The Bound Variable Hierarchy and Donkey Anaphora in Mandarin Chinese

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Cheng and Huang (1996) argue that both unselective binding and E-type pronoun strategies are necessary for the interpretation of natural language sentences and claim that there exists a correspondence between two sentence types in Chinese and the two strategies, namely that the interpretation of the “wh … wh” construction (which they call “bare conditional”) employs the unselective binding strategy, while the ruguo ‘if’ and dou ‘all’ conditionals use the E-type pronoun strategy. They also suggest that there is a complementary distribution between bare conditionals and ruguo/dou conditionals in the sense that the latter allows all the NP forms, e.g. (empty) pronouns and definite NPs, except for wh-phrases in their consequent clauses, and can even have a consequent clause with no anaphoric NP in it, while the former permits only the same wh-phrase appearing in both the antecedent clause and the consequent clause. Although we agree with Cheng and Huang on the necessity of the two strategies in natural language interpretation, we see apparent exceptions to the correspondence between sentence types and interpretation strategies and the complementary distribution between wh-phrases and other NPs in bare conditionals and ruguo/dou conditionals. We think that the claimed correspondence and complementary distribution are the default or preferred patterns, or a special case of a more general picture, namely that (i) bare conditionals prefer the unselective binding strategy and the ruguo ‘if’ and dou ‘all’ conditionals, the E-type pronoun strategy; and (ii) wh-phrases are more suitable for being a bound variable, and pronouns are more suitable for being the E-type pronoun. This paper proposes a Bound Variable Hierarchy to help account for the distribution of wh-phrases and pronouns in Chinese conditionals and claims that any deviation from the preferred patterns will require additional contexts or accommodation.

Keywords: Donkey anaphora, unselective binding, E-type pronouns, Bound Variable Hierarchy, Mandarin Chinese
1. Introduction

In Cheng and Huang (1996), it is argued that both unselective binding and E-type pronoun strategies are necessary for the interpretation of natural language sentences. It is also claimed that there exists a correspondence between the two strategies and the following two sentence types in Chinese: the “wh … wh” construction (which they call “bare conditional”) and the ruguo ‘if’ and dou ‘all’ conditionals. While the former employs the unselective binding strategy, the latter uses the E-type pronoun strategy. Their relevant sentences are listed below.

(1) a. Shei xian lai, shei (jiu) xian chi.
   ‘Whoever comes first, he will eat first.’
   x comes first, x eats first.
   b. Ruguo ni kandao shei, qing jiao ta lai jian wo.
   ‘If you see someone, please ask him/her to see me.’
   If (for some x, (x a person) (you see x)), then ask him/her to see me.
   c. Ni jiao shei jin-lai, wo dou jian ta.
   ‘Whomever you ask to come in, I will see him/her (the person you ask to come in).’
   No matter who comes in, I will see him

Thus, under their analysis, the two wh-phrases in (1a) are both represented as variable x and bound by the necessity operator, whereas the wh-phrases in (1b) and (1c) are bound by an existential operator and the pronoun ta ‘him/her’ in them is analyzed as an E-type pronoun.

Cheng and Huang also claim that there is a complementary distribution between bare conditionals and ruguo/dou conditionals, as the former only allows a wh-phrase in their consequent clauses, whereas the latter permits all other NP forms except for the wh-phrase, e.g. (empty) pronouns and definite NPs, in their consequent clauses, and it even allows a consequent clause with no anaphoric NP in it.

Although we agree with Cheng and Huang on the necessity of the two strategies in natural language interpretation, we see apparent exceptions to the correspondence between sentence types and interpretation strategies and the complementary distribution of noun phrase forms in bare conditionals and ruguo/dou conditionals. We think that the claimed correspondence and complementary distribution are the default or preferred patterns, or a special case of a more general picture, namely that bare conditionals prefer the unselective binding strategy and
the ruguo ‘if’ and dou ‘all’ conditionals, the E-type pronoun strategy, whereas wh-phrases are more suitable for being a bound variable, and pronouns, the E-type pronoun. Hence the best fit or ideal pattern is to use a wh-phrase in the consequent clause of a bare conditional, employing unselective binding, and a pronoun in the ruguo/dou conditionals, using the E-type pronoun strategy, and any deviation from the default patterns requires additional contexts or accommodation. This paper proposes the following Bound Variable Hierarchy to account for the relevant facts in Chinese:

Bound Variable Hierarchy (BVH):
Wh-phrases/Reflexives >> Pronouns/demonstratives

That is to say, wh-phrases (and reflexives) are preferred bound variables and pronouns can be a bound variable as well, though they require some contexts to do so. Since a bare conditional prefers unselective binding, a wh-phrase is preferred in a bare conditional. Since a ruguo/dou conditional prefers the E-type pronoun strategy, pronouns take priority in a ruguo/dou conditional. Any deviation from the preferred patterns requires accommodation or additional contexts. Since the above is only preference, it is no surprise if we find exceptions to the preferred uses of wh-phrases and pronouns in the relevant conditionals: under appropriate contexts we can thus deviate from the ideal patterns, namely having a pronoun in the consequent clause of a bare conditional and a wh-phrase in the consequent clause of the ruguo/dou conditionals. Furthermore, we think that it is also possible to have an E-type pronoun reading for the wh-phrase in the consequent clause of a bare conditional and so is the unselective binding interpretation for the pronoun in the consequent clause of ruguo/dou conditionals.

This article is organized as follows: Section 2 presents some distributional facts of the three constructions discussed in Cheng and Huang (1996). We will point out apparent exceptions to the complementary distribution of noun phrase forms in bare conditionals and ruguo/dou conditionals, revealing the possibility of having a pronoun in the consequent clause of a bare conditional and a wh-phrase in the consequent clause of the other two conditionals. Conditionals introduced by yaoshi ‘if’, similar to ruguo conditionals, also allow a wh-phrase in their consequent clause. In Section 3, we argue that both bare conditionals and ruguo/dou conditionals can have an unselective binding as well as an E-type pronoun interpretation of the pronoun and wh-phrase in the relevant consequent clause. We show that Chinese pronouns can be interpreted as a bound variable in a conditional sentence, just like their counterparts in English, though it is more restricted. We also show that the requirement for the antecedent clause in dou conditionals is not embedded questions but plurality. In Section 4 we demonstrate that indefinite wh-phrases behave similarly to other indefinites, allowing all the readings
an indefinite NP can have (cf. Jiang, Pan & Zou (1997)). In Section 5 we propose
the Bound Variable Hierarchy to account for the facts that wh-phrases prefer to
be interpreted as a bound variable and pronouns, the E-type pronoun, though
they can both be interpreted as bound variables and E-type pronouns if appro-
priate contexts are provided. We try to answer the questions why a wh-phrase is
preferred in the consequent clause of a simple bare conditional instead of the pro-
noun ta which does not fit well there and why a ruguo/dou conditional can even
allow a consequent clause with no anaphoric NP to the wh-phrase in the anteced-
ent clause, not observing the matching effect that the bare conditional exhibits.
Before concluding the article in Section 7, we briefly compare our analysis with

2. Some distributional facts

Cheng and Huang (1996) show that in a bare conditional sentence in Chinese
only a wh-phrase, which refers back to the wh-phrase in the antecedent clause, is
allowed in the consequent clause, as exemplified by the contrast between (1a) and
the sentences below:

(2)  a. *Shei xian lai,  ta  xian chi.
    who first come he first eat
    who first come first eat
    who first come that-cl-person first eat
  d. *Shei xian lai, wo bu gaoxing.
    who first come I not happy

Sentences like (1a) and (2) indicate that no NPs other than a wh-phrase are al-
lowed in the consequent clause of a bare conditional sentence in Chinese.

Cheng and Huang also show that, unlike bare conditionals, dou/ruguo con-
ditionals display the opposite pattern, namely that the element in the consequent
clause that refers back to the wh-phrase in the antecedent clause cannot be a wh-
phrase, and instead it can be a (null or overt) pronoun or definite description, as
shown below.

(3)  a. *Ni jiao shei jin-lai, wo dou jian shei.
    you ask who enter I all see who
    ’Whoever you ask to come in, I will see him/her.’
b. Ni jiao shei jin-lai, wo dou jian ta.
   you ask who enter I all see him/her
   ‘Whomever you ask to come in, I will see him/her.’

c. Ni jiao shei jin-lai, wo dou jian [e].
   you ask who enter I all see
   ‘Whomever you ask to come in, I will see (him/her).’

d. Ni jiao shei jin-lai, wo dou jian na-ge-ren.
   you ask who enter I all see that-cl.-person
   ‘Whomever you ask to come in, I will see that person.’

e. Ni jiao shei jin-lai, wo dou bu gaoxing.
   you ask who enter I all not happy
   ‘Regardless of whom you ask to come in, I am not happy.’

(4) a. *Ruguo ni kandao shei, qing jiao shei lai jian wo.
   if you see who please call who come see me
   ‘If you see someone, please ask him/her to come see me.’

b. Ruguo ni kandao shei, qing jiao ta lai jian wo.
   if you see who please call him/her come see me

c. Ruguo ni kandao shei, qing jiao [e] lai jian wo.
   if you see who please call come see me

d. Ruguo ni kandao shei, qing jiao na-ge-ren lai jian wo.
   if you see who please call that-cl.-person come see me
   ‘If you see someone, please ask that person to come see me.’

e. Ruguo ni kandao shei, qing gankuai gao su wo.
   if you see who please quickly tell me
   ‘If you see someone, please tell me quickly.’

Dou/ruguo conditionals can even allow no anaphoric element in their consequent clauses, as exemplified in the (e) sentences, which is not possible for bare conditionals, cf. (2d).

Thus, Cheng and Huang (1996) claim that there exists a complementary distribution of different NPs in bare conditionals and ruguo/dou conditionals: bare conditionals only allow wh-phrases in their consequent clauses, whereas ruguo/dou conditionals allow all the other anaphoric elements except for wh-phrases in their consequent clauses.

Cheng and Huang point out that, although there are cases which seem to show a pronoun/wh-phrase alternation in the bare conditional (Yu, 1965; Lü, 1980), all the sentences that allow alternation require a sentence connector jiu, and when jiu is omitted, the alternation is not possible, cf. (5c).
   Whoever wants this broken factory, I will give it to him/her.

   *Shei bu dui, wo jiu shuo ta/shei bu dui.*
   Whoever is not right, I will say s/he is not right.

   *Shei yao zhe puo-chang, wo rang gei shei/*ta.*
   Whoever wants this broken factory, I will give it to him/her.

   With *jiu*, the alternation is fine, as shown in (5a, b), but without *jiu*, the alternation is not permitted, as exemplified in (5c). Cheng and Huang suggest that there is an ambiguity instead of an alternation in (5a, b): when a wh-phrase appears in the consequent clause that does not need *jiu*, we have a bare conditional; and when a pronoun appears, we have a reduced ruguo conditional, since *ruguo … jiu* is a pair, though *ruguo* can be omitted. Hence, Cheng and Huang claim that there is no alternation, but a hidden ambiguity, and the claimed complementary distribution can still be upheld.

   However, the sentences in (6) indicate that there is no need to have *jiu* to allow a(n empty) pronoun in the bare conditional.

(6) a. *Shei yao zhe po-chang, rang gei ta hao le.*
   Whoever wants this broken factory, give to him/her good.

   *Shei xiang qu Beijing, [e] bixu/yiding-dei/yiding-yao dao wo zheli baodao.*
   Whoever wants to go to Beijing, must register with me.

   *Shei xiang qu Beijing, [e] qing dao wo zheli baodao.*
   Whoever wants to go to Beijing, please register with me.

   From the sentences above, we can see that without *jiu* we can still have a pronoun in the consequent clause of the so-called bare conditional sentences. If we really want to say that there is a marker that helps improve the grammaticality of the sentences in question, the elements in boldface may be relevant. However, the markers
in question do not seem to form a consistent category, and some sentence even has no markers at all, cf. (6b), though the second clauses in (6) all seem to have the flavour of an imperative sentence. Since the idea of bare conditionals comes from the fact that there are no connectors like ruguo, dou, or jiu in the relevant sentences, it is difficult to say that the sentences in (6) are not bare conditionals but reduced ruguo conditionals. Thus, the sentences in (6) suggest that pronouns are allowed in the consequent clause of bare conditionals, and they constitute exceptions to the claimed complementary distribution between bare conditionals and ruguo conditionals.\footnote{Lin (1996) and us independently reach the conclusion that Cheng and Huang’s claimed complementary distribution of bare conditionals and ruguo/dou conditionals has exceptions, though there are differences in terms of data and analyses of the relevant constructions, which will be made clear later in the article. The current version has been newly worked out in recent years and is dramatically different from the previous ones.}

Besides, it is possible to have a wh-phrase in the consequent clause of ruguo conditionals, as exemplified in the following sentences.

\begin{enumerate}
\item \textbf{Ruguo} shei yao zhe po-chang, jiu rang shei dao bangongshi lai zhao wo.
\end{enumerate}

‘Whoever wants this broken factory, let him/her come to my office to see me.’

\begin{enumerate}
\item Hai shuo: Xiangshan meiyou liangpian xiangtong de hongye, ruguo shei zhaodao le, shei jiu shi zui xingfu de ren.
\end{enumerate}

‘Also said: there are no two maple leaves in Xiangshan that are exactly the same. If anyone/someone finds them, then s/he will be the happiest person.’

Furthermore, the sentence below indicates that there are exceptions to the claimed complementary distribution between bare conditionals and dou conditionals, since it is also possible to have a wh-phrase in the consequent clause of dou conditionals (see also Yu, 1965).

\begin{enumerate}
\item Amei shuo: “Gei shei kan, shei dou hui shuo wo shi hao-xin-hao-yi.”
\end{enumerate}

‘Amei said: “Whomever you give to look at (it), s/he will say that I meant well.’
Notice that even if the second wh-phrase in (8) can be interpreted as *everyone/anyone*, as suggested by one reviewer, one still cannot deny the fact that this wh-phrase and the wh-phrase in the antecedent clause can both be bound by *dou*, as (8) can have the same reading as the one given below, where the second wh-phrase is replaced by *ta* ‘s/he.’

\[(8')\] Amei shuo: “Gei shei kan, \(ta\) dou hui shuo wo shi hao-xin-hao-yi.”

‘Amei said: “Whoever you give to look at (it), s/he will say that I meant well.’

Notice that the pronoun *ta* in (8’) cannot be interpreted as *everyone*, as it has to be interpreted as either a bound variable: for all the x, if letting x look at (it), x will say I meant well, or an E-type pronoun: for all the situation s, if there is an x in s and let x look at (it) in s, that x who looks at (it) will say that I meant well in s. Hence the replacement of *shei* by *ta* in sentences like (8’) suggests that it is also possible to use a wh-phrase in the consequent clause of *dou* conditionals.\(^2\)

Therefore, the sentences in (7) and (8) have shown us that, unlike what is claimed in Cheng and Huang (1996), wh-phrases can appear in the consequent clause of *ruguo/dou* conditionals. A similar conditional to *ruguo*, introduced by *yaoshi* ‘if’, also allows a wh-phrase in the consequent clause in (9a) in addition to the pronoun in (9b).

\[(9) a.\] Shei yaoshi fandui ta, shei jiu shi women de diren.

‘(If) Whoever is against him, then s/he will be our de enemy.’

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\(^2\) One reviewer raises the question why the wh-phrase in the consequent clause can’t appear after *dou* in *dou* conditionals, as shown below:

\[(i)\] Gei shei kan, wo dou keyi baozheng ta/ni/ren/*shei hui liaojie ni.

‘Show it to anybody, I can guarantee that he/that person/*who will understand you.’

This is because the wh-phrase before *dou* and after *dou* are very different: the one before does not have a question sense, and the one after does have one: Shei ta dou xihua ‘He likes everyone’ and Ta dou xihua shei ‘Who are all those persons that he likes?’ So in (i) the wh-phrase plays the anaphoric role to connect the two clauses, which means that it cannot have the question sense. Since all the wh-phrases after *dou* have to have a question sense, it is not appropriate to use them to connect the two clauses, which requires an anaphoric wh-phrase to make them coherent, which is not compatible with the one after *dou*. Notice that the wh-phrase before *dou* can perform the relevant task, as it does not need to have the question sense.
b. Yaoshi *shei* neng faming yizhong dianshi xingxi caiji de if who can invent one-cl TV information collect de diannao, wo hui gei *ta* yi-da-bi qian. computer I will give him/her a-large-lump-sum money

‘Whoever can invent a kind of computer that collects information from TV broadcasting, I will give him/her a large lump sum of money.’

Hence, we can see that there exist exceptions to the claimed complementary distribution of noun phrase forms in bare conditionals and the other conditionals, and it is possible to have a pronoun or a wh-phrase in the consequent clause of both bare conditionals and *ruguo/dou* conditionals.

One reviewer suggests that *ruguo* conditionals exhibit the following patterns, and the third pattern is the one which does not allow a wh-phrase in the consequent clause but we think that (7b’) is an exception to such a claim, as shown in the revised (7b’) below:

- ✓… jiu …: pronoun/wh
- ✓ruguo … (jiu) …: pronoun/?wh
- ✓ruguo … de hua, … (jiu) …: pronoun/?*wh

(7) b’. Hai shuo: Xiangshan meiyou liangpian xiangtong de hongye, ruguo also say not-have two same de maple-leave if *shei* zhaodao le de hua, *shei* jiu shi zui xingfu de ren. who find perf de word who then be most happy de person

Here, the third pattern using *ruguo … de hua* ‘in the event of’ does allow a wh-phrase in the consequent clause, and the revised sentence (7b’) is perfect to us.

The same reviewer also suggests that all the sentences in (6) could be considered as something like the following: the first clause is a rhetorical question and the second one is an answer to it. Hence they are not true bare conditionals and should not be treated as exceptions to the claim that bare conditionals do not allow a pronoun in the consequent clause. However, we do not think this is appropriate. First, we do not think all the sentences could be reinterpreted as a question-answer pair, as shown by (6a). If the first clause in (6a) were really a question, then the appropriate answer for it should be something like *ta yao zhe po chang* ‘He wants this broken factory’ or simply Zhangsan, not the second clause in (6a). Second, even if the suggestion is possible, it is difficult to deny the fact that it is possible for a pronoun to appear in the consequent clause of a bare conditional, as all the sentences in (6) allow a wh-phrase to replace the pronoun in question, as shown below, which suggests that the relevant sentences could be understood as a bare conditional.
(6’) a. *Shei yao zhe po-chang, rang* \textit{ta/shei} hao le.

who want this broken-factory give to him(her)/who goodprt

‘Then give this broken factory to whoever wants it.’

b. *Shei yao zhe po-chang, rang* \textit{ta/shei} dao bangongshi

who want this broken-factory let him/her/who to office

lai zhao wo.

come find me

‘Whoever wants this broken factory, let him/her come to my office to see me.’

c. *Shei xiang qu Beijing, [e/]*\textit{ta/shei} bixu/yiding-yao/yiding-dei dao

who want go who must to me here

wo zheli baodao.

register

‘Whoever wants to go to Beijing, s/he must register with me.’

d. *Shei xiang qu Beijing, qing* \textit{ta/shei} dao wo zheli baodao.

who want go ask who to me here register

‘Whoever wants to go to Beijing, please register with me.’

Besides, it is logically possible to say that all the occurrences of \textit{ta} in (6’) above can be interpreted as a bound variable: for instance, (6’a) has the following interpretation: for all x, if x wants this broken factory, let’s give it to x.

As to the question of how to determine a bare conditional, we agree with Cheng and Huang in assuming that a bare conditional is a bi-clausal sentence that does not have any connective in it. Although Lin’s proposed criteria in distinguishing the above two types of conditionals appear to be more explicit than Cheng and Huang, we do not think that they are sufficient for drawing the distinction, as can be seen from the discussion below.

Lin (1996) thinks that a bare conditional usually does not allow the insertion of \textit{jiu}, though its presence is compatible with the presupposition of the existence of the event denoted by the relevant sentence. He points out that bare conditionals differ from \textit{ruguo} conditionals in the following three aspects: (i) only the antecedent clause of the former can describe an actual event and thus carry an existential presupposition; (ii) only the subject wh-phrase in the latter can be prefixed by \textit{you} ‘have’; and (iii) only the former allows multiple wh-phrases and observes the matching requirement, i.e. the number of anaphoric elements in the consequent clause should match the number of wh-phrases in the antecedent clause. Although we share Lin’s view in recognizing the possibility of using pronouns in the consequent clause of bare conditionals, we think that only (iii) among the above three criteria is reliable, though it is not relevant here, as the sentences in (6) only have one wh-phrase in the antecedent clause.
Lin’s claim in (i) is not reliable, as we can find *ruguo* sentences, as shown below, that can describe an actual event.

(10) a. *Ruguo ni yijing chi-le fan, zheci wo jiu bu yue ni la.*

‘If you already had your meal, I would not invite you this time.’


‘If you really killed people, I could not save you then.’

In both sentences in (10) the antecedent clause is compatible with the fact that the event described actually happened. Hence they indicate that the antecedent clause in *ruguo* sentences can also describe an actual event. Here, however, the possibility of the actuality of the event does not lead to the existential presupposition of the event.

In this connection, we wish to point out that the notion in Lin’s work has been mixed up with two separate phenomena: factual presupposition carried by the sentence in question on the one hand, and the existential presupposition carried by noun phrases on the other; the two do not necessarily co-occur. Here is why. Lin’s claim in (i) implies that the antecedent clause of a *ruguo* conditional never carries an existential presupposition because it can never describe an actual event. To see this issue more clearly, we need to make finer distinctions. First, there is the notion of existential presupposition, which in the pragmatic literature usually refers to the assumed existence of an individual or entity related to an NP, not an event. Whether an event is assumed to have happened or not is in fact distinguished as factual or the lack of factual presupposition in the pragmatic literature. In this light, to say that NPs in sentences containing factual presuppositions may be accompanied with a related existential presupposition is not equivalent to saying that NPs in sentences lacking factual presuppositions never involve an existential presupposition. The conclusion we can reach now is that existential presupposition is not relevant to the well-formedness of the related sentences under discussion.

Furthermore, Lin’s claim in (ii) is not reliable, either, as the use of the existential marker *you* requires that the sentence involved not have an existential presupposition about the NP introduced by *you*. As pointed out by Lin (1996), bare conditionals usually carry an existential presupposition, and we have noted that *ruguo* conditionals usually do not carry such a presupposition, so it is not surprising that
only the former is not compatible with \textit{you}. Nevertheless, since bare conditionals sometimes do not carry an existential presupposition, it is not reliable to say that not allowing \textit{you} is a decisive criterion to identify a bare conditional. It is not impossible to find a bare conditional that does not carry an existential presupposition and is compatible with \textit{you}. It is also possible to find a \textit{ruguo} conditional that does carry an existential presupposition and is thus incompatible with \textit{you}.

(11) a. Shei zhaodao-le, shei jiu shi shijie shang zui xingfu de ren.  
\textit{who find-perf who then be world on most happy de person}  
i. Whoever finds it is the happiest person in the world.  
ii. The person who has found it is the happiest person in the world.

b. You shei zhaodao-le, shei jiu shi shijie shang zui xingfu de ren.  
\textit{There-be who find-perf who then be world on most happy de person}  
'If there is a person who finds it, then he will be the happiest person in the world.'

(12) a. You shei neng gei qian, shei jiu shi qinniang.  
\textit{There-be who can give money who then be real-mother}  
'Whoever can provide money will be the real mother.'

b. You shei xiang qu, shei jiu zai zheli qianming.  
\textit{There-be who want go, who then at here sign-name}  
'Whoever wants to go please sign your name here.'

(13) a. Ruguo shei mai-le zhezhong kaiguan, ta jiu dei qu tui-diao.  
\textit{If who buy-perf this-kind switch s/he then should to return}  
i. Whoever buys this kind of switch should go return it.  
ii. The person(s) who bought this kind of switch should go return it.

b. Ruguo you shei mai-le zhezhong kaiguan, ta jiu de qu tui-diao.  
\textit{If have who buy-perf this-kind switch s/he then should to return}  
'Whoever buys this kind of switch should go return it.'

The contrast in (11) indicates that, when the word \textit{you} occurs in the antecedent clause of a bare conditional, the existential presupposition observed in (11a) disappears, as shown in (11b). This is because (11b) does not have the (ii) reading observed in (11a) that is compatible with the existential presupposition. Notice that the second reading in (11a) carries the existential presupposition, whereas the first reading in (11a) does not. The sentences in (12) show that bare conditionals are also compatible with the existential \textit{you}, as they do not necessarily carry an
existential presupposition. The *ruguo* conditionals in (13) exhibit a similar pattern to that in (11): (13a) has both readings — only the second reading is compatible with the existential presupposition — and (13b) does not have the second reading observed in (13a). The contrasts in (11) and (13) show that the second reading in (11a) and (13a) is not compatible with *you*, as it carries the existential presupposition. Hence, we can see that it is not the type of conditional but the existential presupposition that constrains the use of *you* in the relevant sentences, and only when there is not an existential presupposition in the antecedent clause can we use *you* in the relevant antecedent clause no matter whether the clause in question is a bare conditional or a *ruguo* conditional.

We can thus say that Lin’s criteria to differentiate bare conditionals from *ruguo* conditionals are either unreliable or irrelevant to our discussion in this paper, though we do think Lin’s suggestion of using the insertion of *ruguo* is an applicable condition or reliable way to determine whether a sentence in question is a bare conditional or not: the ones that do not allow such an insertion will be true bare conditionals, no matter whether the consequent clause has the connective *jiu* or not.

Therefore, we conclude on the basis of the discussions earlier that there are indeed exceptions to the claimed complementary distribution discussed in Cheng and Huang (1996).

3. On Cheng and Huang’s analysis

3.1 Cheng and Huang’s analysis

Since bare conditionals only allow unselective binding and *ruguo/dou* conditionals should be interpreted using the E-type pronoun strategy, Cheng and Huang propose a syntactic and semantic account to explain the complementary distribution of noun phrase forms in the two types of conditionals. According to them, both occurrences of *shei* in a bare conditional should be translated into variable *x* and bound by the necessity operator NEC, as shown in (14a).

\[
\begin{align*}
&(14) \quad \text{a.} \quad \text{NEC}_x [P(x)] [Q(x)] \\
&\quad \text{b.} \quad * \text{NEC} [P(x)] [Q(he/she)]
\end{align*}
\]

The second *shei* cannot be translated into an E-type pronoun, since the relevant representation in (14b) would violate the Prohibition against Non-Vacuous Quantification (PNVQ). Note that the symbol ‘*’ on the left of the semantic formulae indicates that the relevant formulae is ill-formed, as the operator NEC is not binding a variable that appears in both the restrictor and the matrix.
Furthermore, the second *shei* in question cannot be replaced by a pronoun, because the variable introduced by the first *shei* is not accessible to it, and Chinese does not allow resumptive pronouns, even though a pronoun can be translated into a free variable x.

Cheng and Huang assume that, in *ruguo* conditionals, the wh-phrase *shei* in the antecedent clause, licensed by the leading element *ruguo*, is translated into a(n generalized) existential quantifier binding a variable x, but the pronoun in the consequent clause should be interpreted as an E-type pronoun, since it is outside the scope of the existential quantifier that binds the variable introduced by *shei*. They claim that it is not possible to have another wh-phrase in the consequent clause to replace the pronoun, since the first one in the antecedent clause is existentially bound, and not a free variable. If we replace the pronoun with a wh-phrase which would be translated into a free variable, then the representation, as given in (14c) below, violates the Prohibition against Non-Restrictive Quantification (PNRQ), hence not well-formed. This is because there is no free variable in the restrictor, corresponding to the wh-phrase variable added to the consequent clause due to the replacement, for NEC to bind. Hence the relevant representation below violates PNRQ.

\[
\text{(14) c. } ^* \text{NEC} \left[ \exists x \ P(x) \right] \ [Q(x)]
\]

For *dou* conditionals, Cheng and Huang argue that the antecedent clause must be an embedded question and the wh-phrase in it is existentially bound. Since the variable introduced by *shei* in the antecedent clause is existentially bound, the pronoun in the consequent clause must be translated into an E-type pronoun. They also think that *dou* quantifies over propositions denoted by the antecedent clause. For the same reason as that in the *ruguo* conditional, *shei* is not allowed in the consequent clause of the *dou* conditional.

In a word, Cheng and Huang seem to assume that (a) wh-phrase are translated into either a free variable or an existential quantifier, and cannot be an E-type pronoun; (b) pronouns cannot be a bound variable, directly bound by an operator; and (c) the elements in the antecedent clause of the conditional are not accessible to the elements in the consequent clause.

3.2 Some different considerations

3.2.1 Bare conditionals

For bare conditionals, Cheng and Huang assume that the necessity operator NEC must bind the same variable in the restrictor and the matrix. If the first wh-phrase is translated into a free variable x, so must be the second wh-phrase. Otherwise, the relevant representation violates PNVQ. Thus, according to Cheng and Huang,
one cannot translate the second wh-phrase into an E-type pronoun. Logically speaking, however, it is perfectly possible to translate the first wh-phrase as an existentially bound x, and the second wh-phrase as an E-type pronoun which depends on the variable x or some related variable, if we assume that the operator in question can bind the situation variable s in both the restrictor and the matrix, as the quantifier need not bind the variable x that can be existentially bound in the antecedent clause, as exemplified in (15a) for sentence (1a). Here we use s/he to represent the translation for the second shei to indicate that it is interpreted as an E-type pronoun. Other possible readings for (1a) are also given in (15).

(15) a. NEC [s] [∃x come(x) first in s] [eat(he/she) first in s]
   b. NEC [x, s] [come(x) first in s] [eat(x) first in s]
   c. NEC [x] [come(x) first] [eat(x) first]

What (15a) means is that, for every situation s, if there is some x that comes first in s, then the x that comes first in s will eat first in s. (15a) could be true even if every time we have the same x that comes first and eats first, and it is also true if there is only one individual in the domain of universe, as the necessity operator is binding the situation variable s which helps to satisfy the plurality requirement of universal quantification. Notice that neither scenario above for (15a) is allowed for (15c), as it requires a domain of universe with more than one individual.

The following sentences have a preferred reading in which there is only one person who has the relevant property, so the E-type pronoun strategy should be used to interpret shei in the consequent clause.

yesterday who buy-wrong-perf cake I then fine who DE money
   ‘Who bought the wrong cake yesterday, I will fine him/her.’
   b. Dan deng Li Laosan huilai shuo shi shei, jiu he shei pinming.
only wait return say be who then with who fight-life
   ‘(People) are just waiting for Li Laosan to come back to identify that someone (who did some bad thing), and then fight with him/her for life.’
   c. Shei zuo cuo le shi, piping shei hao le. Buyao shuo wo.
who do wrong perf thing criticize who OK prt don’t scold me
   ‘Whoever did things wrong, you criticize him/her. Don’t scold me.’
   ‘Someone did things wrong, you criticize him/her. Don’t scold me.’

What is crucial for the E-type pronoun analysis of the second shei is if the first shei is existentially bound, then the second wh-phrase has to be interpreted as an E-type pronoun. Notice that the occurrences of the second shei in (16) can all be replaced by the third person singular pronoun ta. This fact suggests that it can play a similar role
to *ta*. In Cheng & Huang (1996), they assume that the necessity operator is both the licensor and binder of the wh-phrase *shei* in the antecedent clause of a bare conditional, so another *shei* is necessary in the consequent clause in order to avoid a violation of PNVQ. However, the first *shei* can actually be bound by an existential operator, as shown in (15a), so interpreting the second *shei* as an E-type pronoun will not cause any problem, as the first *shei* can be licensed by the existential operator, and the necessity operator NEC can bind the situation variable $s$.

Hence, the wh-phrase in the consequent of a bare conditional can also be interpreted as an E-type pronoun, given appropriate context.

It is not adequate to claim that the wh-phrase in the consequent clause of a bare conditional is an indefinite pronoun, as suggested in Chierchia (1998), as an indefinite pronoun, e.g. English *one* as in “John has a book, and Bill has one too” must have a different referent from that of the first wh-phrase in the antecedent clause. In reality, the second wh-phrase in a bare conditional is not only anaphoric to the first wh-phrase in the antecedent clause, but can also refer to the same individual as that denoted by the first wh-phrase, as exemplified in sentences like (16), especially (16b).

Also notice that the sentences in (16) are all compatible with the so-called one-case reading discussed in Lin (1996). Under the one-case reading, one can assume that the second *shei* can be interpreted as an E-type pronoun just like the cases in which one uses a pronoun to replace the second *shei* in (16), when the first *shei* is interpreted existentially.

One cannot say that sentences like (16b, c) are not bare conditionals, hence not a problem for Cheng and Huang. This is because they are not reduced *ruguo* conditionals, but true bare conditionals, as shown by the fact that *ruguo* cannot be added to these sentences, cf. (16b, c).

The representation in (15a) can explain why a pronoun is possible in the consequent clause of bare conditionals (cf. (6a)), as the second *shei* can be interpreted as an E-type pronoun. Actually, a pronoun in the consequent clause can also be interpreted as a bound variable, pace Cheng and Huang, so a bare conditional with a pronoun in the consequent clause can also have an unselective binding representation. The clear examples are those sentences given in (5a, b) and (6a, b). In these sentences the wh-phrase in the antecedent clause can have a meaning similar to *anyone* or *whoever*. Since these sentences do not presuppose the existence of at least one entity that has the relevant property, the relevant variable in the antecedent clause need not be existentially bound. Hence, both variables introduced by the wh-phrase in the antecedent clause and the pronoun in the consequent clause can be bound by the same operator, the necessity operator NEC, which corresponds to the unselective binding interpretation of the sentences in question.
The crucial arguments against interpreting pronouns as bound variables that Cheng and Huang put forward in their article are (a) Chinese does not allow resumptive pronouns; and (b) syntactically the variable introduced by shei in the antecedent clause is not accessible to the pronoun in the consequent clause. Their first argument does not necessarily exclude pronouns from being a bound variable, as resumptive pronouns are only one type of bound variables. As for the second argument, it may be correct in terms of syntax, but cf. Lin (1996) for the weakness of Cheng and Huang in this regard. Furthermore, in the literature of Discourse Representation Theory (DRT) (Kamp, 1981; Heim, 1982; Kamp and Reyle, 1993), it is commonly assumed that an indefinite NP in the antecedent clause of a conditional is accessible to the pronoun in the consequent clause if the indefinite is not in the scope of a proportional quantifier like a universal quantifier, and both the indefinite and the pronoun can be interpreted as variables bound directly by the operator in question. Since the wh-phrases in the antecedent clause can be treated on a par with indefinites in Chinese, as will be shown in Section 4 later, it is very difficult to claim that the wh-indefinites are not accessible to the pronouns in the consequent clause of the conditional in question.

The fact that we can have pronouns in the consequent clause of bare conditionals interpreted as bound variables, as pointed out earlier, provides strong support to our position that pronouns can actually be interpreted as bound variables in Chinese. Besides, the accessibility question may not be an issue if we assume that both the antecedent and the pronoun are directly bound by the necessity operator, though they may not be directly linked to each other.

Furthermore, in the DRT literature, the entity introduced in the antecedent clause will not be accessible to the pronoun in the consequent clause only if there is a proportional quantifier such as the universal quantifier in the antecedent clause. Since there is no such quantifier in the representation of the relevant sentence, the entity introduced in the antecedent clause should be accessible to the pronoun in question.

Another piece of evidence supporting our position that pronouns can be bound variables is the fact that the sentences in (6a) and (6b) do not allow a plural pronoun, as shown in (17a) and (17b)3, and these sentences indicate that the pronoun in question is not similar to the E-type pronoun which does allow plural pronouns. Hence the more likely candidate for the pronoun in question is a bound variable.

3. One reviewer does not agree with our judgement. This seems to suggest that it is possible to have a plural pronoun in (17). Notice that this judgement is not problematic to our analysis, as we do not claim to rule out the possibility of the E-type pronoun interpretation in the relevant sentences.
(17)  a. *Shěi yào zhē pǔ-chāng, ràng *ta/*tāmēn hǎo le.*

Then give this broken factory to whoever wants it.

b. *Shěi yào zhē pǔ-chāng, ràng *ta/*tāmēn dào bāngōngshī lái zhāo wǒ.*

Whoever wants this broken factory, let him/her to come to my office to see me.

Notice that we are not claiming that none of the pronouns in the consequent clause is an E-type pronoun. Rather, we think they can be translated as either a bound variable or an E-type pronoun depending on context. If the wh-phrase in the antecedent is existentially bound, then the pronoun in question has to be interpreted as an E-type pronoun. If not, the pronoun can be a bound variable. For example, the following sentence can be felicitously interpreted with an E-type pronoun analysis of its pronoun in the consequent clause, since it can take a plural form in the consequent clause.

(18) *Nǐ yǒu shénme péngyǒu, qǐng bā tāmēn/*ta jīeshào géi Līsī.*

If you have some friend(s), please introduce them to Lisi.

3.3.2 *Ruguo* conditionals

For *ruguo* conditionals, Cheng and Huang think that the wh-phrase in the antecedent clause is always existentially bound, so the pronoun in the consequent clause cannot be a bound variable. Since wh-phrases are interpreted as bound variables, they cannot appear in the consequent clause of a *ruguo/dōu* conditional. However, as argued in the previous section, we can have wh-phrases in the consequent clause of both types of conditionals, which supports our claim that the wh-phrases in the relevant consequent clause can be interpreted as E-type pronouns, as their antecedents are existentially bound. On the other hand, since the relevant wh-phrases in the antecedent and consequent clauses can also be interpreted as a variable bound by the quantifier in question, *ruguo* conditionals can be interpreted using unselective binding. This suggests that it is possible for *ruguo* conditionals to employ the unselective binding strategy.

Actually, looking at some of the *ruguo* conditional sentences, we can see that there can be a universal reading on the variable introduced by the wh-phrase in the antecedent clause. For example, sentences like (6a) do not necessarily presuppose that there is someone who wants the broken factory, and they are perfectly compatible with a situation where there is no one who wants to buy the factory. In
this situation, the sentence describes a condition for my giving away the factory. What is emphasized is not the existence of at least one person who has the relevant property, but rather the condition for me to give away the factory. Anyone will do, as long as s/he has the relevant property, namely wanting the broken factory. This is a reading that should be represented using unselective binding, since the first shei need not be existentially bound, and both variables introduced by shei and the pronoun can be bound directly by the necessity operator, a possibility which is also recognized in Cheng and Huang (1996).

Therefore, like bare conditionals, the pronouns in the consequent clause of the ruguo conditional can also be bound variables. This is further supported by some of the ruguo conditional sentences. For example, sentences like (19), repeated as (19) below, demonstrate that the pronoun in the consequent clause can be a bound variable, in addition to the E-type pronoun interpretation that corresponds to the second reading of (19), as it is possible that no one will be able to find two maple leaves which are exactly the same, so the first wh-phrase need not be existentially bound. Since it is not existentially bound, the wh-phrase in the antecedent clause only introduces a variable. If the pronoun in the consequent clause also introduces a variable, then both variables can be bound by the necessity operator NEC. Hence, the pronoun in this case can be a bound variable, which corresponds to the first reading, the unselective binding interpretation, of (19), as given below. This is supported by the fact that we can actually have a wh-phrase in the consequent clause in (19).

(19) …Hai shuo: Xiangshan meiyou liangpian xiangtong de hongye, also say not-have two-cl same de maple-leave
ruguo shei
if who
zhaodao le, shei/ta jiu shi zui xingfu de ren.
find perf who/him(her) then be most happy de person
‘…Also said: there are not two maple leaves in Xiangshan that are exactly the same. If anyone finds them, then s/he will be the happiest person.’
‘…Also said: there are not two maple leaves in Xiangshan that are exactly the same. If someone finds them, then s/he will be the happiest person.’

3.3.3 Dou conditionals
For dou conditionals, we would like to show first that it is not necessary to have an embedded question in the antecedent clause, unlike Cheng and Huang. Then we show that both wh-phrases and pronouns can be directly bound by the quantifier in question, since the semantics provided by Cheng and Huang does not give us all the possible readings of the sentence in question.
In order to uphold the view that the anaphoric element in the consequent clause of the *dou* conditional can be anything but a wh-phrase and must be translated into an E-type pronoun, Cheng and Huang have to assume that the wh-phrase in the antecedent clause is existentially bound. Since an interrogative wh-phrase is existentially bound, Cheng and Huang assume that the indefinite wh-phrase in the antecedent clause is an embedded question word, and thus the clause is an embedded question specifying a set of propositions over which the universal *dou* can quantify. As a piece of evidence, they claim that the question sense is fully spelled out in (20), since they assume that *bulun* s-selects an interrogative proposition as its complement. Also there is a question marking in the antecedent clause of (21).

(20) *Bulun* ni jiao shei jin-lai, wo dou jian ta.
    regardless you ask who come-in I all see him/her
    ‘Regardless of whom you ask to come in, I will likewise see him/her.’

(21) Ta jintian lai-bu-lai, wo dou bu deng ta.
    s/he today come-bu-come I all not wait him/her
    ‘Whether s/he comes or not today, I will not wait for him/her.’

However, as we know, *dou* need not quantify over a wh-question. As long as there is an element that can give it a plural individual or sum individual, we can use *dou* (see Cheng (1995), S.-Z. Huang (1996), Li (1997), Lin (1998), Pan (2006), Jiang & Pan (2013), etc. for the basic properties of *dou*). The following sentence shows that we can even use *dou* to quantify over time.

(22) Ta da ren de shihou, wo *dou* zhuangzhe mei kanjian.
    he hit person de time I all pretend not see
    ‘Whenever he hits people, I always pretend that I don’t see it.’

Sentences like (22) indicate that the general requirement for *dou* quantification is plurality, of which the embedded question treatment is just one of the many ways to satisfy the plurality requirement. Hence, we think that it is not justified to assume that the wh-phrase in the antecedent clause in the *dou* conditional necessarily introduces an embedded question. The argument we offer is a semantic one.

According to Cheng and Huang, the semantics of *dou* conditionals is to have an existential quantifier binding the wh-phrase variable, and the universal quantifier connected with *dou* binds the proposition variable. Thus, sentence (23a) has the semantics, as specified in (23b).

(23) a. Ni jiao shei jin-lai, wo *dou* hui jian ta.
    you ask who come-in I all will see him/her
    ‘Whomever you ask to come in, I will see him/her.’
b. \( \forall P ((\exists x (\text{person}(x)) \text{ and } P = \text{you ask x to come in}) \rightarrow \text{I will see him/her in the event } P) \)

c. \( \forall x ((\text{person}(x) \text{ and you ask x to come in}) \rightarrow \text{I will see } x) \)

Since the \( x \) in (23b) is existentially bound, \( P \) may correspond to one individual or several individuals. When it is one individual, then (23b) and (23c) are equivalent. When it is several individuals, the E-type pronoun could be treated as covering all the individuals such that I will see all of them. In essence, this reading is also equivalent to (23c). However, if the E-type pronoun is not covering all the individuals but only one or some of them, then that I will see some of them will be true, but not that I will see all of them will be true, namely that some of the individuals in the domain of universe that were asked to come in will not make (23b) true, as they were asked to come in, but not seen by me. This is the case where (23c) will be different from (23b), as (23c) has to apply to every single individual in the domain of universe that were asked to come in, whereas (23b) does not necessarily apply to every single one of the individuals who were asked to come in, as pointed out above. Hence, our interpretation (23c) covers more cases than Cheng and Huang’s (23b). It is also consistent with the fact that we can have a wh-phrase in the consequent clause of the \textit{dou} conditional, as exemplified in (8): when both wh-phrases introduce a variable \( x \), both \( x \)'s can be bound by \textit{dou} or the necessity operator.

To summarize, in this section we have shown that there are exceptions to both the claimed correspondence between sentence types and the interpretation strategies and the complementary distribution between wh-phrases and other NPs in bare conditionals and \textit{ruguo/dou} conditionals. Both bare conditional and \textit{ruguo/dou} conditionals can receive an unselective binding interpretation and employ the E-type pronoun strategy. The pronoun and wh-phrase in the consequent clause can be either a bound variable or an E-type pronoun, depending on context. We have also shown that wh-phrases can appear in the consequent clause of \textit{ruguo/dou} conditionals, and pronouns can occur in the consequent clause of a bare conditional, though additional contexts are required.

4. Indefinite NPs and wh-phrases behave the same

As shown in Jiang, Pan and Zou (1997), an indefinite NP in Chinese can be interpreted as \textit{specific}, \textit{non-specific}, \textit{existential}, \textit{arbitrary}, \textit{universal}, \textit{generic}, etc. In this section we will show that indefinite wh-phrases behave similarly to other indefinites, so it is not surprising that pronouns and wh-phrases in the consequent clause of a conditional can be interpreted as bound variables as well as E-type pronouns, since their antecedents, a wh-phrase, can be interpreted as either existential or
arbitrary. Notice that the existential interpretation of a wh-phrase in the antecedent clause corresponds to the E-type pronoun interpretation of the pronoun or wh-phrase in the consequent clause, whereas the arbitrary interpretation of the wh-phrase in the antecedent clause leads to the unselective binding or bound variable interpretation of the pronoun and wh-phrase in the consequent clause.

The sentences below demonstrate that an indefinite subject can be interpreted as specific, existential, arbitrary, and/or universal.

(24) a. Shuo zhen de, yige ren duonian chongfu yijian shi, say real de one-cl man many-year repeat one-cl matter
na-pa zhejian shi even this-cl matter
ji fu meili, zong rang ren qiaoqiao chansheng yizhong extremely have charm always let people gradually grow one-cl
nifan xinli.
defying mentality
‘Frankly speaking, if a man keeps on doing one thing for many years, even if it is extremely attractive, it will always make him develop an adverse feeling towards it.’
b. Yige dao, suan-bu-suan ni-de jia?
one-cl island count-not-count you-de home
‘Does an island count as your home?’

(25) a. Yiqian yiwei you da zhihui de zhanglao chu-le yige wenti, before one-cl have big wisdom de elder set-perf one-cl question
dao rujin hai mei jie chulai. till now still not solve come-out
‘A long time ago, a Buddhist sage put forth a puzzle, which remains unsolved.’
b. Yiliang jipu ya-si shimin de shi, zai renmen xinshang one-cl jeep crush-dead civilian de matter at people mind-on
tou-xia nongzhong de yinying. throw-down strong de shadow
‘The news that a jeep killed a civilian cast a dark shadow on people’s mind.’

(26) a. Cong falü shang jiang, yige zhongguo gongmin cong yi chusheng from law on speak one-cl Chinese citizen from once born
jiu xiangyou gongminquan le. then have citizenship prt.
‘According to the Law, a Chinese citizen, once born, will have the Chinese citizenship.’
The indefinite subjects in (24) can have the any reading that corresponds to an arbitrary NP. By employing an arbitrary NP reading, we are talking about a typical abstract entity, not a specific one. One of the properties of being a typical abstract entity is that, although one can talk about it, one can never have tea with him/her. 4 The indefinite subjects in (25) can be existential in the sense that there is an individual who has the property specified in the verb phrase. The emphasis is not on a particular one or a typical one, but on the fact that there exists at least one. If there are two such instances, the assertion still holds. The indefinites in (26) have the universal reading, since they focus on every individual, not a typical one or a specific one.

From the sentences in (24)–(26), we can see that it is a very subtle matter for one to differentiate the readings that an NP can have, and it is also possible that the same NP can have different readings, depending on the emphasis of the sentence and the intention of the speaker. The following sentences exemplify this point.

(27) a. Ruguo yige bu hui shuo zhongwen de ren pengdao ni, ni cai ta hui yong shenme yuyan gen ni shuohua.
   'If a person who does not speak Chinese meets you, you guess what language s/he will use to talk to you.'

b. Ruguo yige you qian ren xiang jiehun, ni cai ta hui qu shenmeyang de ren.
   'Guess it, if a rich person wants to get married, what kind of person would s/he like to marry?'

The indefinite subjects (in italics) in (27) can have three readings: arbitrary, existential, and specific, depending on where the stress is and the intention of the speaker. For example, if the speaker has someone in mind, then the indefinite subjects in (27) are interpreted as specific. If the stress is on the number, then we can have the arbitrary or quantity reading, just like the indefinite subject in (28) below. Otherwise, the existential reading is intended.

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4. See Jiang, Pan and Zou (1997) for detailed definitions and formalizations.
The indefinite subjects in (27) indicate that an indefinite NP can have either an existential reading or an arbitrary/universal reading, and the pronoun in the consequent clause can be an E-type pronoun or bound variable accordingly, depending on whether the antecedent is existentially bound or not. If existentially bound, then the pronoun is an E-type pronoun. Otherwise, it is a bound variable which corresponds to the unselective binding interpretation of the pronoun in question. The behaviour of the non-wh-indefinites is very similar to that of the wh-indefinites, thus providing independent support to our treatment of the wh-phrases and pronouns in the conditional sentences, as discussed in the previous sections.

5. **Our proposal: The Bound Variable Hierarchy (BVH)**

Although we have shown above that a pronoun can appear in a bare conditional and a wh-phrase can also occur in the consequent clause of the ruego/dou conditionals, we do think that what is proposed in Cheng and Huang is basically correct, though it has to be relativized to the typical contexts. In another word, what they propose and describe is the ideal patterns for the use of pronouns and wh-phrases in the relevant conditionals.

Hence we propose the following Bound Variable Hierarchy (BVH) to account for the observed facts in Chinese:

$$\text{wh-phrases/reflexives} \gg \text{pronouns/demonstratives}$$

We propose to take the patterns proposed in Cheng and Huang as the most preferred strategies for Chinese conditionals, namely that wh-phrases (and reflexives) are the preferred bound variable and most suitable for appearing in the consequent clauses of a bare conditional, whereas pronouns are preferred to be an E-type pronoun and most suitable for a ruego/dou conditional. In other words, bare conditionals are most suitable for the bound variable interpretation using unselective binding and ruego/dou conditionals are most suitable for the E-type pronoun strategy. If one wants to deviate from the preferred patterns, then accommodation is needed. That is, more contexts are needed to allow the non-preferred patterns. As suggested by one reviewer, all the consequent clauses in (6) are imperative sentences, hence one could say that this type of sentence is one type of such contexts.
We could view the hierarchy above in the following ways: the one on the left is more suitable for being a bound variable, and the one to the right is less so; or alternatively the one on the right is more suitable to be an E-type pronoun, and the one on the left is less so. Under this view, it is neither true that only a wh-phrase is allowed to be a bound variable and can thus appear in the consequent clause of a bare conditional, nor is it true that only a pronoun is allowed to be an E-type pronoun and can thus appear in the consequent clause of a ruguo/dou conditional, though these are the preferred patterns, and any deviation from these patterns require accommodation or additional context. Hence pronouns can be a bound variable and thus appear in the bare conditional if suitable contexts are provided, one such context is suggested in Aoun and Li (1990) that a pronoun can be a bound variable if its antecedent appears outside a tensed clause which contains the pronoun; otherwise it will be a referential pronoun, as will be discussed in details below. This helps explain why there are sentences like (6) in Chinese.

Besides, since a bound variable interpretation is only the preferred strategy for wh-phrases and an E-type pronoun interpretation is the preferred one for pronouns, it is easy to understand now why we also found cases where wh-phrases can appear in the consequent clause of a ruguo/dou conditional, and why pronouns sometimes do appear in the bare conditional. Therefore, what Cheng and Huang propose is the best fit for the use of wh-phrases and pronouns in the consequent clauses of a conditional sentence in Chinese, though we do find exceptions, which are the non-preferred cases requiring additional contexts to accommodate their appearance.

The above account helps explain one fact, as pointed by James C.-T. Huang (p.c.): although the pronoun ta ‘he/she/him/her’ can appear in some bare conditionals, we can only use shei in the typical or primitive bare conditional like the ones given in (2), namely that other NP forms, for instance ta, are not allowed. The question is why ta cannot appear in sentences like (2).

As pointed by Aoun and Li (1990), Chinese pronouns are different from their English counterparts in the sense that they can be bound by a quantifier only in some contexts, which is why ta can’t be bound by the universal quantifier meige ren ‘every person’ in (29) below.

(29) a. Meige ren dou xihuan ta de baba.  
Every-cl person all like he DE father  
‘Everyone likes his father.’
b. Meige ren dou shuo ta xihuan Lisi.  
Every-cl person all say he like  
‘Everyone says that he likes Lisi.’

5. Since sentences like (2) are very simple, we call them primitive bare conditionals in the following discussion.
The sentences in (29) indicate that *ta* cannot be a bound variable in contexts like (29) and it is more like a referential pronoun that finds its antecedent from the previous discourse.6

Aoun and Li further point out that *ta* can be a bound variable under their minimal disjointness condition. They claim that *ta* can be bound by a quantifier if there is an intervening operator in the minimal domain for *ta*, and *ta* has to be free in this minimal domain according to Binding Condition B (Chomsky, 1981). We think that Aoun and Li are correct in the sense that Chinese pronoun *ta* can be a bound variable only if certain conditions are satisfied, though we do not agree with them on the specific condition that they propose in their article. Hence, it is suffice to say that the default interpretation for *ta* is not a bound variable but a referential pronoun. It can be a bound variable only under certain conditions.

Since bare conditionals use the unselective binding strategy, and according to BVH, a wh-phrase is preferred over a pronoun, hence a wh-phrase is used. This preference is further supported by the fact that using a pronoun in a bare conditional may lead to different interpretations, as a pronoun can be referential or bound, though using the same wh-phrase in the consequent clause as the one appearing in the antecedent does not lead to any ambiguity. Since the pronoun strategy requires appropriate contexts and may lead to ambiguity, and a wh-phrase is an ideal variable and does not lead to any ambiguity, using a wh-phrase in a bare conditional is preferred over a pronoun.

Besides, as pointed out above, a pronoun can be used as a bound variable only if the content of the first clause is accommodated, by local accommodation, cf. Heim (1982), when interpreting the second clause, or the second clause is made subordinate to the operator that also has scope over the first clause, the so-called modal subordination, as discussed in Roberts (1987); in both situations the pronoun in question can be a bound variable if certain conditions are satisfied, hence the possibility of a pronoun in a bare conditional sentence.

Furthermore, the sentence connective ‘*jiu*’ could be considered as playing the role of a trigger for modal subordination, which may help explain why some bare conditionals require it to appear, or sound better with its appearance when *ta* is used in the consequent clause, as *jiu*’s appearance may prevent *ta* from being interpreted as a referential pronoun and force it to be anaphoric to the wh-phrase in the

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6. Unlike what was hinted at by an anonymous reviewer, we do not claim that pronouns in Chinese cannot function as a bound variable under ANY context, and we think that they can be bound variables under appropriate contexts, as exemplified below.

(i) Meige xuesheng dou cong wo zheli na-zou-le tade zuoye.
   every student all from I here take-away-Perf his homework
   'Every student took away his homework from me.'
antecedent clause, for instance, *shei xian lai, ta jiu xian chi*. Notice that using *ruguo* in the above example does not sound that well, ?*ruoguo shei xian lai, ta jiu xian chi*. In fact, with *jiu* appearing in the second clause, all the examples in (2) become acceptable, which further supports our claim that *jiu* is a trigger for modal subordination. This also show that *jiu* is another example of accommodation contexts.

Another question is why the bare conditional requires the same wh-phrase, exhibiting the so-called matching effect, and does not allow a consequent clause with no anaphoric NP in it? We think this is because that a bare conditional has to depend on the anaphoric strategy to make the two clause mini-discourse coherent; otherwise, they may be considered as two independent sentences, not being recognized as bare conditionals. Unlike a *ruguo/dou* conditional which has sentential connectives to make its two clauses connected and coherent, a bare conditional has no connectives in its two clauses, so it has to depend on the anaphoric strategy to make the two clauses connected, forming a coherent mini-discourse. There are two ways to make the two clauses coherent: (a) the same wh-phrase and (b) a pronoun that depends on the wh-phrase in the antecedent of the conditional sentence. Since the same wh-phrases are certainly related to each other; actually they are identical, the coherence of the two clause mini-discourse is guaranteed. The use of (b) can also give us a coherent mini-discourse if the pronoun has the wh-phrase in the antecedent as its antecedent. Although both ways can establish the connection between the antecedent and the consequent of a conditional, the use of (a) does not lead to any ambiguity, and the use of (b) does give us an ambiguity, as a pronoun can be a bound variable, an E-type pronoun, and a referential pronoun. Since the same wh-phrase is not ambiguous, it should be preferred over the use of a pronoun, which may be an additional reason why a bare conditional prefers a wh-phrase over a pronoun in its consequent clause.

Furthermore, the coherence requirement also helps explain why it has to be the same wh-phrase in the antecedent and consequent, as no coherence will be produced if different wh-phrases are used in the antecedent and the consequent of a conditional, thus accounting for the matching effect. Since different wh-phrases are apparently not related to each other, there will be no coherence between the two clauses of a conditional, and the two clauses in question will not form a conditional.

Besides, the coherent requirement also helps explain why a bare conditional does not allow a consequent clause with no phrases that are anaphoric to the wh-phrase in the antecedent, as the coherence requirement will not be met if nothing in the consequent clause is related to the wh-phrase in the antecedent clause. Since *ruguo/dou* conditionals have other ways such as connectives like *ruguo…jiu* and *dou* to make the mini-discourse coherent, they do not need to appeal to the anaphoric strategy, though they are compatible with it. Since these conditionals do
not depend on the anaphoric strategy, different wh-phrases are allowed in these conditionals, as noted by one of the reviewers, where the two wh-phrases are not related to each other and can thus be different from each other:

(30) (wulun) ni qipian na-ge ren, shei dou hui shuo ni bu daode.
    ‘Regardless of which person you cheat, everybody will say you are immortal.’

Notice that (30) can also be grammatical with no wh-phrase in the second clause, as shown below, where *ta* can mean someone salient in discourse, e.g. Zhangsan, or it is interpreted as a bound variable, co-varying with *na-ge ren*:

(30’) (wulun) ni qipian na-ge ren, ta dou hui shuo ni bu daode.
    ‘Regardless of which person you cheat, he (= Zhangsan, or the person you cheat) will say you are immortal.’

Since the coherence between the two clauses are achieved by sentence connectives, *ruguo/dou* conditionals behave differently from the bare conditional and they do not observe the same wh-phrase constraint, and even allow a consequent clause with no anaphoric NP to the wh-phrase in the antecedent clause.


Although Lin (1996) also points out that a bare conditional can have a pronoun in its consequent clause and *ruguo/dou* conditionals can have a wh-phrase in their consequent clauses, we differ from him in the following aspects. Firstly, Lin claims that a wh-phrase can appear in the consequent clause of a *ruguo/yaoshi* conditional only if the wh-phrase precedes the leading element *ruguo/yaoshi*, as shown in the patterns below (Lin’s (15): p291):

*Ruguo/yaoshi*-conditionals

1. Ruguo/Yaoshi … wh ….. ta/*Wh …
2. Wh ruguo/yaoshi ….. Wh/ta

However, we think a wh-phrase can appear in the consequent clause of these conditionals without requiring it to appear before the leading element, as exemplified by sentences like (7).

Secondly, we differ from Lin in not claiming that a pronoun can appear in the consequent clause of a bare conditional only if the sentence in question describes a one-case situation, namely that there is a uniqueness requirement on the pronoun, and only one individual can satisfy the requirement of the pronoun. In other words, Lin’s view is that, when there is more than one individual that can
satisfy the requirement described by the sentence, only wh-phrases are allowed in the consequent clause of the bare conditional. Lin calls the two situations one-case and multi-case bare conditionals, respectively. Lin claims that the pronoun in the consequent clause of a bare conditional corresponds to the one-case situation. He states that “In fact, they [the pronouns] not only can but must pick out a unique referent.” (Lin (1996): p250). He further claims that “Significantly, if the anaphoric wh-phrase [in the consequent clause] is replaced by a pronoun, the antecedent wh-phrase must refer to a unique referent. The ‘more than one person’ reading disappears.” (Lin (1996): p250). Hence, Lin proposes the following condition to govern the distribution of donkey pronouns in bare conditionals:

(31) Condition on Donkey Pronouns in Bare Conditionals
A donkey pronoun in a bare conditional is felicitous only if it picks out a unique referent.

Lin uses the distinction between one-case and multi-case situations to explain why the pronoun \textit{ta} is not allowed in bare conditionals like (2), as he thinks that there exists a conflict between the use of a pronoun in the consequent clause and the wh-phrase in the antecedent clause: the use of a pronoun requires a unique referent of the wh-phrase in the antecedent clause, but the wh-phrase in the antecedent clause in (2) is only compatible with multi-case situations, as the operator NEC is similar to \textit{always} and \textit{usually} that carry a plurality presupposition, as suggested in de Hoop and de Swart (1989) and Chierchia (1992, 1995).

However, we think that the distinction between one-case and multi-case situations is not the correct factor to explain why the pronoun \textit{ta} is not allowed in bare conditionals like (2). Below we show that even Lin’s own one-case sentences support our position, as all his so-called one-case sentences are compatible with multi-case interpretations (Lin’s (9): p217–218).

(32) a. Shang ci shei mei jiang-wan, jintian jiu you shei/ta xian kaishi.
    last time who not talk-finish today then with who/him first begin
    ‘Today let us begin with whoever did not finish his talk last time.’

b. Ni zuotian gen shei yi zu, jintian ni jiu haishi gen shei/ta yi zu.
    you yesterday with who one group today you then still with who/him one group
    ‘Whoever you were in a group with yesterday, you will be in the same group with him today.’
c. Shei shang xueqi na di-yi-ming, shei/ta zhe xueqi jiu who last semester get top-one who/him this semester then keyi/bixu dang banzhang, may/must serve class-leader
‘Whoever’s performance was the best last semester, he may/must serve as the class leader this semester.’

d. Shei jishu zui quanmian, jiu rang shei/ta who skill most good-at-every-respect then let who/him zuo zhongfeng.
do center
‘lit. Whoever has the best skill in every respect, let him play the center.’

Lin thinks that all the bare conditional sentences in (32) have a one-case reading only, i.e., they are not compatible with a multi-case reading, with ta in the consequent clause, which he thinks is why they allow ta to appear in their consequent clauses. However, these sentences are perfectly compatible with multi-case readings, as indicated by the possibility of using a wh-phrase in the consequent clause in (32). Besides, sentence (32a), with ta in the consequent clause, can be used to describe the following situation: there are three discussion groups in a class; although each group had some presentations yesterday, none of them finished, and it happened to be true that each group had one person who did not finish his/her presentation. Sentence (32b) can certainly be used to describe different groups. In that case, the people in different groups will have a different referent for ta in the sentence. Hence ta can vary with groups.

Notice that ni ‘you’ in (32b) is not a 2nd person deictic, but a generic use of it, meaning “one” or “each one.” Sentence (32c) can be applied to different classes, and thus each class can have a top student that is the referent of ta. Each grade can have a top student, too. Sentence (32d) can be applied to different teams. With each team having its center-forward, there will be different center-forwards that are the referents of ta, corresponding to the relevant team. Hence, all the sentences in (32) are compatible with multi-case readings, even with ta in the consequent clause.

From the discussion above we can see that Lin’s one-case vs. multi-case distinction is not the correct factor for distinguishing the possibilities of using shei and ta in the consequent clause of a bare conditional. Actually both ta and shei can be used in one-case and multi-case situations.

Lastly, Lin proposes different treatments for the donkey pronouns in bare and ruguo/dou conditionals. He claims that the pronoun in the consequent clause of the former is a Heimian definite with a uniqueness condition, but that of the latter, an E-type pronoun, though both types of pronoun can only be used in the
one-case situation and cannot appear in the multi-case situation. However, we treat the pronouns in both conditionals the same: they can be an E-type pronoun that has a uniqueness requirement on its antecedent, relativized to a situation variable $s$, and a bound variable which corresponds to the unselective binding interpretation of the pronoun. We take a Heimian definite with a uniqueness condition to be the same as an E-type pronoun, though Lin thinks they are not. Besides, we also differ from Lin in not claiming that the one-case vs. multi-case distinction corresponds to the use of pronouns and wh-phrases in the consequent clause of all the conditionals discussed in this article. We think both pronouns and wh-phrases can appear in one-case and multi-case situations, depending on context, as argued by Heim (1990) that all the unselective binding cases can actually be represented using the E-type pronoun strategy relativizing to the minimal situation.

7. Conclusions

In this article, we have re-examined the three types of conditional sentences in Chinese, as discussed in Cheng and Huang (1996). Although we agree with them on the necessity of the two interpretation strategies (unselective binding and E-type pronoun) in natural language, we have shown that there are apparent exceptions to the claimed correspondence between the two strategies and sentence types and the complementary distribution between wh-phrases and other NPs in bare conditionals and ruguo/dou conditionals. We think that the patterns proposed in Cheng and Huang are the default cases, and their claims are best viewed as the ideal uses of wh-phrases and pronouns in Chinese conditional sentences. We thus propose that Chinese conditionals be constrained by the Bound Variable Hierarchy (BVH): **Wh-phrases/Reflexives >> Pronouns/Demonstratives**: wh-phrases are preferred in a bare conditional, and pronouns take priority in a ruguo/dou conditional, and any deviation from the preferred patterns requires accommodation or additional contexts, which is why we do find exceptions to the preferred uses of wh-phrases and pronouns.

Besides, we have tried to explain why the pronoun $ta$ is not allowed in the primitive bare conditional by appealing to the assumptions that $ta$ is interpreted as a referential pronoun by default, and it can be a bound variable only with appropriate contexts, and wh-phrases do not introduce discourse referents outside their own clause domain. We could also use the BVH to help explain why a pronoun is not preferred in a bare conditional, as it is not the preferred choice, and when it is used, additional context is required, which is why primitive bare conditionals like (2) are at odds with a pronoun, as there is not enough context to allow its use. We have also briefly compared our analysis with that of Lin (1996), and we differ from
him in the following aspects: (i) how to account for the fact that the pronoun ta is not allowed in the so-called primitive bare conditional like (2); (ii) whether pronouns and wh-phrases can be interpreted using the E-type pronoun or unselective binding strategy; and (iii) how to treat the pronouns in the consequent clause of all the three types of conditionals.

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