ASP one CL Tesla
 'Zhangsan and Lisi each bought a Tesla.' *Distributive-dou* ←Entailment

Besides offering a conceptually simple way of understanding *dou*'s various uses, the EVEN-based analysis brings together two prominent accounts of *dou* proposed in the literature: the distributivity approach that takes *dou* to be a distributivity operator similar to English *each* (Lin 1998a), and the maximality approach that takes *dou* to be ι (or σ , Link 1983) that encodes maximality/uniqueness, similar to English definite article *the* (Giannakidou & Cheng 2006; Xiang 2008; Cheng 2009). Consider (7) (with stress on *dou*), which illustrates both of *dou*'s maximality and distributivity effects. In (7), the bare numeral subject associated with *dou* is interpreted as a definite, indicated by *the* in the gloss (see Cheng & Sybesma 1999: (57b), a.o. for the observation), and the VP following *dou* has a distributive construe marked by

¹ To be clear, (6) is ambiguous. It also has a reading that 'even Zhangsan and Lisi as a group bought a Tesla'. This reading is captured by taking strength to be unlikelyhood and comparing the prejacent *that Zhangsan and Lisi (as a group) bought a Tesla* with alternatives like *that John and Mary (as a group) bought a Tesla*, with *dou* conveying that the prejacent is the most unlikely one. Stress disambiguates. Under entailment-related readings *dou* is generally stressed, while for *even*-uses of *dou* the stress falls on *dou*'s associates. The prosodic pattern has been observed for a long time and yet no concrete proposal is currently available.

each in the gloss. Obviously, neither the distributivity approach (motivated by and thus only capturing *each*) nor the maximality approach (motivated by and thus only capturing *the*) accounts for the full range of *dou*'s effects exhibited in (7).

- (7) San.ge xuesheng dou mai.le wu.ben shu.
 three.CL student DOU buy.ASP five.CL book
 'The three students each bought five books.'

Taking the *dou* in (7) as EVEN based on entailment predicts both effects. As entailment-based EVEN, *dou* presupposes that its prejacent (*that 3 students bought five books*, 3 being *at least 3*) entails all the other alternatives, with plausible candidates for the alternatives being *that 2 students bought five books*, *that 1 student bought five books* and so on. The entailment from the prejacent to the alternatives goes through only if the VP is interpreted distributively (*that 3 students each bought five books* \subset *that 2 students each bought five books*), but not collectively/cumulatively. This explain the distributivity effect, in parallel with the explanation of (6) above.

Furthermore, for the prejacent of (7) to entail *all* the other alternatives, there have to be exactly three students in the context. This can be illustrated by comparing (8) and (9). With exactly three students in the context, propositions of the form *that n students each bought five books* with $n > 3$ are not in the alternative set in the first place (for it makes no sense to consider a proposition like *that 4 students each bought five books* if we already know there could only be three students), and thus the prejacent indeed entails all the other alternatives, as in (8). (9) is different. In this case, there are more than 3 students (say 4) in the context and thus there is a proposition (*that 4 students each bought five books*) in the alternative set asymmetrically entailing the prejacent; as a result, *dou*'s strongest-prejacent presupposition cannot be met and the sentence is infelicitous under (9). In other words, the EVEN-based analysis of *dou* predicts (7) to carry a presupposition that there are exactly 3 students in the context, and this is precisely the maximality/definiteness effect.

- (8) $Alt_{=3} : \left\{ \begin{array}{l} 3 \text{ students each bought five books } (= \pi), \\ 2 \text{ students each bought five books,} \\ 1 \text{ students (each) bought a books,} \end{array} \right\}$
- (9) $Alt_{>3} : \left\{ \begin{array}{l} 4 \text{ students each bought five books,} \\ 3 \text{ students each bought five books } (= \pi), \\ \dots \end{array} \right\}$

In sum, taking *dou* to be EVEN (based on likelihood or entailment, and in this particular case entailment) accounts for both distributivity and maximality of *dou*: the former is required to ensure entailment among alternatives while the latter is needed so that the prejacent could entail *all* the other alternatives (in schematic

words, strongest = distributivity + maximality). In this sense, the EVEN-analysis inherits insights from both the distributivity analysis and the maximality analysis.

The paper adopts the EVEN analysis of *dou*. Specifically, I take the *dou* in the *wh-dou* to be entailment-based, which presupposes that all the other alternatives are entailed by the prejacent². Next we turn to *dou*'s prejacent and its alternatives.

2.3 Analyzing universal *wh*'s with *dou*: *wh*'s as existentials

I assume that non-interrogative *wh*'s (including universal *wh*'s) and interrogative *wh*'s share the same semantic core. A fairly standard semantics of questions takes them to denote a set of propositions (Hamblin 1973; Karttunen 1977), corresponding to the set of alternatives from which the addressee is to choose her answer. The set can be represented in (10), with the role of the *wh*-word as an \exists -quantifier suggested by the underlined part and explicitly proposed by Karttunen (1977).

$$(10) \quad \llbracket \text{Lisi qing.le shei?} \rrbracket = \lambda p. \exists x[\text{person}_w(x) \wedge p = \lambda w. \text{Lisi invited}_w x]$$

Treating (interrogative-) *wh*'s as \exists -quantifiers also find cross-linguistic support. Across languages, indefinites and interrogative words are closely related in form or identical — the so-called “interrogative-indefinite affinity” (Haspelmath 1997). Taking them both to be \exists provides a basis for understanding this topological tendency.

Mandarin happens to be a language that exemplifies this affinity. As is already illustrated in (1b), Mandarin *wh*'s can be used as non-interrogative indefinites. Another example is provided in (11), where the *wh* is interpreted as a narrow scope existential. Assigning it an \exists -semantics straightforwardly captures the interpretation.

- | | |
|---|---|
| <p>(11) Wo bu xihuan shei.
I not like who.
'I don't like anyone'.</p> | <p>(12) * Wo xihuan shei.
I like who
Intended: “I like somebody.”</p> |
|---|---|

Moreover, when used as indefinites, Mandarin *wh*'s are polarity sensitive (Huang 1982, Cheng 1994): they are felicitous in downward-entailing contexts such as under negation (11) and within a conditional antecedent, and in modal environments as in (1b), but crucially not in episodic positive contexts, illustrated by (12).

Recent alternatives-and-exhaustification based analyses of polarity phenomena (Chierchia 2013b, a.o.) try to derive behaviours of polarity sensitive items (PSIs) from their lexical semantical properties and independent motivated mechanisms and

² Strength based on likelihood would also work (See Crnič 2019), partly due to the *Principle of Entailment* – if a proposition *p* entails a proposition *q*, *p* is at most as likely as *q* – that connects entailment and likelihood (Lahiri 1998; Crnič 2014). We however opt to work with entailment henceforth for ease of exposition, following Crnič's (2017) treatment of *any*.

principles in the grammar. In particular, PSIs are assumed to be existentials that obligatorily trigger *alternatives* (of different species); reasoning (in more technical terms *exhaustification*) over these alternatives using covert ONLY/EVEN generates inferences that are only satisfiable in certain DE and/or modal environments, and thus the polarity sensitivity. Since both alterantives and exhautificaiton are independently needed for analyzing other phenomena, the framework has more explanatory power.

To illustrate, consider Chierchia & Liao's (2015) treatment of Mandarin *wh*-indefinites. In their account, *wh*'s are just \exists -quantifiers, illustrated in (13a) with the domain explicitly represented as D . The main difference between PSIs such as Mandarin *wh*-indefinites and plain indefinites (*some/a*) is that the former *obligatorily* activate alternatives while the latter only do so *optionally*. In Particular, Chierchia & Liao propose that Mandarin *wh*'s obligatorily activate subdomain alternatives, which are also existential quantifiers but with domains being subsets of D as in (13b).

- (13) a. $\llbracket \text{shei } D \rrbracket = \lambda P. \exists x \in D [\text{person}_w(x) \wedge P(x)]$
 b. ALT of $\llbracket \text{shei } D \rrbracket = \{ \lambda P. \exists x \in D' [\text{person}_w(x) \wedge P(x)] \mid D' \subseteq D \}$

Alternatives, once activated, must be used and factored into meaning (exhaustified). The process is implemented by inserting into the structure one or more exhaustifiers from a restricted set of covert alternative-sensitive operators, which include counterparts of focus-sensitive particles like *only* and *even*. For Mandarin indefinite *wh*'s, the relevant exhaustifier is a covert *only* — the O in (14), which takes two arguments, ALT (a set of propositions determined by the prejacent and represented as a subscript on O in (14)) and p (its prejacent proposition), and returns true iff p is true and everything in ALT not entailed by p is false.

- (14) For any alternative set ALT , $\llbracket O_{ALT} \rrbracket = \lambda p \lambda w. p_w \wedge \forall q \in ALT [q_w \rightarrow p \subseteq q]$

With O , (11)-(12) have the analyses in (15)-(16). Recall that *wh*'s are \exists triggering subdomain alternatives. These alternatives project up to the sentence level, and thus we have (15b) and (16b) as the two alternative sets. It turns out that exhaustifying the two prejacent against their respective alternative sets delivers distinct outcomes.

- (15) a. LF of (11): $O_{ALT} [\text{I don't like who}_D]$
 b. ALT : $\{ \lambda w. \neg \exists x \in D' [\text{I like}_w x] \mid D' \subseteq D \}$ O vacuous
- (16) a. LF of (12): $O_{ALT} [\text{I like who}_D]$
 b. ALT : $\{ \lambda w. \exists x \in D' [\text{I like}_w x] \mid D' \subseteq D \}$
 c. Application of O : $\lambda w. \exists x \in D [\text{I like}_w x]$ Prejacent
 $\wedge \forall D' \subset D [\neg \exists x \in D' [\text{I like}_w x]]$ + Negation of ALT = Contradiction!

In (15), all the alternatives are entailed by the prejacent. Since O only negates alternatives not entailed by the prejacent, no alternative is negated and exhaustification is vacuous but coherent, and simply passes through the prejacent. As a result,

indefinite-*wh*'s are felicitous in negative contexts and receive a simple narrow-scope \exists interpretation. In (16), all alternatives other than the prejacent asymmetrically entail the prejacent, and thus are negated by *O*. Negating all these stronger alternatives however gives rise to a meaning that is contradictory with the prejacent. Assume that sentences that are logically contradictory are judged as unacceptable (Gajewski 2002). The contradiction thus explains why Mandarin *wh*-indefinites are unacceptable in positive contexts and thus accounts for its polarity-sensitive nature.

Chierchia & Liao 2015 provides a starting point for a unified understanding of Mandarin *wh*-items: interrogative-*wh*'s and non-interrogative indefinite-*wh*'s are both \exists -quantifiers. Specifically, the latter are Chierchia-style polarity- \exists that trigger subdomain alternatives and thus need covert *O* to exhaustify them, while the former are Karttunen- \exists that do not trigger alternatives but need to appear in an interrogative context (in syntactic parlance, its *+wh* feature needs to be feature-checked by an interrogative C_Q head). The paper continues this strongly unitary position, and extend the \exists -analysis to universal *wh*'s. In particular, I propose universal *wh*'s are also \exists -quantifiers triggering subdomain alternatives, as is already specified in (13).

2.4 Analyzing universal *wh*'s with *dou*: universal from free choice

The alert reader would have detected an opposition. In §2.2 we adopted the EVEN-analysis of *dou* where *dou* requires its prejacent to be the strongest. In §2.3 we took *wh*'s to be \exists -quantifiers triggering subdomain alternatives. The two assumptions however seem incompatible: assume that *dou* has sentential scope; a prejacent with a wide domain existential quantifier is very weak — in fact entailed by its subdomain alternatives. The presupposition of *dou* cannot be satisfied.

The issue can be solved by introducing free choice effects that usually come with disjunctions and indefinites, strengthening them into \wedge and \forall , and fix the relation between *dou*'s prejacent and its alternatives. With free choice strengthening added, the prejacent now becomes a \forall with a wide domain, which indeed entails all the subdomain \forall -alternatives; *dou*'s requirement is thus satisfied, and the correct interpretation (universal) obtained. Let me illustrate free choice using disjunction.

- (17) You can bring wine or chocolate.
 $\approx \diamond \text{WINE} \wedge \diamond \text{CHOCOLATE}$ (WINE abbreviates *that you bring wine*).

As illustrated in (17), free choice effects refer to cases where disjunctions/existentials are interpreted conjunctively/universally, usually in construction with a modal. There are reasons to believe that free choice effects are not rooted in the lexical semantics of the relevant items. The point is most obvious with free choice disjunctions like (17). For one thing, the compositional semantics of (17) only delivers $\diamond(\text{WINE} \vee \text{CHOCOLATE})$, and under standard semantics of disjunction and modals

this is equivalent to $\diamond \text{WINE} \vee \diamond \text{CHOCOLATE}$, weaker than the perceived interpretation $\diamond \text{WINE} \wedge \diamond \text{CHOCOLATE}$. For another, free choice effects usually disappear under negation and in other downward-entailing contexts (*you cannot bring wine or chocolate* is simply interpreted as $\neg \diamond (\text{WINE} \vee \text{CHOCOLATE})$), which is a signature of enriched meanings such as implicatures (Kratzer & Shimoyama 2002).

Free choice effects can be elegantly derived in the alternatives-and-exhaustification framework, by applying the exhaustification operator O in (14) to pre-exhaustified alternatives (Fox 2007; Chierchia 2013b). With certain natural assumptions on the alterantives disjunctions/existentials can trigger, the process will turn them into \wedge/\forall . I will illustrate the idea using \vee . \exists can be turned into \forall in essentially the same way, since \exists -quantifications are simply generalized (potentially infinite) disjunctions.

Consider (17). Its free choice effect can be derived in two steps. First, assume a disjunction also triggers subdomain alterantives, which are its disjuncts (of arbitrary length) (Sauerland 2004). The step by itself will not deliver free choice, for exhaustification of (17) relative to the subdomain alterantives via the exhaustifier O defined in (14) will instead return a contradiction. This is because both of the two subdomain alterantives asymmetrically entail the prejacent $\diamond (\text{WINE} \vee \text{CHOCOLATE})$, and are thus negated by O . The result in combination with the prejacent is a contradiction.

Next, Fox (2007) proposes that we consider *pre-exhaustified* alterantives, which as the name suggests are alternatives (in particular the subdomain ones) that have already been exhaustified by O . The set of pre-exhaustified alternatives for (17) is $\{O_{ALT} \diamond \text{WINE}, O_{ALT} \diamond \text{CHOCOLATE}\}$, with the two pre-exhaustified alterantives $O_{ALT} \diamond \text{WINE}$ being $\diamond \text{WINE} \wedge \neg \diamond \text{CHOCOLATE}$, and $O_{ALT} \diamond \text{CHOCOLATE}$ being $\diamond \text{CHOCOLATE} \wedge \neg \diamond \text{WINE}$. Since both pre-exhaustified alterantives asymmetrically entail the prejacent, both are negated by the matrix O . The result is free choice. Specifically, the two pre-exhaustified alterantives equal to $\neg(\diamond \text{WINE} \rightarrow \diamond \text{CHOCOLATE})$ and $\neg(\diamond \text{CHOCOLATE} \rightarrow \diamond \text{WINE})$. Negating them delivers $\diamond \text{WINE} \leftrightarrow \text{CHOCOLATE}$, which, in conjunction with the prejacent, gives rise to free choice.

With exhaustification over pre-exhaustified domain alterantives, we can strengthen the \exists denoted by *wh* into \forall , thus satisfying *dou*'s strongest-prejacent presupposition.

2.5 A compositional implementation

Implementation of the proposal follows important insights from Crnič's (2017) treatment of English *any*. First, I propose (18) as the lexical entry of *dou*, which takes as its arguments a B (ackground) and a F (ocus), presupposes that the result of applying B to F entails those of applying B to alternatives of F , and returns $B(F)$ only if the presupposition is met.

$$(18) \quad \llbracket \text{dou} \rrbracket^g = \lambda B \lambda F \lambda w : \forall F' \in \text{Alt}(F) [F \neq F' \rightarrow B(F) \subset B(F')]. B_w(F)$$

Next, *wh*'s are \exists -quantifiers triggering subdomain alternatives, as in (13).

I further assume that in *wh-dou*, the *wh*'s domain argument *D* is focused. It focus-moves to the Spec of *dou* and is interpreted there (with its \exists -part left behind and interpreted in-situ). The idea that the *wh* (a part of it in our implementation) is focused finds additional support in the prosodic fact that universal *wh*'s in *wh-dou* always bear stress, in accordance with interrogative-*wh*'s in questions which arguably also involve focus (Kiss 1995, a.o.), but in contrast with indefinite-*wh*'s without *dou* ((1b) and (11) above) that can never be stressed (Dong 2009: 143).

The above assumptions deliver (19b) as the LF of a simple episodic positive sentence with *wh-dou* (19a). Surface word order (PF) can be obtained by taking the part of *wh* that moves (the D_F in (19b)) to be the pronounced position of the *wh* and moving the subject *Lisi* above *dou* to an vP-external position.

- (19) a. Lisi shei_i dou qing.le t_i .
 Lisi who DOU invite.ASP t_i
 'Everyone is such that Lisi invited her.'
- b. $[D_F [dou]_{\text{vP}_3} \lambda 3_{\text{vP}_2} O_{ALT_{Exh-D}} [\text{vP}_1 \text{ Lisi invited } [shei \ t_3]]]]]$
- c. For any alternative set *ALT*, $[[O_{ALT}]^g = \lambda p \lambda w.p_w \wedge \forall q \in ALT [q_w \rightarrow p \subseteq q]$
- d. ALT_{Exh-D} of $p = \{O_{IE-DA(p)}(q) : q \in DA(p)\}$,
 where $DA(p)$ is the set of subdomain alternatives of p ; $O_{IE-DA(p)}(q)$ is the result of exhaustifying q relative to the members of the subdomain alternatives of p that are Innocent Excludable relative to q^3 .

In (19b), exhaustification by *O* takes place at vP₂, with the standard semantics of *O* repeated in (19c) (from (14)). The exhaustification is relative to a set of pre-exhaustified alternatives whose definition is explicitly spelled out in (19d) (Chierchia 2013b: 138). Since *wh*'s are existentials triggering subdomain alternatives, exhaustifying the preadjacent $\lambda w.\exists x \in g(3) \cap \text{person}[\text{Lisi invited}_w x]$ with respect to its pre-exhaustified subdomain alternatives will turn the existential statement into a universal one — $\lambda w.\forall x \in g(3) \cap \text{person}[\text{Lisi invited}_w x]$, in the same way disjunctions are turned into conjunctions. Next, λ -abstraction over the domain variable creates the denotation of vP₃ — $\lambda D' \lambda w.\forall x \in D' \cap \text{person}[\text{Lisi invited}_w x]$, which is then passed on to *dou* as its background-argument. The derivation is given in (20).

- (20) a. $[[\text{vP}_1]]^g = \lambda w.\text{Lisi invited}_w \text{ a person in } g(3)$
 b. ALT_D of $[[\text{vP}_1]]^g = \{\lambda w.\text{Lisi invited}_w \text{ a person in } D' \mid D' \subseteq g(3)\}$

³ The set of Innocent Excludable alternatives relative to a proposition p and a set of alternatives C is the intersection of all the maximal C' in C that have the property that the negations of all their members can be jointly conjoined with p . Formally, the set of Innocent Excludable alternatives relative to p and C is $\cup\{C' \subseteq C \mid C' \text{ is a maximal set in } C \text{ such that } \{-q \mid q \in C'\} \cup \{p\} \text{ is consistent}\}$ (Fox 2007).

- c. ALT_{Exh-D} of $\llbracket vP_1 \rrbracket^g = \{\lambda w. \text{Lisi invited}_w \text{ a person in } D' \wedge \neg \text{Lisi invited}_w \text{ a person in } g(3) \setminus D' \mid D' \subseteq g(3)\}$
- d. Alternatives in ALT_{Exh-D} all entail $\llbracket vP_1 \rrbracket$ and are thus negated by O
- e. $\llbracket vP_2 \rrbracket^g = \lambda w. \text{Lisi invited}_w \text{ a person in } g(3) \wedge \forall D \subset g(3) [\text{Lisi invited}_w \text{ a person in } D \rightarrow \text{Lisi invited}_w \text{ a person in } g(3) \setminus D] = \lambda w. \forall x \in g(3) \cap \text{person}[\text{Lisi invited}_w x]$
- f. $\llbracket vP_3 \rrbracket^g = \lambda D' \lambda w. \forall x \in D' \cap \text{person}[\text{Lisi invited}_w x]$
- g. Presupposition of (19a): $\forall D' \in ALT(D) [D' \neq D \rightarrow \lambda w. \forall x \in D \cap \text{person} [\text{Lisi invited}_w x] \subset \lambda w. \forall x \in D' \cap \text{person} [\text{Lisi invited}_w x]]$
Assertive meaning of (19a): $\lambda w. \forall x \in D \cap \text{person} [\text{Lisi invited}_w x]$

At the last step, *dou* takes the background (a property of domains) and the focus (a domain), yielding the presupposition in (20g). The presupposition checks whether the prejacent $\lambda w \forall x \in D \cap \text{person} [\text{Lisi invited}_w x]$ entails its alternatives, which are propositions in the form of $\lambda w \forall x \in D' \cap \text{person} [\text{Lisi invited}_w x]$, with D' being an alternative of D . Assuming the alternatives to D are again those subdomains (Krifka 1995; Chierchia 2013b; Crnić 2017), the presupposition is a tautology. With its presupposition satisfied, *dou* returns a universal statement as the assertion. Universal *wh*'s (with episodic positive VPs) are thus accounted for.

For reasons of space, I will not spell out the details of *wh-dou* with every type of predicate, but briefly illustrate how *wh-dou* behaves with \square as in (21a). With the LF in (21b), *dou*'s presupposition actually cannot be satisfied: $\square(\text{Ls invt a person in } D) \wedge \forall x \in D \cap \text{person} [\diamond(\text{Lisi invite } x)]$ does not entail its subdomain alternatives. Exhaustification below \square solves the problem (21c). $\llbracket O_{ALT_{Exh-D}} [\text{Lisi invited} [\text{shei } t_3]] \rrbracket^g$ based on the LF in (21c) is just a universal statement, derived in exactly the same way as in (20). With \square added and the assumption that D_F activates subdomain alternatives, it is easy to see that the relevant presupposition is a tautology. With *dou*'s presupposition satisfied, the returned assertion is equivalent to $\lambda w. \forall x \in D \cap \text{person} [\square_w(\text{Lisi invite } x)]$ and an intuitively correct result.

- (21) a. Lisi shei_i dou bixu qing t_i .
Lisi who DOU has.to invite t_i
'Everyone is such that Lisi has to invite her.'
- b. LF₁: $[D_F [dou [\lambda 3 [O_{ALT_{Exh-D}} [\square [\text{Lisi invited} [\text{shei } t_3]]]]]]]$
- c. LF₂: $[D_F [dou [\lambda 3 [\square [O_{ALT_{Exh-D}} [\text{Lisi invited} [\text{shei } t_3]]]]]]]$

Let's review what have been achieved so far. In this section we have presented a compositional analysis of universal *wh*'s with *dou*. The key driving force is *dou*'s EVEN presupposition. As an entailment-based EVEN, *dou* requires that the result

of combining its background and focus arguments entail those combinations where the focus is replaced by one of its alternatives. In the case of *wh-dou*, the focus is just a domain argument. Assuming the alternatives to the focus are its subdomains, *dou* forces the background to be interpreted universally. On the other hand, since *wh*'s are existentials, they form existential backgrounds and are unable to satisfy *dou*'s requirement. Fortunately *wh*'s trigger subdomain alternatives, which can be pre-exhaustified and used by a covert exhaustification operator. The exhaustification turns the *wh*'s into real universals. Universal *wh*'s are thus accounted for.

3 Existential *wh*'s without *dou*

Instead of looking directly at existential *wh*'s without *dou*, I will introduce the topic by discussing a challenge our current story of universal *wh*'s faces.

3.1 Competition and *wh*'s without *dou* as polarity items

We have been assuming that exhaustification over pre-exhaustified alternatives of a *wh* can turn it into a universal. We have also seen that Mandarin *wh*'s without *dou* are polarity items banned from episodic positive environments, and assumed with Chierchia & Liao (2015) that this is due to a contradiction resulting from obligatory exhaustification of their plain domain alternatives in episodic positive contexts. Combining the two assumptions into a single coherent story however seems problematic. In particular, consider a *dou*-less *wh* in an episodic positive context: why can't we make use of its pre-exhaustified alternatives, which would turn the prejacent into a universal statement and thus avoid the contradiction?

The issue can be more clearly seen by comparing (22) (from (19) above) and (23). In the *dou* version (22), pre-exhaustified alternatives (indicated by the subscript $ALT_{E,xh-D}$ on *O* in (22b)) help satisfy the presupposition of *dou* and give rise to an intuitively correct universal interpretation. However, in (23) without *dou*, it seems that only plain domain alternatives as in (23b) are being considered — if pre-exhaustified alternatives as in (23c) were possible, the result would be a consistent universal statement instead of a contradiction that would give rise to the polarity sensitivity of *wh*'s without *dou*. In other words, the LF₂ in (23c) needs to be blocked.

- (22) a. Lisi shei_i dou qing.le t_i .
 Lisi who DOU invite.ASP t_i
 'Everyone is such that Lisi invited her.'
 b. LF: [D_F [*dou* [$\lambda 3$ [$O_{ALT_{E,xh-D}}$ [Lisi invite [shei t_3]]]]]]]
- (23) a. * Lisi qing.le shei.
 Lisi invite.ASP who

- b. LF₁: [O_{ALT_D} [Lisi invite [shei D]]] \rightsquigarrow Contradiction.
 c. LF₂: [$O_{ALT_{Exh-D}}$ [Ls invite [shei D]]] \rightsquigarrow Ls invited everyone. (to be blocked)

One encounters a similar issue with plain disjunction: obviously we cannot use pre-exhaustified domain alternatives to turn \vee into \wedge in episodic positive contexts, or *John invited Sue or Mary* would be equivalent to *John invited Sue and Mary*. A typical answer to this kind of questions crucially involves the assumption that disjunction/existentials also activate conjunction/universals as their *scalar alternatives* (e.g., *John invited Sue and Mary* being the scalar alternative of *John invited Sue or Mary*). In episodic positive contexts, exhaustification over both pre-exhaustified alternatives and scalar alternatives leads to a contradiction, while exhaustification over just the pre-exhaustified alternatives vacuously returns the scalar alternative, violating an economy constraint that bans exhaustification from yielding one of the alternatives itself (see Chierchia 2013b: 120-122, Chierchia 2013a: 72, a.o.)⁴.

We cannot apply this explanation to Mandarin non-interrogative *wh*'s and assume that they (as existential quantifiers) activate universals as their scalar alternatives, since this move, though correctly blocks a *dou*-less *wh* from appearing as a universal in episodic positive contexts (by making (23c) either a contradiction or indistinct from the universal alternative and thus blocked by economy), would also incorrectly ban universal *wh*'s with *dou* from episodic positive contexts (see (22b) and in particular the equivalence between its underlined part and (23c)).

Instead, I propose that Mandarin *wh*'s, though being existentials, do not have universals as their alternatives. Without the extra universal alternative, a *wh* with *dou* can be freely turned into a universal without being contradictory or violating the economy constraint and is thus felicitous in episodic positive contexts. On the other hand, a non-interrogative *wh* without *dou* in episodic positive contexts is ill-formed and does not have a universal interpretation (that is, the LF₂ in (23c) is blocked). I propose that this is not due to a contradiction incurred by exhaustifying both pre-exhaustified and scalar alternatives, or a violation of a particular economy constraint that bans existentials from being turned into universals, but because of a (global) blocking effect of the *dou* variant (22b) over the *dou*-less one (23c).

Let's make this blocking idea slightly more concrete. Compare the two LFs (22b) and (23c). The two have identical truth-conditions — both being *Lisi invited everyone*. However, (22b) has an additional presupposition contributed by *dou* that the prejacent entails all other alternatives (see (20g)). The extra presupposition — though tautologically satisfied in (22b) — would trigger Maximize Presupposition

⁴ Exhaustification of pre-exhaustified alternatives and scalar alternatives above a modal element (as in *John can invite Mary or Sue*) does not give rise to a contradiction ($\diamond \text{MARY} \wedge \diamond \text{SUE} \wedge \neg \diamond (\text{MARY} \wedge \text{SUE}) \neq \perp$), and the result is distinct from the scalar alternative. This explains why free choice readings are possible in these cases.

(Heim 1991), which as a principle prefers among sentences (or LFs) with identical assertive information the one that has more/stronger presuppositions, and thus blocks (23c) — the one lacking the presupposition — from being a possible LF of (23). With (23) blocked, episodic positive *wh*'s without *dou* are not exhaustified into a universal and would stay ill-formed. It might also be helpful to understand the idea in intuitive terms: while *wh*'s can in principle be used (via exhaustification over pre-exhaustified subdomain alternatives) to express a universal statement, it is useful (and might even have been grammaticalized into a necessity) to mark this explicitly, by making use of the strongest-prejacent presupposition of *dou*.

3.2 *Wh*'s without *dou* as existential FCIs with partial variation

The competition idea makes an interesting prediction regarding non-interrogative *wh*'s without *dou*: when contradiction or exhaustification economy is not an issue, a *dou*-less *wh*-sentence may still lack a particular LF and the corresponding interpretation due to the blocking effect from its *wh-dou* counterpart. Consider *wh*'s with possibility modals in (24). (24a) is a *dou*-less *wh*-sentence under an epistemic possibility modal, while (24b) is its *dou* counterpart with the *wh* moved to the left of *dou*. Crucially, the two differ in meaning. While (24b) conveys universal free choice (total freedom) and can be glossed as English *any*, in (24a) the *wh* is an existential free choice item (or modal indefinite) expressing weak partial variation similar to Spanish *algún* (see also Chen 2017). The hide-and-seek scenario in Alonso-Ovalle & Menéndez-Benito 2010 readily reveals the difference: while (24a) can be felicitously uttered in a context where not all rooms of the house are possible options as described in (25), (24b) is deviant in the scenario, similar to English *any*.

- (24) a. Lisi keneng zai nage.fangjian.
 Lisi might in which.room
 ‘Lisi might be in someone room or other.’
- b. Lisi nage.fangjian_i dou keneng zai *t_i*.
 Lisi which.room DOU might in *t_i*
 ‘Lisi might be in any room.’
- (25) [Context: Lisi and the speaker are playing hide-and-seek. Lisi is hiding, and for all the speaker knows, Lisi might be in some room of the house; but she is certain Lisi is not in the bathroom, for it is under construction and locked.]
- a. Lisi might be in which.room = (24a)
- b. #Lisi which.room DOU might be in. = (24b)
 cf. #Lisi might be in any room. English *any*

The variability of Mandarin *wh*'s between universal and existential free choice items depending on whether *dou* is present partly follows from our competition story. Just as the universal construe of *wh*'s without *dou* is blocked from episodic positive contexts as in (23), *wh*'s without *dou* under possibility modals are also blocked from conveying universal free choice due to their competition with the *wh-dou* counterparts. In particular, in the case of a *wh* without *dou* under \diamond , exhaustification over pre-exhaustified subdomain alternatives as in (26a) would lead to a free choice meaning that is equivalent to what its *wh-dou* competitor (26b) would produce — $\lambda w.\forall x \in D \cap \text{room}[\diamond_w(\text{Lisi is in } x)]$. Again, the extra presupposition that *dou* invokes in (26b) blocks (26a) by Maximize Presupposition. Crucially, here neither contradiction nor exhaustification economy is helpful in explaining the unavailability of the LF₁ (26a) for (24a) — the LF produces a coherent universal free choice interpretation, distinct from its postential scalar alternative $\lambda w.\diamond_w[\forall x \in D \cap \text{room}[\text{Lisi is in } x]]$.

- (26) Competition between (24a) and (24b) with D-alternatives
- Impossible LF_(24a): $O_{ALT_{Exh-D}}[\diamond[\text{Lisi is in } [\text{which.room}D]]]$ blocked
 - LF_(24b): $[D_F[\text{dou}[\lambda 3[O_{ALT_{Exh-D}}[\diamond[\text{Lisi is in } [\text{which.room}t_3]]]]]]]$

Next, to capture the existential free choice reading with partial variation of *wh*'s without *dou*, we follow the analysis of Spanish *algún* in Alonso-Ovalle & Menéndez-Benito 2010 and propose that *wh*'s have the option of activating singleton domain alternatives, as illustrated in (27) for *nage* 'which'. It turns out that exhaustification over pre-exhaustified singleton alternatives delivers existential free choice with partial variation. The process is illustrated in (28) for (24a) in a hide-and-seek scenario where the relevant house has three rooms — a bedroom, a living room and a bathroom (BEDROOM abbreviating *Lisi is in the bedroom*).

- (27) ***wh*'s with singleton domain alternatives**
 ALT_{S-D} of $\llbracket \text{nage.room } D \rrbracket$
 $= \{ \lambda P \lambda Q. \exists x \in \{u\} [\text{room}_w(x) \wedge Q(x)] \mid \{u\} \subseteq D \}$
- (28) Exhaustifying pre-exhaustified singleton alternatives \rightarrow partial variation
- LF: $O_{ALT_{Exh-S-D}}[\diamond[\text{Lisi is in } [\text{which.room}D]]]$ for (24a)
 - $ALT_{S-D} = \{ \diamond \text{BEDROOM}, \diamond \text{LIVING.ROOM}, \diamond \text{BATHROOM} \}$
 - $ALT_{Exh-S-D} = \left\{ \begin{array}{l} \diamond \text{BEDROOM} \wedge \neg \diamond \text{LIVING.ROOM} \wedge \neg \diamond \text{BATHROOM}, \\ \diamond \text{LIVING.ROOM} \wedge \neg \diamond \text{BEDROOM} \wedge \neg \diamond \text{BATHROOM}, \\ \diamond \text{BATHROOM} \wedge \neg \diamond \text{BEDROOM} \wedge \neg \diamond \text{LIVING.ROOM} \end{array} \right\}$
 $= \left\{ \begin{array}{l} \neg(\diamond \text{BEDROOM} \rightarrow (\diamond \text{LIVING.ROOM} \vee \diamond \text{BATHROOM})), \\ \neg(\diamond \text{LIVING.ROOM} \rightarrow (\diamond \text{BEDROOM} \vee \diamond \text{BATHROOM})), \\ \neg(\diamond \text{BATHROOM} \rightarrow (\diamond \text{BEDROOM} \vee \diamond \text{LIVING.ROOM})) \end{array} \right\}$

- d. Result of exhaustification: $\llbracket O_{ALT_{Exh-S-D}}[\diamond[\text{Lisi is in [which.room}D]]] \rrbracket =$
 $\diamond[\exists x \in \{\text{bedroom, living.room, bathroom}\}[\text{Lisi is in } x]] \wedge$
 $(\diamond\text{BEDROOM} \rightarrow (\diamond\text{LIVING.ROOM} \vee \diamond\text{BATHROOM})) \wedge$
 $(\diamond\text{LIVING.ROOM} \rightarrow (\diamond\text{BEDROOM} \vee \diamond\text{BATHROOM})) \wedge$
 $(\diamond\text{BATHROOM} \rightarrow (\diamond\text{BEDROOM} \vee \diamond\text{LIVING.ROOM}))$
- e. equivalently, $\exists x \exists y \in \{\text{bedroom, living.room, bathroom}\}$
 $[x \neq y \wedge \diamond[\text{Lisi is in } x] \wedge \diamond[\text{Lisi is in } y]]$ Partial variation

To see that the result in (28d) amounts to existential free choice with partial variation, consider the hide-and-seek scenario described in (25) that supports only partial variation. In such a context, $\diamond\text{BEDROOM}$ and $\diamond\text{LIVING.ROOM}$ are true, and $\diamond\text{BATHROOM}$ false. It is easy to verify that the conditions in (28d) are all met, and thus (24a) felicitous and true in the scenario. The process can also be intuitively understood as follows: total free choice is stronger than partial variation; since exhaustifying the entire domain results in free choice/universal, reducing it to the set of singletons leads to a weakening to partial variation (since negating less).

By assigning singleton alternatives to Mandarin existential *wh*'s, we depart from Chierchia & Liao who take them to activate subdomain alternatives of the full range, including both singleton alternatives and the large ones (see Chierchia & Liao 2015: (45)-(46)). The departure helps avoid the criticisms raised by Giannakidou & Lin (2016) and Giannakidou (2018) against Chierchia & Liao 2015. Essentially, Giannakidou and Lin criticize Chierchia and Liao for positing almost identical semantics for existential-*wh*'s and English *any*, and this is problematic since the two have different behaviours (compare (24a) and (24b) in the hide and seek scenario (25)). We do not suffer from the criticism since we analyze existential-*wh*'s as activating singleton alternatives and triggering partial variation, similar to modal indefinites (or *referentially vague indefinites* in Giannakidou's works) such as Spanish *algún* and different from total variation items such as English *any*.

Returning now to *wh-dou*, it turns out that *wh*'s with *dou* cannot be coupled with singleton alternatives. That is, while the LF in (29a) (with $ALT_{Exh-S-D}$ indicating we are exhaustifying pre-exhaustified singleton alternatives) correctly capture existential *wh*'s without *dou*, (29b) is impossible as an LF for *wh*'s with *dou*. This is due to the presupposition of *dou*: (24b) delivers a prejacent $\exists x \exists y \in \{\text{bedroom, living.room, bathroom}\}[x \neq y \wedge \diamond[\text{Lisi is in } x] \wedge \diamond[\text{Lisi is in } y]]$, which clearly does not entail its alternatives such as $\exists x \exists y \in \{\text{bedroom, living.room}\}[x \neq y \wedge \diamond[\text{Lisi is in } x] \wedge \diamond[\text{Lisi is in } y]]$, and thus *dou*'s presupposition is not satisfied.

(29) LFs for *wh*'s with singleton alternatives

- a. LF_(24a): $O_{ALT_{Exh-S-D}}[\diamond[\text{Lisi is in [which.room}D]]]$
 b. Impossible LF_(24b): $[D_F [dou [\lambda 3 [O_{ALT_{Exh-S-D}}[\diamond[\text{Lisi is in [which.room}t_3]]]]]]]$

The following table summarizes our discussion of non-interrogative *wh*'s with \diamond so far, where the actual interpretations of the relevant *wh*'s are marked in bold.

(30) Interpretation of non-interrogative *wh*'s with \diamond in Mandarin

	<i>wh</i> 's without <i>dou</i>	<i>wh</i> 's with <i>dou</i>
Singleton alt	existential partial variation	<i>dou</i> 's presup not met
Whole domain alt	blocked by <i>wh-dou</i>	universal free choice

We now turn to *wh*'s without *dou* under \square , as in (31a). (31a) is also compatible with the hide-and-seek scenario, and its interpretation suggests that the *wh* also conveys partial variation, consistent with the idea that *wh*'s without *dou* (in modal contexts) are always existential free choice items with partial variation. The reading again can be captured by associating *wh*'s without *dou* with singleton domain alternatives (with or without pre-exhaustification; see for example Chierchia 2013b: 141). The relevant LF of (31a) and the meaning thus derived is given in (31b).

- (31) a. Lisi kending zai nage.fangjian.
 Lisi must in which.room
 'Lisi must be in some room or other.'
- b. LF₁ with singleton D-alts: $O_{ALT_{(Exh)-S-D}}[\square[\text{Lisi is in } [\text{which.room } D]]]$
 $\rightsquigarrow \square[\exists x \in D \cap \text{room}[\text{Lisi is in } x]]$
 $\wedge \exists x, y \in D \cap \text{room}[x \neq y \wedge \diamond[\text{Lisi is in } x] \wedge \diamond[\text{Lisi is in } y]]$
- c. LF₂ with total D-alts: $O_{ALT_{(Exh)-D}}[\square[\text{Lisi is in } [\text{which.room } D]]]$
 $\rightsquigarrow \square[\exists x \in D \cap \text{room}[\text{Lisi is in } x]] \wedge \forall x \in D \cap \text{room} \diamond[\text{Lisi is in } x]$

There is a complication though. In contexts with necessity modals, it turns out that the presumed *wh-dou* competitor is not enough to block the LF in (31c) for (31a), where the entire set of domain alternatives is activated (which would incorrectly render a universal free choice interpretation for (31a)). The reason for this lack of blocking is that a *wh-dou* with \square actually produces an assertive meaning that is distinct from its *dou*-less counterpart and thus fails to trigger maximize presupposition. This is illustrated in (32), where (32a) needs to receive the interpretation in (32b) to satisfy the presupposition of *dou* (see (21c) on how the meaning is derived). Note that (32a) sounds infelicitous, precisely because this interpretation runs against the world knowledge that a person cannot be in different rooms at the same time.

- (32) a. # Lisi nage.fangjian dou kending zai.
 Lisi which.room DOU must in
 '#Lisi must be in every room.'
- b. $\square[\forall x \in D \cap \text{room}[\text{Lisi is in } x]]$

In other words, without an equivalence of the assertive meaning between (31c) and (32b), we cannot rely on MP to block the former as a possible LF of (31a), and (31a) is thus predicted to have a total free choice interpretation — *Lisi must be in some room, and any room is a possibility*. This is problematic since the only interpretation (31a) has is the partial variation one, glossed as *some room or other*.

I tentatively propose to understand the issue as the result of competition between *wh-dou* and *wh* without *dou* in modal contexts at a more abstract and more general level. More specifically, suppose that the competition is between an abstract modal sentence containing a *dou*-less *wh* [... MODAL... *wh*...] and its *wh-dou* counterpart [... *wh* ... *dou* ... MODAL ...], without taking the quantification force of the MODAL into consideration; then, singleton alternatives have to be associated with the former, since that is the only way to guarantee the distinction between the two as is required by maximize presupposition (consider a case where MODAL is \diamond). In other words, we assume the behaviors of *wh*'s without *dou* across different modal contexts to be uniform, and take the \diamond -environment to be the base case that determines their behaviors. As a result (see (30) for a summary of *wh*'s with \diamond), *wh*'s without *dou* in modal contexts always activate singleton alternatives and trigger partial variation.

To summarize, we have proposed universal *wh*'s with *dou* and existential *wh*'s without *dou* form competitors regulated by maximize presupposition. The competition has the desirable consequences that plain *wh*'s are blocked from positive episodic contexts, and receive an existential partial variation interpretation different from their universal free choice *wh-dou* competitors in modal contexts. The fact that what seem at first sight to be unrelated phenomena fall naturally under our analysis lends further support to our proposal.

4 Conclusion

The paper has offered a compositional analysis of the universal use of Mandarin *wh*'s in the *wh-dou* construction: *dou* is argued to be EVEN that requires its pre-jacent to entail all the other alternatives; *wh*'s are taken to be existential quantifiers triggering domain alternatives; existentials are (pre-)exhaustified into universals to meet *dou*'s EVEN presupposition. The proposed analysis explains the source of *wh*'s universal force and their co-occurrence with *dou*. Components of the proposal are all independently motivated and a unified \exists -semantics for *wh*'s is maintained.

The analysis also points to a systematic view of two major uses of Mandarin non-interrogative *wh*'s — the universal use (*wh*'s with *dou*) and existential use (*wh*'s without *dou*). The two uses correspond to distinct types of alternatives activated by the existential, as is in the framework of the polarity system in Chierchia 2013b. Distributions and interpretations of the two types of *wh*'s follow from their interaction with *dou* and competitions between them.

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