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7

The Non-uniformity of Wh-indeterminates with Polarity and Free Choice in Chinese

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1. Introduction

It has already been discussed extensively in the literature that *wh*-elements in Chinese (as in Japanese and Korean) can have non-interrogative interpretations, i.e. they are the so-called '*wh*-indeterminates' à la Kuroda 1965 (see Huang 1982; Cheng 1991; Li 1992; Lin 1998; among others). (1a–c) illustrate the typical examples:

(1) (a) tā   mǎi-le   shěnme   (interrogative)
          he   buy-PERF   what
          'What did he buy?'

     (b) tā   méiyǒu   mǎi   shěnme   (existential)
          he   not-have buy   what
          'He didn't buy anything.'

     (c) tā   shěnme   dōu   mǎi   (universal)
          he   what   all   buy
          'He buys everything.'

Both existential (non-interrogative) and universal readings of *wh*-indeterminates have received a lot of attention (e.g. Lin 1996, 1998; and literature on *dōu*; see the

discussion below as well). The free choice interpretation of *wh*-elements, however, has been discussed only recently (Giannakidou and Cheng 2006).

On the surface, there are three types of Free Choice Items (FCIs) in Mandarin Chinese, as shown in (2):[1]

(2) (a) wǒmén néng-gòu zhàn-shèng **rènhé** kuèn-nán (examples from Lü 1980)
        we   can   fight-win   any   difficulty
        'We can conquer any difficulty.'

    (b) **nǎ**-zhǒng huā-sè   dōu xíng
        which-kind   flower-colour all possible
        'Any kind of flower-colour is possible.'

    (c) zhè-ge   háizi **shěnme** dōu bú   pà
        this-CL child what   all not afraid
        'This child is not afraid of anything.'

All cases in (2) involve a *wh*-related element. In (2c), a bare *wh* element is used (e.g. *shéi* 'who', *shěnme* 'what', *nǎr* 'where'), in (2b), *nǎ*-CL NP: '*which*-CL NP', and in (2a), a noun phrase headed by *rènhé* (*rèn* 'regardless/as you please', *hé* 'which' (in Classical Chinese)).[2]

Though all three types appear to express free choice, they are not equal in terms of distribution and interpretation. (3a) shows that a bare *wh*-word *shéi* 'who' can appear with *dōu*, glossed here as 'all', in an episodic sentence and get a universal interpretation while *nǎ-ge-xuéshēng* 'which student' cannot.

(3) (a) shéi dōu jìn-lái-le
        who   all enter-come-PERF
        'Everyone came in.'

    (b) *nǎ-ge   xuéshēng dōu jìn-lái-le
        which-CL   student   all enter-come-PERF
        Intended: 'Any/Every student came in.'

Nǎ-ge-xuéshēng 'which student', then, in contrast to the bare *wh*-word *shéi* 'who', exhibits polarity behaviour. This contrast does not follow from recent accounts of wh-indeterminates as Hamblin indefinites that are routinely closed by sentential quantifiers at the top level (Kratzer and Shimoyama 2002; Kratzer 2006), since in these accounts the wh-phrase merely forms the basis for creation of a Hamblin set of propositions, and polarity behaviour is not predicted. In this chapter, we discuss the

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[1] Wang and Hsieh (1996) noted in their footnote 2 that a *wh*-element can have a free choice reading when it occurs with *dōu*. As we will show below, *dōu* is not always obligatory.

[2] *Nǎ* 'which' has the third tone (falling–rising), so it differs from the demonstrative *nà* 'that' (fourth tone—falling) in tone.

non-uniform distribution of Chinese wh-indeterminates in their use as FCIs, and propose that the key to understanding the contrasts is an intensional dependency: the three paradigms of wh-indeterminates as FCIs vary depending on whether or not they contain a dependent world variable that needs to be bound. In addition, we show that Chinese FCIs provide further evidence for Giannakidou and Cheng (2006), who propose that there are both definite and indefinite FCIs. Definite FCIs in Chinese will be shown to have the same composition as the Greek definite FCIs: maximality, core *wh*, and the intensional world variable.

   The structure of the chapter is as follows. In section 2 we present in some detail the refined theory of free choice that we are assuming (Giannakidou 2001; Giannakidou and Cheng 2006). In section 3 we present evidence for the need to distinguish between intensional and non-intensional wh-indeterminates—only the former have polarity status. In section 4 we discuss the contribution of *dōu* and argue that it is not a universal quantifier but a maximalizer, i.e. it denotes the *iota* operator. In section 5, finally, we revisit the issue of intensionality in combination, this time, with the analysis of *dōu*.

2. What is Free Choice?

How FCIs should be analysed has certainly been a long-standing issue. Though sentences such as (4a) have prompted analyses treating Free Choice *any* as a universal quantifier (Saebo 2001; Dayal 1998, 2004), there are also examples showing that Free Choice *any* does not have a universal interpretation, as in (4b, c).

(4)   (a) Anybody can solve this problem.
      (b) Press any key to continue.
      (c) If you sleep with anybody, I'll kill you.

The quantificational variability of FCIs is more readily handled by accounts which treat FCIs as indefinites (Giannakidou 2001; Horn 2000, 2003; Quer 1998, 1999; Haspelmath 1997), among others. In Giannakidou and Cheng 2006 (henceforth G&C) it is suggested that Chinese FCIs provide further support for this type of account—and in this chapter we set off to prove this claim right.

   FCIs typically appear in sentences that involve quantificational (Q-) structures, i.e. with modal, generic, habitual, and intensional Q-operators, in subjunctive complements of volitional and other directive attitudes, in imperatives, and with Q-adverbs of various kinds (for an extensive illustration see Giannakidou 2001; Quer 1998, 1999; earlier discussion also in Bosque 1996). If we look at the distribution of FCIs cross-linguistically (see Giannakidou 2001, table reproduced as Table 7.1 below), the generalization is that FCIs are unacceptable in veridical and episodic contexts, but are fine in contexts involving implicit or explicit quantification over alternatives (modal,

TABLE 7.1 **Comparative distribution of** *any*, **broad NPIs of the Greek kind, and free choice items**

Environments	*any*	*Broad* NPI	Free choice item
1. Episodic negation	OK	OK	*/#
2. Episodic yes/no question	OK	OK	*/#
3. Conditional (*if*-clause)	OK	OK	OK
4. Restriction of *every/all*	OK	OK	OK
5. (Non-antiadditive) Downward entailing Q	OK	*	*
6. Modal verbs	OK	OK	OK
7. Directive attitudes (e.g. *want, insist, suggest, allow*)	OK	OK	OK
8. Imperatives	OK	OK	OK
9. Habituals	OK	OK	OK
10. Disjunctions	*	OK	OK
11. *isos/perhaps*	*	OK	OK
12. Stative verbs	OK	*	OK
13. *prin/before* clauses	OK	OK	OK
14. NP Comparatives	OK	*	OK
15. *monon/only*	OK	*	*
16. Emotive factive verbs	OK	*	*
17. Episodic past sentences	*	*	*
18. Positive existential structures	*	*	*
19. Epistemic attitudes (e.g. *believe, imagine, dream, say*)	*	*	*
20. Progressives	*	*	*
21. Non-emotive factives (e.g. *know, remember*)	*	*	*

generic, habitual, individual level predicates, and the like). FCIs also tend to avoid episodic negation and questions, environments typical for negative polarity items (NPIs). In their overall distribution and preferences, then, FCIs differ from NPIs, as well as *any* which seems to comprise the distribution of both FCIs and NPIs, and therefore is fine in episodic contexts.

Overall, and this must be emphasized, the polarity status of FCIs (as well as their contrasts with *any*) is puzzling in recent Hamblin approaches to free choice (Aloni 2007; Menendez-Benito 2010; see Giannakidou and Quer to appear for why these accounts don't give the right explanation). For Kratzer and Shimoyama's analysis of German *irgendein*, free choice is at best an implicature, and can therefore *not* restrict the distribution of the FC indefinite. Indeed, *irgendein* is not polarity restricted.

2.1. Ingredients of Free Choice: Intensionality, (In)definiteness, Exhaustive Variation

In this section we outline the main ideas of the theory of free choice that we are employing (Giannakidou 2001; G&C 2006), tailoring the discussion to what is

necessary for understanding the Chinese FCIs that we discuss in this chapter. The theory contains the three main ingredients indicated in the title of the section.

A. Intensionality　FCIs, as we said, are not admitted in episodic sentences, i.e. sentences like (3b) that make reference to an event in the past. This is known as the anti-episodicity effect (Giannakidou 1997). In order to account for the anti-episodicity effect and the need to occur in a quantifier structure, Giannakidou 1998, 2001 proposes that FCIs are intensional in that they contain a world variable that cannot be free but must be bound by some operator (either a Q-operator, or the λ-). Such a variable is called *dependent* (Giannakidou 1998), or *non-deictic* (Giannakidou 2011), and G&C analyse FCIs as indefinites which contain such variables. Intensionality in Greek is induced by *-dhipote*. In this analysis, the FC determiner is treated as a property modifier which, when applied to the NP denotation, returns a property with the dependent variable as its output:

(5) $[\![\ \mathrm{DET_{FC}}\ ]\!] = \lambda P_{<s,et>}.\lambda x\ \lambda w[P(x)(w)]$

So, the FC-determiner takes a property P as input—the NP argument, which contains already an open *s* position (in line with recent observations in the literature, e.g. about temporal and situational arguments of NPs)—and does not saturate the NP by creating a generalized quantifier. Rather, the FC determiner works as an identity function and preserves the intensional type of the NP. In the ordinary case, i.e. with a non-FC determiner, the *s* index of the NP argument will be interpreted as a constant, i.e. as referring to the actual world, and can thus be ignored. But after application of FC determiner the *w* variable becomes *dependent*, and it can no longer be interpreted as a free variable (Giannakidou 1998, 2001: 704–5), and must therefore become legitimate through something else, e.g. binding.

Intensionalization understood this way—as the presence of a w variable in need of binding—is the core of free choice. Because the w variable cannot remain free, FCIs will be well formed only if there is some Q-operator in the sentence that can bind the *w* variable. In episodic sentences, FCIs are out because no such operator is present, and *w* remains unbound. This analysis explains the polarity status and anti-episodicity property of FCI nominals that exhibit these properties.

B. Definite and Indefinite FCIs　On top of intensionalization, G&C propose that some FCIs may be maximalized. This results in two kinds of FCIs, those that are indefinite and those that are definite. In this case there is an active definiteness function, i.e. an expression that contributes *iota* operating on top of intensionalization. In languages like English and Greek, the difference is reflected syntactically as one between FCI-nominals, i.e. FCIs like *any* that take NP arguments, which are indefinite, and FCI-free relatives which are definite. We give the derivations for both in the next section. For the Greek item *opjosdhipote* both analyses are appropriate depending on whether the FCI applies to an NP or a CP. For Mandarin *nǎ*-CL-NP, the

presence of *dōu*, which we will analyse, following our earlier work as the iota operator equivalent to Greek *o*, renders *nǎ*-CL a definite regardless of the type of argument it selects. However, the definite and indefinite distinction is still found in Chinese with *nǎ*-CL-NP, the reason being that it is possible to have *nǎ*-CL-NP with *dōu* and also *nǎ*-CL-NP without *dōu*, as we will further elaborate here. The former is definite and the latter is indefinite, as can be seen from the examples which show that the presence of *dōu* leads to ruling out the empty set (G&C 2006: section 5).

C. Exhaustive Variation   Finally, another important lexical semantic feature of FCIs is exhaustive variation: the FCI variable must be assigned distinct values in each world or situation we consider, and we must consider all possible worlds. This property derives the quasi-universal effect of FCIs. Variation is captured in the notion of an i(dentity)-alternative (Giannakidou 2001; Dayal 1997):
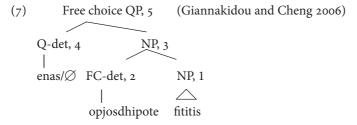
(6) *i-alternatives* (= epistemic alternatives: Giannakidou 2001; G&C 2006)
     A world w1 is an i-alternative wrt α iff there exists some w2 such that $[\![\alpha]\!]^{w1} \neq [\![\alpha]\!]^{w2}$ and for all $\beta \neq \alpha$: $[\![\beta]\!]^{w1} = [\![\beta]\!]^{w2}$

Two i-alternatives are worlds *w1* and *w1* agreeing on everything but the value assigned to the FCI. Such worlds will be, naturally, the worlds that the Q operator quantifies over, and some of these worlds can be much less stereotypical, i.e. less similar to the actual world, an assumption necessary to capture the intuition of 'domain extension', or 'scalarity' of free choice. It is also important to emphasize that the existence of possible worlds for variation is a condition on the context of the FCI (i.e. a presupposition); the FCI itself cannot introduce these alternatives; if it could, it should be able to do so also in an episodic sentence with the result of licensing itself contrary to fact (recall again (3b)).

   Given this background, we can now illustrate the specific derivations that G&C posit for indefinite and definite FCIs, based on the Greek paradigm *opjosdhipote*.

2.2. The Derivation of the Indefinite FCI

The indefinite FCI *(enas) opjosdhipote fititis* '(a) any student' has the structure below:

(7)   Free choice QP, 5   (Giannakidou and Cheng 2006)

```
              ╱‾‾‾‾‾╲
  Q-det, 4           NP, 3
    │              ╱‾‾‾‾‾╲
 enas/∅   FC-det, 2        NP, 1
              │            △
         opjosdhipote   fititis
```

1. $\llbracket \text{fitititis} \rrbracket = \lambda w \lambda x.\text{student}(x)(w)$
2. $\llbracket \text{opjosdhipote} \rrbracket = \lambda P_{<s,\ et>}\ \lambda w \lambda y.P(y)(w)$
3. $\llbracket \text{opjosdhipote} \rrbracket\ (\llbracket \text{fitititis} \rrbracket) = \lambda P_{<s,et>}\ \lambda w \lambda y.P(y)(w)\ (\lambda w \lambda x.\text{student}(x)(w))$
   $= \lambda w \lambda x.\text{student}(x)(w)$. This is the intension of the predicate 'student'.
4. $\llbracket$ enas $\rrbracket$: This is the indefinite determiner in Greek. We assume that an overt *enas* or covert counterpart is present in the structure—evidence for an overt one is actually given from construals like *enas opjosdhipote* which are attested in Greek (Giannakidou 2001). *Enas* is a Heimian indefinite function, i.e. as a function from properties to propositions: it takes the NP property as its input and gives back an open formula:
5. $\llbracket$ Free choice QP $\rrbracket = \text{student}(x)(w_d)$

Hence we end up with our dependent world variable, designated now as w_d which cannot be interpreted as a free variable, and cannot receive a value from the context.
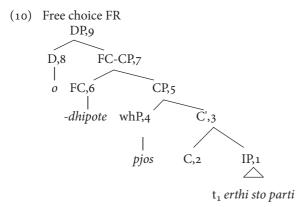
2.3. The Derivation of the Definite FCI

Definite FCIs in Greek as well as English typically come in free relative (FR) structures, G&C adopt Jacobson's (1995) idea that such structures are closed under a maximality (iota) operator. Consistent with this analysis is the fact that FCI-FRs tend to give rise to what appears to be an expectation of existence, illustrated in the sentence below:

(8)   (a) If any student calls, I am not here.
      (b) Whichever student calls, I am not here.

The sentence (8a) with *any* is a neutral statement expressing my desire not to talk to anybody, and there is no expectation that somebody will actually call. The one with *whichever student* (8b), on the other hand, seems to favour (but not require) a context where there is indeed an expectation of call; in fact it can (but doesn't have to) be an instruction to avoid talking to somebody undesirable. This expectation, which seems to not be as strong as a presupposition, makes sense only in the definite analysis of FRs because we tend to exclude the empty set from the plural FR collection we are forming, as we have suggested in G&C (see also comments in Jacobson 1995). With an indefinite, there is no such inclination, hence the unmarked use of the FCI indefinite in a neutral context. Chinese, as we will see soon, makes this contrast visible in the presence or absence of *dōu*- which naturally motivates an analysis of this item as a maximalizer.

In G&C, we start with the derivation for the simple FR wh- *opjos* 'who', building on the Comp analysis of Jacobson's. In Greek we have the option of having FCI-FR with or without -*dhipote*, an option that does not exist in English (*whoever came to the party* versus *who came to the party*). Naturally, the *wh-ever* in English will encompass both Greek paradigms. The derivation of the regular FR follows closely

Jacobson's analysis with the wh-word denoting a set of individuals: Greek *o* being the iota, and no intensionalization; the *-dhipote* wh-FR will be derived compositionally from it. In our notation below we use lower case individual variables instead of Jacobson's set variables, assuming that *x* may be a plural entity (atomic entities being a subcase thereof, again following Jacobson). We also treat the relative pronoun as the λ-abstractor (slightly modifying Heim and Kratzer's (1998) predicate abstraction rule for relative clauses (Heim and Kratzer 1998: 96, rule (15)). The relative C is semantically vacuous, unlike e.g., the interrogative C (though in some cases it may host free choice complementizers, as shown in G&C).

(9)   opjosdhipote erthi   sto   parti 'who(ever) comes to the party'
      det-wh.FC   comes   to.the   party

(10) Free choice FR

$$
\begin{array}{c}
\text{DP,9}\\
\diagup \quad \diagdown\\
\text{D,8} \qquad \text{FC-CP,7}\\
| \qquad\quad \diagup \quad \diagdown\\
o \quad \text{FC,6} \qquad\qquad \text{CP,5}\\
| \qquad\qquad \diagup \quad \diagdown\\
\textit{-dhipote} \quad \text{whP,4} \qquad \text{C',3}\\
| \qquad\quad \diagup \quad \diagdown\\
\textit{pjos} \quad \text{C,2} \qquad \text{IP,1}\\
\triangle\\
t_1\ \textit{erthi sto parti}
\end{array}
$$

1. ⟦ IP ⟧ = came.to.party (t_1)
2. ⟦ C ⟧ = λp. p (identity function)
3. ⟦ C'⟧ = came.to.party (t_1)
4. ⟦ pjos⟧ = λ
5. ⟦ CP ⟧ = λx. person (x) ∧ came.to.party (x)

Thus far the derivation proceeds exactly as in the case of the plain FR. Now, we add FC:

6. ⟦ -dhipote ⟧ = λP$_{<e,t>}$ λz λw. P(z)(w)
7. ⟦ FC-CP ⟧ = ⟦ -dhipote ⟧ (⟦ CP ⟧) =
    λP$_{<e,t>}$ λz λw. P(z)(w) (λx. person (x) ∧ came.to.party (x))=
    λx λw. person (x) (w) ∧ came.to.party (x) (w).

This is the intensional FC-FR set: it is a function from a set of individuals x to a world w such that x is a person and came to the party in w; it can thus apply to any possible world w yielding the individuals that have the mentioned property in that world.

If applied to the actual world the function gives the set of individuals that came to the party in the actual world. The input to iota will thus now be of type $<e, st>$.

8. $⟦ o ⟧ = \lambda P_{<e,\ st>}\ \iota\ (\lambda x\ \lambda w.\ P(x)\ (w))$

9. $⟦ DP ⟧ = ⟦ o ⟧\ (⟦\ FC\text{-}CP\ ⟧) = \lambda P_{<e,\ st>}\ \iota\ (\lambda x.\ P(x)\ (w))\ (\lambda x\ \lambda w.\ person\ (x)\ (w)\ \wedge\ came.to.party\ (x)\ (w)) = \iota\ (\lambda x.\ \lambda w\ person\ (x)\ (w)\ \wedge\ came.to.party\ (x)\ (w))$

In an extensional (episodic) sentence, the $\iota\ (\lambda x \lambda w\ person\ (x)\ (w)\ \wedge\ came.to.party\ (x)\ (w))$ will apply to the actual world w_o, thus giving us the maximal set of persons that came to the party in w_o, just as with the plain FR—this is how *subtrigging* (LeGrand 1975) is derived (see section 5 below for more discussion). The intensionalization of the property under iota, at the same time, creates an intensional domain that is plausibly responsible for the 'scalar' or domain-widening inference we get with free choice. Crucially, *dōu* in Mandarin also carries this inference, giving a flavour of *even* (see Badan 2007 and Xiang 2008), a fact that fits nicely with the effect of intensionalization that we are suggesting here—without, however, positing a scalar operator in the syntax.

To summarize, here are the main ideas that will guide our analysis of Chinese:

(a) FCIs come in two varieties: indefinite as well as definite FCIs. The contrast correlates with whether or not the FCI contains an expression that contributes iota. Typically, this is the case of FC free relative, but it is not the only case.

(b) FCIs contain a world variable that is dependent—either because it cannot receive the actual world as its value (indefinite FCIs), or because it remains bound by the λ-operator under iota (definite FCIs). This dependency is consistent with the view of PIs as lexically 'deficient' expressions, advocated in Giannakidou (1998, 2001), and constitutes an attempt to capture formally this deficiency.

(c) The presence of a dependent variable in what renders FCIs polarity sensitive, and restricts their distribution in non-veridical and non-episodic contexts.

In light of this theory, let us focus now on the landscape of Chinese FCIs.

3. Distribution of the Different FCIs in Mandarin Chinese: Intensionality

As we have noted in the introduction, in Mandarin there are three types of items that are typically associated with FCIs: bare *wh*-elements, *nǎ*-CL NPs 'which NPs', and *rènhé* NPs. We propose in this section that the latter two are intensional paradigms parallel to the *-dhipote* FCIs in Greek, whereas bare *wh*-elements are not intensional. The crucial piece of evidence for this division is given by episodic contexts where bare *wh*s are allowed but *nǎ*-CL NPs 'which NPs' and *rènhé* NPs are not.

We start with the distribution and properties of *rènhé* NPs and bare *wh*-elements.

3.1. Rènhé *NPs and Bare* wh-*Phrases*

Both *rènhé* NPs and bare *wh*-phrases are items that can be characterized as polarity sensitive (for the former, see Wang and Hsieh 1996, and for the latter, see Cheng 1991, Li 1992, and Lin 1998).[3] Some representative examples are:

(11)   (a) Bólíng   *(bù)   xǐhuān   rènhé   rén/shéi   (negation)
        Boling   not   like   any   person/who
        'Boling does not like anyone.'

        (b) tā   mǎi-le   shénme/   rènhé   shū   ma?   (yes-no question with yes-no
             he   buy-PERF what   any   book   Y/N   particle *ma*)
             'Did he buy anything/any book?'

        (c) rúguǒ   shéi/   rènhé   rén   qīfù   nǐ...   (conditional)
             if   who/   any   person   bully   you
             'If anyone bullies you...'

As shown in (11), non-interrogative bare *wh* and *rènhé* NP are legitimate under negation, in yes–no questions, and conditionals, just like typical NPIs.[4]

Note however that NPIs and FCIs are distinct classes of polarity sensitive items (Giannakidou 1998). And the fact that both bare *wh* and *rènhé* NPs can be 'translated' with *any* does not help in determining the difference between NPIs and FCIs. Giannakidou (2001) has shown that there is overlap in terms of distribution between NPIs and FCIs (recall Table 7.1). We will concentrate here on the free choice reading of bare *wh* and *rènhé* NP, and we will discuss later the polarity side of these items.

From the examples above, we can simply pair *rènhé* NPs with bare *wh* since they seem to share the same distribution. If we start to look beyond the typical polarity contexts such as negation, yes–no questions, and conditionals, and turn to non-veridical contexts in which FCIs can appear, we see the differences between *rènhé* NPs and bare *wh*. We illustrate below with a modal verb:

(12)   (a) tā   kěyǐ   jiè   rènhé/*shénme shū[5]
        he   can   borrow   any/   what   book
        'He can borrow any book.'

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[3] Lin (1998) states the following condition for the existential (and non-interrogative) reading of *wh*-phrases (which he calls EPW):

The use of an EPW is felicitous iff the proposition in which the EPW appears does not entail existence of a referent satisfying the description of the EPW.

This we think is very similar to non-veridicality (Giannakidou 1998; Giannakidou and Cheng 2006).

[4] Without negation, yes–no marker, conditionals, or other licensers (see Cheng, 1991; Li 1992; and Lin 1998), the bare *wh*s can only be interpreted as interrogative, as shown in (12a).

[5] With *shénme shū* 'what book', the only possible interpretation is an interrogative interpretation.

(b) tā   rènhé/shěnme shū   *(dōu) kěyǐ jiè
    he   any /what   book   all   can   Borrow
    'He can borrow any book.'

(13) rènhé/shěnme   xuéshēng   *(dōu)   kěyǐ   cānjiā
     any /what   student   all   can   participate
     'Any student can participate.'

(12a) shows that though *rènhé* can appear under kěyǐ 'can' in an object position, bare *wh* cannot. To rescue an object *wh*-element as an FCI, it is necessary to have *dōu* 'all' together with fronting of the object NP, as in (12b). Note that though *rènhé* NP does not require *dōu* when it is an object (though it can appear with *dōu* when fronted as in (12b)), the obligatory presence of *dōu* shows up when *rènhé* NP appears in the subject position (13), just like bare *wh*s. Three questions arise given these examples: (i) what is the difference between *rènhé* NP and bare *wh*? (ii) what is the role of *dōu* in FC?; and (iii) is there any difference between FC with *dōu* and FC without *dōu*?

The answer to the first question lies in the composition of FCIs and the difference between *rènhé* NPs and *wh*-elements in terms of composition. Considering the fact that *dōu* is not always obligatory for the interpretation of FCI (and we will show more examples below), the answers to the second and third questions are related. Not only do we need to address the role that *dōu* plays in the interpretation of FC with *dōu*, we also need to discuss the type of FC interpretation in cases without *dōu*. Needless to say, the question of why *dōu* is sometimes obligatory needs to be addressed too.

Let us tackle the first question by first considering bare *wh*. The fact that *wh*-elements can be used for FC has been discussed extensively in the literature (see Kratzer and Shimoyama 2002; Giannakidou 2001; G&C 2006; among others). There are two aspects of the use of *wh*-elements for FC that we would like to address here. First, when we take into consideration languages such as Chinese, Japanese, and Korean, i.e. languages with *wh*-indeterminates, the indefinite variable treatment of FCIs becomes very plausible. This is so because in these languages, as noted in the introduction (and shown in examples in (1)), *wh*-elements can be interpreted as interrogative, existential, and as universal, depending on the quantificational operator present. By treating *wh*-elements as Heimian indefinites, we will be able to have a uniform analysis, regardless of whether the interpretation is interrogative, existential, free choice, or universal. In the case of FC interpretation, as Giannakidou (2001) proposes, *wh*-elements are then a special type of indefinite, i.e. they not only have an individual variable, but also a dependent world variable.

Second, as we show below, bare *wh*s can be simple indefinites; they need not be special indefinites, i.e. a free choice indefinite. This is evident in (3a), repeated here as (14a), in contrast with *rènhé* in (14b):

(14) (a) shéi   dōu   jìn-lái-le
          who   all   enter-come-PERF
          'Everyone came in.'

      (b) *rènhé rén   dōu   jìn-lái-le
          any   person   all   enter-come-PERF
          'Anyone came in.'

(14a) shows that bare *wh*-phrases such as *shéi* can appear in episodic sentences, which are *not* licensing contexts for FCIs. On the other hand, *rènhé* doesn't appear in this environment. The question then is how we distinguish between a bare *wh* which is an FCI and one that is not, and why bare *wh*-phrases can claim both status. Before answering this question, we briefly discuss the composition of *rènhé*.

Rènhé is a more complex *wh*-item than a typical *wh*-item; it consists of *rèn* 'regardless' and *hé* Classical Chinese 'which', making it comparable to *opjos-dhipote* 'anyone' in Greek in that it has both the FC part, *rèn*, and the *wh*-part, *hé*. *Rèn*, we suggest, provides the dependent variable, and it operates like the Greek -*dhipote* that we illustrated in section 2:

(15) $[\![\text{rèn-}]\!] = \lambda P_{<s,\ et>}.\lambda x\ \lambda w[P(x)(w)]$

Rèn thus creates an FCI with a dependent world variable, and this FCI will consequently have PI-status, just like the Greek indefinite FCI *opjosdhipote*. This is why *rènhé* is not legitimate in episodic contexts.

3.2. Na-CL *NPs*

Consider now another *wh*-paradigm used for FC, the NPs with *nǎ* 'which' plus a classifier. The comparison between *nǎ*-CL NPs and bare *wh*-phrases will provide us with a better idea of how to treat bare *wh*-phrases.

Nǎ-CL NPs are similar to bare *wh* in that they cannot appear in canonical object positions when the modal *kěyǐ* 'can' is used (16a). Instead, fronting to a pre-*dōu* position is obligatory (16b):

(16) (a) *Bólíng kěyǐ kàn   nǎ-běn   shū   (Interrogative reading only)
          Boling   can   read   which-CL book
          Intended: 'Boling can read any book.'

      (b) Bólíng   nǎ-běn   shū   dōu   kěyǐ   kàn
          Boling   which-CL book   all   can   read
          'Boling can read any book.'

However, *nǎ*-CL NPs are more restricted than bare *wh* in terms of distribution. We have seen above in (14a) that bare *wh* can be interpreted as universals and they don't

have to be in a non-veridical environment. This is not the case with *nǎ-*CL NPs, as we can see in (17a), which contrasts with (14a), as well as (17b), which is non-episodic:

(17) (a) *nǎ-ge   xuéshēng   dōu   jìn-lái-le
         which-CL   student   all   enter-come-PERF
         Intended: 'Every student came in.'

   (b) nǎ-ge   xuéshēng   dōu   <u>kěyǐ</u>   jìn-lái
       which-CL   student   all   can   enter-come
       'Any student can come in.'

This shows that even though bare *wh* can be used as FCIs, they do not exhibit limited distribution as *nǎ-*CL NPs, which are FCIs when not used as interrogatives. In other words, *wh*-elements do not form a uniform group as far as limited distribution is concerned. In fact, when we compare the distribution of *nǎ-*CL NPs with bare *wh*s and *rènhé* NPs, we see that *nǎ-*CL NPs are actually very restricted in distribution, as shown in Table 7.2.

From Table 7.2 (see the corresponding sentences in Appendix), it is clear that bare *wh*-phrases and *rènhé* NPs are comparable to *any* in English, since they all can appear in episodic negation and episodic questions (unlike Greek FCIs, recall Table 7.1):

(18) (a) tā   mǎi-le   shěnme/   rènhé   shū   ma?
         he   buy-PERF   what   any   book   Y/N
         'Did he buy anything/any book?'

   (b) tā   méiyǒu   mǎi   shěnme/   rènhé   shū
       he   not-have buy   what   any   book
       'He didn't buy anything/any book.'

In contrast, *nǎ-*CL NPs 'which NPs' cannot appear in these environments (patterning Greek FCIs):

(19) (a) *tā   mǎi-le   nǎ-běn   shū   ma?
          he   buy-PERF   which-CL   book   Y/N
          Intended: 'Did he buy any book?'

   (b) tā   měiyou   mǎi   nǎ-běn   shū
       he   not-have buy   which-CL   book
       'Which book did he not buy?'
       cannot mean: 'He didn't buy any book.'

The ability of bare *wh*s and *rènhé*-NPs to appear in an episodic environment may call into question the anti-episodicity property of FCIs, if one were to consider (18a, b) to involve FCIs. (Notice that the non-veridicality condition is met, since questions and

TABLE 7.2 Comparative distribution of bare-*wh*, *nǎ*-CL-NP, and *rènhé* NP

Environments	Bare wh	Nǎ-CL	Rènhé-NP
1. Episodic negation	OK	*	OK
2. Episodic questions	OK	*	OK
3. Conditionals	OK	OK	OK
4. Restriction of universal	*	*	OK
5. Future *hui*	*	*	OK
6. Modal verbs	OK^	OK^	OK
7. Directive intensional verbs	*	*	*
8. Imperatives	*	OK	OK
9. Habituals	OK^	*	OK^
10. Stative verbs	*	*	*
11. Generics	OK^	OK^	*
12. NP-comparatives	OK^	OK^	OK^
13. *zhi* 'only'	*	*	*
14. Factive verbs	*	*	*
15. Affirmative episodic sentences	OK^	*	*
16. Existential constructions	*	*	*
17. Epistemic intensional verbs	OK^	OK^	*
18. Progressives	*	*	*

Note: OK^: indicates that the targeted element is licit in a position in front of *dōu*.

negations, episodic or not, *are* non-veridical.) But sentences such as (20) suggest that *rènhé* and bare *wh* are not FCIs in questions:[6]

(20) (a) *tā   mǎi-le   jīhū   shěnme/ rènhé shū   ma?
          he   buy-PERF almost   what/   any   book   Y/N
          '*Did he buy almost anything/any book?'

      (b) *tā   měiyǒu   mǎi jīhū   shěnme/ rènhé shū
          he   not-have buy almost   what   any   book
          '??He didn't buy almost anything/any book.'

(20a, b) show that with the addition of *jīhū* 'almost', bare *wh* and *rènhé*-NP can no longer appear in episodic questions or negation. It has been noted by Davison (1980) that an adverbial such as *almost* modifies an FC reading (and cannot modify an NPI reading), and notice the oddity of *any* with *almost* in the translations. The ungrammaticality of (20a, b) illustrates the same thing in Chinese, indicating that when bare

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[6] Note that the judgement does not improve if we put *jīhū* 'almost' preverbally in these contexts.

wh and *rènhé*-NPs are used as FCIs, they respect anti-episodicity and non-veridicality. The conclusion will then have to be that in the cases of episodic negation and questions above, *rènhé* and bare *wh* are not used as FCIs, hence we claim that they must be ambiguous between FCI and NPI just like English *any* (and unlike Greek *opjosdhipote*).

In addition, although bare *wh* and *rènhé* seem ambiguous between FCI and NPI-*any*, like NPI-*any*, they are still bad in veridical contexts (columns 13–18 in Table 7.2). Hence licensing by non-veridicality is the condition we also need for Chinese (Giannakidou 1998, 2001; see also Lin 1998 for the related notion of non-existence).

It should be noted that if we were to replace the perfective *-le* with the experiential *-guò* in sentences such as (3b) and (14b) (i.e. sentences containing *nǎ*-CL NP and *rènhé*-NP), the sentences become grammatical:

(21) (a) nǎ-ge   xuéshēng dōu   jìn-lái-guò
          which-CL   student   all   enter-come-EXP
          'Any student has come in (at least once before).'

     (b) rènhé   xuéshēng dōu   jìn-lái-guò
          any   student   all   enter-come-EXP
          'Any student has come in (at least once before).'

This is not surprising since *-guò* does not indicate a single event (thus is not episodic). Rather, *-guò* is more like an experiencer perfect marker, and as such it contains an extended now interval (McCoard 1973) that can be rendered non-veridical in the sense that the eventuality is not true at all the times in the interval (Giannakidou 1995, 2002). We will have to postpone more detailed discussion of this, however, for a future occasion.

Let us now turn to the difference between bare *wh* and *nǎ*-CL NPs, namely, why *nǎ*-CL NPs are FCIs when they are not interpreted as interrogatives. This, we think, rests upon the difference between a non-D-linked wh-phrase and a D-linked wh-phrase. Beck and Rullmann (1999) argue that *which*-phrases may have *de re* and *de dicto* readings in intensional contexts. To capture that, they propose that *which*-phrases come with a world variable w which can be either bound by the question operator in C^0—in which case it acquires a dependent or intensional value—or it can be free in which case it is assigned the value of the actual world. We propose that *nǎ*-CL NP cannot have a free w variable, but only has a dependent w when it is used as a non-interrogative. In other words, *nǎ* undergoes intensionalization.[7] We propose the following way of doing this.

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[7] Den Dikken and Giannakidou (2002: 42) argue that since *which*-phrases are presuppositional, they cannot be used as PIs; in favour of this they illustrate for example that the PI *the hell* cannot modify *which*-phrases: **which student the hell*. This observation, which correctly captures the fact that *which*-phrases in

We follow Lin (1996) who analyses all *dōu*-sentences as *wúlùn . . . dōu* sentences (*wúlùn* = regardless). Typical *dōu* sentences are therefore elliptical *wúlùn . . . dōu* sentences.[8] There are two kinds of *wúlùn . . . dōu* sentences. One is clausal and one is nominal (examples and translations from Lin 1996) (note that regardless of whether *wúlùn* takes a nominal or a clause, *dōu* is present):

(22) (a) (Wúlùn)   shéi   dōu   kěyǐ   lái
          no-matter   who   all   can   come
          'No matter who can come.'

     (b) (Wúlùn)   nǐ   zuò   shěnme,   wǒ   dōu   méi   yìjiàn
          no-matter you   do   what   I   all   not   opinion
          'No matter what you do, I won't have an opinion.'

Note that *wúlùn* 'no matter/regardless' is optionally present; note also that the above examples contain a bare wh-word. In (22b), we have a structure identical to the Greek FC free relative and subtrigged FCI we presented in section 2, and *wúlùn* can be seen as the counterpart of *-dhipote*. According to Lin (1996), '. . . the function of *wúlùn* is to form the generalized union over the set of propositions, i.e. the set of sets of situations, denoted by the wh-clause following it'. We propose that *wúlùn* (overt or covert) is actually the element that provides the intensionalization, along with the presupposition of exhaustive variation of free choice, which, as we noted in section 2, gives the flavour of universality. Our analysis is thus very close to Lin's. The meaning of *wúlùn* is equivalent to that of the Greek intensionalizer *-dhipote*, and *rèn* that we gave earlier:

(23) ⟦ wúlùn ⟧ = $\lambda P_{<s,\ et>}\ \lambda x \lambda w.\ P(x)(w)$

Dōu, on the other hand, is a generalized distributive operator in Lin's analysis. In the case of *wúlùn . . . dōu*, it distributes over the set of situations in the generalized union corresponding to the denotation of the *wúlùn*-clause. In our analysis, this gets translated into a claim that *dōu* is the iota operator (like the definite article *o* in Greek), as proposed in G&C 2006 and Cheng 2009 (see also Xiang 2008). So, *wúlùn dōu* wh-phrases, in our analysis, come out as definite FCIs, always interpreted universally, equivalent to subtrigged FCIs.

English are not PIs, raises a question which should be addressed in the context of the consequences of our analysis: if *which* provides prime material for polarity FC status, then why is it that *which*-phrases in Chinese but not in English are FCIs? The answer, in the analysis we are pursuing, is obvious: in English, there is no intensionalizer, and therefore the variable of *which*-phrases can be interpreted as a free variable, hence no polarity behaviour.

[8] Though we are not entirely convinced that *all dōu* sentences are elliptical *wúlùn . . . dōu* sentences (see the discussion in section 5 below), we believe that the ones expressing FCIs must be.

The presence of *wúlùn* brings in the dependent variable and explains English *wh*-phrases are *not* FCIs: their world variable is not dependent, since they contain no intensionalizer, and can indeed get the actual world as a value, as argued in Beck and Rullmann (1999). This in turn also explains the similarity between *rènhé* NPs and *nǎ*-cl NPs (i.e. neither of them can appear in pure episodic perfective past as illustrated in (14b) and (17a)): both are inherently intensionalized, i.e. they contain a dependent world variable because they contain *rèn* and *wúlùn* respectively. We come back to these issues in section 4 next when we consider *dōu*.

Bare *wh*-phrases, on the other hand, do not have dependent world variables, and can thus have a wider distribution, e.g. in episodic contexts. This explains the contrast between bare *wh*-phrases and *nǎ*-cl NPs. However, it does not yet provide an answer to the question why *nǎ*-cl NPs are even more restricted than a typical FCI in Greek, which we leave open for now.

4. The Role of *Dōu*

We have seen that FC readings in Chinese do not necessarily have to have *dōu*. However, in some cases, *dōu* is obligatory. In this section, we examine the contribution of *dōu*, with the ingredients of FC (intensionality, exhaustivity) presented in section 2.

4.1. Dōu *as Iota Plus Emphasis*

Consider first the optionality of *dōu*, and what *dōu* contributes when it is present:

(24) (a) Bólíng   bù   xiǎng   jiàn   nǎ-ge   rén
          Boling   not   want   see   which-cl   person
          'Boling does not want to see any person (in particular).'
          Weak negative: 'It is not the case that Boling wants to see somebody.'

      (b) Bólíng   nǎ-ge   rén   ***dōu*** bù   xiǎng   jiàn
          Boling   which-cl person   all   not   want   see
          'Boling does not want to see any person at all.'
          Emphatic negative: 'Boling wants to see absolutely nobody.'

Though truth-conditionally equivalent, (24a) differs from (24b) in that (24a) conveys that there is no one in particular that Boling wants to see, whereas (24b) says that there is absolutely no one at all that Boling wants to see. The presence of *dōu* thus creates a stronger, more emphatic negative statement. The contrast is reminiscent of emphatic and non-emphatic NPIs in Greek (Giannakidou 1997, 1999). 'Widened' items (NPIs, FCIs, and mixed, like *any*) are usually emphatic, as opposed to weaker,

non-scalar PIs which are not (see also Yoon 2008 for similar contrasts in Korean). The presence of *dōu* in Mandarin is clearly responsible for creating an emphatic negative statement, and if *dōu* has a scalar component as EVEN (as we mentioned earlier; Xiang 2008), the emphatic effect here may be due to EVEN. However, it is important to emphasize the existence of both negative variants, emphatic and non-emphatic, as they challenge approaches that posit an always-emphatic component in NPIs with negation (Chierchia 2006).

A similar contrast can be found in sentences involving conditionals which Cheng and Huang (1996) called *rúguǒ*-conditionals (25a) and *dōu*-conditionals (25b):

(25) (a) rúguǒ   (yǒu)   nǎ-ge   rén   dǎ-diànhuà   lái   jiù   shuō
           if   have   which-CL   person   telephone   come,   then   say
           wǒ   bú   zài
           I   not   be
           'If anyone calls, say that I'm not here.'

      (b) (wúlùn) nǎ-ge   rén   dǎ-diànhuà   lái,   wǒ   **dōu**   bú   zài
           no-matter which-CL   person   telephone   come   I   all   not   be
           'Whoever calls, I'm not here.'

In (25a), the *rúguǒ*-conditional, no *dōu* is present. This sentence can be uttered when the phone is not ringing, and can be paraphrased as: in the case some person or other calls, then say that I'm not here; and it is compatible with a situation in which no call eventually comes through. In fact, (25a) cannot be used in situations in which the phone is ringing. In contrast, (25b) can be used when the phone is ringing. It is therefore compatible with the existence of phone calls.

The contrast between (25a) and (25b) is reminiscent of the contrast between *anyone* and *whoever* discussed in G&C (2006) mentioned earlier; (8a, b) are repeated here:

(26) (a) If any student calls, I am not here.
      (b) Whichever student calls, I am not here.

As discussed in section 2, G&C propose that *any student* in (26a) is an indefinite FCI, while *whichever student* in (26b) is a definite FCI. The sentences in (24) and (25) in Chinese further support this, and suggest, given the non-emphatic (i.e. *some or other*) use of *any* in (26), that *any* is not always emphatic of scalar (for more such examples see Duffley and Larivee 2011; also Krifka 1995 for the claim that there is indeed emphatic and non-emphatic *any*).

What *dōu* seems to contribute is exhaustivity in (24), existence (25), and in both cases an emphatic rhetoric flavor. If *dōu* contributes definiteness then it is a

maximality operator, comparable to the definite article *-o* in Greek FCIs such as *opjosdhipote* 'anyone'.[9]

(27)   dou = ⟦ o ⟧ = $\lambda P_{\langle s, et \rangle} \iota (\lambda x \lambda w. P(x) (w))$

The Mandarin structures *wúlùn . . . dōu*, then, are pretty parallel to the Greek morphological compounding *o-wh-dhipote*. Extending our account, we may hypothesize that the strategy to employ particles in FCIs cross-linguistically (e.g. *mo, demo* in Japanese, *(i)lato* in Korean) with *wh*-indeterminates reflects definite FCIs, with a possible emphatic component. At this stage, however, our claim remains at the level of speculation, and clearly more work needs to be done to support it.

Nǎ-CL NPs come with a world variable which is dependent. Given what we said earlier in section 3, i.e. that *nǎ*-CL NP appears with *wúlùn*, the denotation of *nǎ*-CL-*noun + dōu* is in fact always *wúlùn+ nǎ*-CL-*noun + dōu*. This suggests the following composition parallel to *opjosdhipote* (without iota):

(28)   1. ⟦ nǎ-ge rén⟧ = $\lambda y.$ person (y)
2. ⟦ wúlùn ⟧ (⟦ nǎ-ge rén$_i$⟧) = $\lambda P_{\langle e,t \rangle} \lambda x \lambda w. P(x)(w) (\lambda y.$ person (y))
= $\lambda y \lambda w.$ person (y) (w)

This intensionalized person-property is then the input to *dōu*:

(29)   ⟦ dou ⟧ (⟦ wulun na-ge ren⟧) = $\lambda P_{\langle e, st \rangle} \iota (\lambda x \lambda w. P(x) (w)) (\lambda y \lambda w.$ person (y) (w)) = $\iota (\lambda y \lambda w.$ person (y) (w))

The *w* variable of this intensional quantifier will be dependent, and just as in the case of the Greek FCI-FR it will be bound by the λ-operator under iota.

This analysis entails that what we see in the Greek morphology, we see in the syntax in Chinese in the case of *nǎ*-CL NP. In Greek, the morphological composition of FCIs has a definiteness marker as well as the FC determiner *-dhipote*, providing the intensionality. Chinese, on the other hand, does not have these ingredients in the morphological composition. Rather, they are present in the syntactic composition of FC, with *wúlùn . . . dōu* (see also Cheng 2009).

4.2. *Why is* Dōu *Obligatory in Certain Environments?*

Let us now turn to the obligatoriness of *dōu* in certain environments. If the contribution of *dōu* is definiteness (and some sort of emphasis, maybe via EVEN), and if *nǎ*-CL NP is a definite already, then why is *dōu* sometimes obligatory? There are two cases where *dōu* is obligatory: (a) when bare *wh*s and *nǎ*-CL NPs are used (and not *rènhé* NPs) with the modal *kěyǐ* 'can', and (b) when the FCI is in a subject position

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[9] See Cheng (2009) for further discussions of *dōu* as a definite determiner in Mandarin Chinese.

(regardless of which type of FCI is used), except in *rúguǒ*-conditionals. Consider the second case first:

(30) (a) shéi/ rènhé rén/   nǎ-ge   xuéshēng *(dōu) xiǎng/kěyǐ lái
           who/ any   person/ which-CL student   all   want/can come
           'Anyone/any student can come.'

      (b) rúguǒ (yǒu)   shéi/ rènhé rén/   nǎ-ge   rén   qīfu   nǐ,
           if   have   who/   any person/ which-CL person bully you
           mǎshàng   zhǎo   wǒ
           immediately find   me
           'If anyone bullies you, immediately get me.'

In (30b), when the FCIs appear in a *rúguǒ*-conditional, the presence of *dōu* is not obligatory. It is possible to add *dōu*, as shown in (31):

(31) rúguǒ (*yǒu)   rènhé   rén   dōu   qīfù nǐ,   nǐ   jiù
      if   have   any   person all   bully you   you   then
      dě   gǎibiàn xíngxiàng
      must   change   image
      'If it is the case that anybody (will) bully you, then you must change your image.'

The difference between (30b) and (31) can be understood as a difference between a definite (emphatic), and an indefinite (non-emphatic) distinction. (30b) is uttered in a context when no one has yet bullied the listener, and the speaker is advising the listener what to do in case someone bullies him or her. (31), in contrast, can be uttered only when someone complains that everyone bullies him or her, when bullies are somehow under discussion. Then the speaker can utter (31), meaning that if it is the case that you pick anyone, then she or he will bully the listener, then the listener has to change his or her image to become someone less gullible. *Dōu* thus provides the existence, the 'topicality' of bullies, and thus the contrast in interpretation.

   Note that in (30b), it is possible to insert *yǒu* 'have' in front of the subject. The insertion of *yǒu* 'have' is sometimes preferred when an indefinite subject is present (as in (32a)). The fact that *yǒu* can be inserted in (30b) suggests that the FCI in that sentence is an indefinite. In contrast, *yǒu* cannot be inserted in (31) (just as it cannot be inserted in front of a demonstrative noun phrase (32b)), providing further support that what we are dealing with here is a definite FCI.

(32) (a) yǒu   (yī-ge) rén   huì   lái
           have   one-CL person will   come
           'Someone/some people will come.'

      (b) *yǒu   nà-ge   rén   huì   lái
           have   that-CL person   will   come
           Intended: 'That person will come.'

Now consider the obligatory presence of *dōu* in (30a). This, we think, also has to do with the fact that *dōu* provides definiteness. Subjects in Chinese are preferably definites (if not, then the insertion of *yǒu* before the subject is preferred) (see among others Cheng 1991). In (30a), the presence of *dōu* rescues the FCI. However, this cannot be the whole story, as we cannot insert *yǒu* in (30a) in order to rescue an indefinite FCI, in contrast with (32a). Consider the following sentences:

(33) (a) yǒu   shéi/   nǎ-ge   rén   xiǎng/kěyǐ   lái
           have   who/   which-CL   person   want/can   come
           'Who/which person wants to/can come?'
           -cannot mean: 'Anyone can come.'

      (b) *(yǒu) rènhé   rén   kěyǐ   lái
           have   any   person   can   come
           Intended: 'Anyone can come.'

      (c) ta   kěyǐ   jie   rènhé   shū
           he   can   borrow   any   book
           'He can borrow any book.'

If *yǒu* is inserted in front of the *wh*-indeterminates, the sentence necessarily acquires the interrogative reading. The FC reading is not available. This seems to show that *kěyǐ* 'can' cannot easily license a subject FCI. This is further confirmed by (33b,c): *rènhé* NP cannot appear in the subject position (with or without *yǒu*), while it can appear in the object position.

   This links up with the first case of obligatoriness of *dōu*: when bare *wh*s and *nǎ*-CL NP appear with *kěyǐ* 'can' in an object position, the sentence is ungrammatical; the only way to rescue it is to add *dōu* 'all' and front the FCI to a pre-*dōu* position:

(34) (a) tā kěyǐ   jiè   shěnme   shū/nǎ-běn   shū
           he can   borrow   what   book/which-CL   book
           'What book/which book can he borrow?'
           -cannot mean: 'He can borrow any book.'

      (b) tā   shěnme   shū/ nǎ-běn   shū   <u>dōu</u>   kěyǐ   jiè
           he   what   book/which-CL   book   all   can   borrow
           'He can borrow any book.'

As we can see in (34a), when a bare *wh* or a *nǎ*-CL NP appears in the object position under the scope of *kěyǐ* 'can', they can only have the interrogative reading, and not a FC reading. To acquire a FC reading, *dōu* is obligatory. There is an obvious question here about why this arises with a modal verb like CAN, but we will leave it as an open puzzle in the present chapter.

5. More on Subtrigging

We suggested that one of the crucial ingredients of FCIs such as *nǎ* and *rèn-* is intensionality, and we used this analysis to explain why they behave like PIs, i.e. they also have to be licensed in non-veridical environments. Intensionality with *rènhé* comes from *rèn*, and we proposed that intensionality in *nǎ*-CL comes from a possibly covert *wúlùn*. Here we are going to ask the question of whether *all wh-dōu* sentences have this source, as suggested by Lin 1996.

The problem rests upon cases involving episodicity. Recall that FCIs are anti-episodic. We have shown earlier that Chinese bare *wh*-phrases contrast with *nǎ*-CL NPs in that bare *wh*s appear in episodic environments, example (3a) is repeated here:

(35)   shéi   dōu   jìn-lái-le
       who   all   enter-come-PERF
       'Everyone came in.'

If all *wh+dōu* constructions are *wúlùn+dōu* constructions, and if *wúlùn* provides intensionality, we would not expect (35) to be grammatical, since it involves an episodic event. In fact, if one were to add *wúlùn* to (35), the sentence deteriorates considerably:

(36)   ??wúlùn   shéi   dōu   jìn-lái-le
       no-matter   who   all   enter-come-PERF
       '*Anyone has come in.'

Interestingly, none of the *wh+dōu* or *wúlùn+dōu* examples provided by Lin (1996) involves an episodic event. Note that some speakers find (36) not totally ungrammatical. This we think has to do with a possible sentential source for (36). As Lin (1996) notes, some nominal *wúlùn* sentences may have a sentential source involving the copular verb *shì* 'be', as shown by the pair in (37) (examples from Lin, with modified translations).

(37)   (a)   wúlùn   shéi   dōu   bìxū   zhūnshǒu   fǎlù
             no-matter   who   all   must   obey   law
             'Anyone must obey the law.'

       (b)   wúlùn   shì   shéi   dōu   bìxū   zhūnshǒu   fǎlù
             no-matter   be   who   all   must   obey   law
             'Regardless of who it is, he/she must obey the law.'

If nominal *wúlùn*-sentences may have a sentential source involving a covert *shì*, the acceptance of (36) is not totally unexpected. To see this, we need to turn briefly to subtrigging.

Subtrigging is used to refer to cases where FCIs (as well as *any* in English) appear grammatically followed by a relative clause, even when the FCIs are in a 'hostile' environment, e.g. episodic perfective past (see Dayal 1998; Quer 1998; and Giannakidou 2001 for detailed discussions), as we see from the contrast between (38a) and (38b):

(38) (a) *John talked to any woman.
      (b) John talked to whoever came up to him.

Quer (1998) and Giannakidou (2001) argue that subtrigging is an underlying conditional structure. What we have in the Chinese case (36) is the combination of *wúlùn+wh+dōu* appearing in an episodic perfective past sentence. As Lin (1996) pointed out, some nominal *wúlùn*-constructions may involve a sentential *wúlùn*-structure, as shown in (37). Further, Lin notes that a sentence such as (39a) expresses (39b):

(39) (a) (wúlùn)   nǐ   yāoqǐng shéi, wǒ dōu huānyíng tā
           no-matter   you   invite   who   I   all welcome   him
           'No matter who you invite, I'll welcome him.'

      (b) If you invite John, I will welcome him.
           If you invite Jack, I will welcome him.
           …
           …
           …
           If you invite Mary, I will welcome her.

Thus Lin states that the *wúlùn*-constructions are like *if*-conditionals, and he subsequently calls them *wúlùn*-conditionals. (Note that in Cheng and Huang 1996, these elliptical *wúlùn*-sentences are called '*Dōu*-conditionals'.) In our analysis earlier, we suggested that these are like FC free relatives in Greek. In either case, we are actually dealing with a sentential constituent, a *wúlùn*-conditional or a free relative, and for subtrigging, it doesn't really matter, as the result is equaivalent (see G&C, section 5). Generalizing, even cases like (36), which on the surface looks like a nominal *wúlùn*-construction, actually have a hidden sentential source, as in (40).

(40) wúlùn   shì   shéi, (tā)   dōu jìn-lái-le
      no-matter be   who   s/he all   enter-come-PERF
      'Whoever it is, he/she came in.'

6. Conclusions: Consequences for Indeterminate Quantification

In this chapter we explored the landscape of Chinese indeterminate wh-phrases focusing on their use as free choice items. We presented evidence that Chinese

indeterminates do not behave uniformly with respect to free choice and polarity status, and that they must be divided into two varieties: intensional indeterminates (*nǎ*-CL NP 'which', and *rènhé* NPs), and non-intensional ones (bare *wh*s). The crucial difference between the two is that the former exhibit polarity behaviour and are not licensed in veridical and episodic contexts, whereas the latter do not exhibit polarity behaviour, and can be fine in episodic positive sentences.

We derived the difference compositionally following the analysis of FCIs as variable contributing elements which may undergo intensionalization (Giannakidou 1998, 2001; Giannakidou and Cheng 2006). Intensionalization provides a dependent, non-deictic (Giannakidou 1998, 2011) *w* variable that cannot remain free, thus rendering the wh-phrase polarity sensitive, restricted in distribution in non-episodic contexts. In our account, *rèn* and *wúlùn* are the elements supplying the dependent variable; they are thus intensionalizers contained in the *nǎ*-CL 'which' and *rènhé* FCIs. At the same time, we also acknowledged the fact there are FCIs that are not subject to licensing, and this was shown to be the case with bare *wh*-phrases.

In the larger picture, our observations about the non-uniformity of wh-indeterminates in free choice and polarity challenges recent ideas that wh-indeterminate quantification relies on Hamblin semantics (Kratzer and Shimoyama 2002). The Hamblin account is too coarse to predict the polarity behaviour of FCIs and the observed difference between polarity and non-polarity FCIs. This conclusion adds to the earlier one we made in Giannakidou and Cheng 2006, where it was shown that the non-polarity cases of Greek wh-FCIs—which would fall typically under the category described by Kratzer and Shimoyama—were free relatives, hence substantially different from interrogative structures.

If our approach is correct, then at least for Greek and Mandarin, the *wh*-form that serves as the basis for the FCI is a set of individuals, and quantification remains 'classic', i.e. over objects (individuals and worlds), and not propositions (as in Kratzer and Shimoyama). Recently, Zimmermann 2009 makes a similar case about wh-indeterminates in Hausa: they are also argued to involve operations on individual domains, in particular an iota operation like our *dōu*. Gil 2004 and Park 2009 likewise argue that Korean wh-indeterminates (*nwuku*-na) also involve maximalization on a domain of individuals. These results taken together challenge the Hamblin approach to wh-quantifiers, and they should at least make us hesitant to generalize it without evidence (for a more detailed criticism of additional aspects of the Hamblin based theories of free choice, see Giannakidou and Quer to appear). The Hamblin approach crucially misses the important generalization that we discovered, namely that in a number of unrelated languages (Greek, Korean/Japanese, Hausa) free choiceness contains a level of maximalization.

Appendix

# indicates that the sentence does not have the intended reading, and has only an interrogative reading.

1. Episodic negation

(41) (a) tā   méiyǒu   mǎi   shěnme
          he   not-have   buy   what
          'He didn't buy anything.'

    (b) tā   méiyǒu   mǎi   rènhé   shū
          he   not-have   buy   any   book
          'He didn't buy any book.'

    (c) #tā   měiyou   mǎi   nǎ-běn   shū
          he   not-have   buy   which-CL   book
          Intended: 'He didn't buy any book.'
          Interrrogative reading: 'Which book didn't he buy?'

2. Episodic questions

(42) (a) tā   mǎi-le   shěnme/rènhé   shū   ma?
          he   buy-PERF   what   any   book   Y/N
          'Did he buy anything/any book?'

    (b) *tā   mǎi-le   nǎ-běn   shū   ma?
          he   buy-PERF   which-CL   book   Y/N
          Intended: 'Did he buy any book?'

3. Conditionals

(43) (a) rúguǒ   shéi/   rènhé   rén   qīfù   nǐ...
          if   who/   any   person   bully   you
          'If anyone bullies you...'

    (b) rúguǒ   (yǒu)   nǎ-ge   rén   dǎ-diànhuà   lái   jiù   shuō   wǒ
          if   have   which-CL   person telephone   come, then   say   I
          bú   zài
          not   be
          'If anyone calls, say that I'm not here.'

4. Restriction of universal

(44) (a) Měi-ge   rènshì   rènhé   dàrénwù   de   rén   dōu   hěn   gāoxìng
          every-CL   know   any   celebrity   DE   person   all   very   happy
          'Everyone who knows any celebrity is very happy.'

(b) ?*Měi-ge   rènshì   shěnme/nǎ-ge   dàrénwù   de   rén   dōu   hěn
every-CL   know   what/which-CL   celebrity   DE   person   all   very
gāoxìng
happy
Intended: 'Everyone who knows any celebrity is very happy.'

5. Future *hui*

(45) (a) Zhāngsān   huì   qù   jīchǎng   jiē   rènhé   wàiguó   rén
Zhangsan   will   go   airport   pick.up   any   foreign   person
'Zhangsan will pick up any foreigner at the airport.'

(b) #Zhāngsān   huì   qù   jīchǎng   jiē   shěnme   wàiguó   rén
Zhangsan   will   go   airport   pick.up   what   foreign   person
Intended: 'Zhangsan will pick up any foreigner at the airport.'
Interrogative: 'What (kind of) foreigner will Zhangsan pick up at the airport?'

(c) #Zhāngsān   huì   qù   jīchǎng   jiē   nǎ-ge   wàiguó   rén
Zhangsan   will   go   airport   pick.up   which-CL   foreign   person
Intended: 'Zhangsan will pick up any foreigner at the airport.'
Interrogative: 'Which foreigner will Zhangsan pick up at the airport?'

6. Modal verbs

(46) wǒmén   néng-gòu   zhàn-shèng   rènhé   kuèn-nán   (examples from Lü 1980)
we   can   fight-win   any   difficulty
'We can conquer any difficulty.'

(47) (a) tā   kěyǐ   jiè   rènhé/*shěnme   shū[10]
he   can   borrow   any/   what   book
'He can borrow any book.'

(b) tā   rènhé/shěnme   shū   *(dōu)   kěyǐ   jiè
he   any/what   book   all   can   borrow
'He can borrow any book.'

(48) rènhé/shěnme   xuéshēng   *(dōu)   kěyǐ   cānjiā
any/what   student   all   can   participate
'Any student can participate.'

(49) (a) #Bólíng   kěyǐ   kàn   nǎ-běn   shū
Boling   can   read   which-CL   book
Intended: 'Boling can read any book.'
'Which book can Boling read?'

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[10] With *shěnme shū* 'what book', the only possible interpretation is an interrogative interpretation.

   (b) Bólíng   nǎ-běn   shū   dōu   kěyǐ   kàn
       Boling   which-CL   book   all   can   read
       'Boling can read any book.'

7. Directive intensional verbs

(50) (a) *Húfēi   jiānchí wǒ yúnxǔ shéi/nǎ-ge   rén /rènhé   rén
          Hufei   insist   I   allow   who/which-CL person /any   person
          jìn-lái
          enter-come
          Intended: 'Hufei insists that I allow anyone in.'

      (b) *Húfēi   jiānchí   wǒ shéi/nǎ-ge   rén / rènhé   rén
          Hufei   insist   I   who/which-CL person /any   person
          dōu yúnxǔ jìn-lái
          all allow   enter-come
          Intended: 'Hufei insists that I allow any person in.'

8. Imperatives

(51) (a) ?*suí-biàn-nǐ   ná   shénme   píngguǒ
          if.you.please   take   what   apple
          Intended: 'Take any apple.'

      (b) suí-biàn-nǐ   ná   nǎ-ge/rènhé   píngguǒ
          if.you.please   take   which-CL/any   apple
          'Take any apple.'

9. Habituals

(52) (a) *tā tōngcháng hěn zǐxì   kàn shénme/nǎ-běn/xiē   shū
          he usually   very carefully   read what/which-CL/CL^PL book
          Intended: 'He usually reads any book very carefully.'

      (b) tā   tōngcháng shénme/?*nǎ-běn/?*xiē   shū   dōu hěn
          he   usually   what/ which-CL/CL^PL   book   all   very
          zǐxì   kàn
          carefully read
          'He usually reads any book very carefully.'

(53) (a) ?*tā tōngcháng hěn zǐxì   kàn   rènhé shū
          he usually   very carefully read   any   book
          Intended: 'He usually reads any book very carefully.'

      (b) tā tōngcháng rènhé shū   dōu hěn zǐxì   kàn
          he usually   any book   all   very   carefully read
          'He usually reads any book very carefully.'

10. Stative verbs

(54) (a) #Zhāngsān   rènshì   xìshàng   de   shěnme   lǎoshī/nǎ-ge   lǎoshī
          Zhangsan   know   department   DE   what   teacher/which-CL   teacher
          Intended: 'Zhangsan knows any teacher from the department.'

   (b) *Zhāngsān   rènshì   xìshàng   de   rènhé   lǎoshī
          Zhangsan   know   department   DE   any   teacher
          Intended: 'Zhangsan knows any teacher from the department.'

11. Generics

(55) (a) *Rènhé   māo   dōu   zuā   lǎoshǔ[11]
          any   cat   all   catch   mouse
          Intended: 'Any cat catches mouse.'

   (b) shěnme/nǎ-zhī māo   dōu   zuā   laǒshǔ[12]
          what/which-CL cat   all   catch   mouse
          'Any cat catches mouse.'

12. NP-comparatives

(56) Zhāngsān   bǐ   shéi/nǎ-ge /   rènhé   rén   dōu pǎo   de   kuài
       Zhangsan   COMP   who/which-CL /any   person   all run   DE   fast
       'Zhangsan runs faster than anyone.'

13. *Zhi*-only

(57) (a) *zhǐyǒu   zhāngsān   kàndào   rènhé   rén
          only.have   Zhangsan   see   any   person
          Intended: 'Only Zhangsan sees anyone.'

   (b) #zhǐyǒu   zhāngsān   kàndào   shéi/nǎ-ge   rén
          only.have   Zhangsan   see   who/which-CL   person
          'Only Zhangsan sees anyone.'

14. Factive verbs

(58) *wǒ   hěn   jīngyà   tā   yǒu   shěnme/nǎ-ge/rènhé   péngyǒu
       I   very   surprise   he   have   what/which-CL/any   friend
       Intended: 'I am surprised that he has any friend.'

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[11] To improve the sentence, the future modal *huì* has to be added.
[12] Adding the modal *néng* 'can' here is preferable for some speakers.

15. Affirmative episodic sentences

(59) (a) *Zuótiān wǒ zài xuéxiào kàndào-le shéi/nǎ-ge/   rènhé rén
          yesterday I at school see-PERF who/which-CL /any person
          Intended: 'Yesterday, I saw anyone at school.'

   (b) Zuótiān   shéi/*nǎ-ge/*rènhé rén   dōu   lái-le
        yesterday who/which-CL/any person all come-PERF
        Intended: 'Yesterday, everyone came.'

16. Existential constructions

(60) Yǒu   #shěnme/*nǎ-běn/*rènhé shū   zài   zūoshàng
      have what/which-CL/ any   book at   table.top
      Intended: 'There is any book on the table.'

17. Epistemic intensional verbs

(61) (a) #Zhāngsān yǐwéi wǒ gēn shéi/nǎ-ge   rén   shuō-guò huà
          Zhangsan think I   with who/which-CL person speak-EXP speech
          Intended: '*John thinks/imagines that I spoke to anyone.'

   (b) *Zhāngsān yǐwéi wǒ gēn rènhé rén   shuō-guò huà
        Zhangsan   think I   with any   person speak-EXP speech
        Intended: '*John thinks/imagines that I spoke to anyone.'

(62) (a) Zhāngsān   yǐwéi   wǒ   gēn   shéi/nǎ-ge   rén   dou
          Zhangsan   think   I   with who/which-CL person all
          shuō-guò   huà
          speak-EXP speech
          'John thinks/imagines that I spoke to everyone.'

   (b) ?*Zhāngsān yǐwéi wǒ gēn rènhé rén   dou shuō-guò huà
        Zhangsan   think I   with any   person all speak-EXP speech
        Intended: '*John thinks/imagines that I spoke to anyone.

18. Progressives

(63) (a) *zǎoshàng wǒ zài   xiě   shěnme/nǎ-fēng /rènhé xìn
          morning   I   PROG write what/which-CL /any   letter
          Intended: 'In the morning, I am writing any letter.'

   (b) *zǎoshàng wǒ shěnme/nǎ-fēng /rènhé xìn   dōu zài   xiě
        morning   I   what/which-CL /any   letter all PROG write
        Intended: 'In the morning, I am writing any letter.'