Deriving counterfactuality in Mandarin Chinese *yaobushi* conditionals[1]

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1. Introduction

Counterfactual conditionals (henceforth, CF) have raised great interest in the field of generative grammar, since, in many Indo-European languages, counterfactuality has a tight connection with tense, aspect, and mood elements. Accordingly, generativists are concerned with the issue of which grammatical construction, if any, expresses the meaning of counterfactuality, and how the semantics of counterfactuality is derived and composed in a language.

However, in the Chinese literature, CF have not received much attention. In this study, we are concerned with two types of conditional constructions: *yaoshi* 'if' and *yaobushi* 'if-not', focusing on the differences and similarities between these two types of conditionals. Morphologically, *yaobushi* consists of a negation morpheme *bu* 'not' and *yaoshi* 'if', which can be further decomposed into two parts: an epistemic modal *yao*, and a copular *shi*. Semantically, *yaobushi* constructions convey only the meaning of counterfactuality, as in (1 b). Unlike *yaobushi* conditionals, conditionals headed by the positive complementizer *yaoshi* can receive an indicative, as in (1 a, i) as well as a counterfactual interpretation as in (1 a ii), depending on the context.

(1) a**. yaoshi** zoutian ni qu Milan, ni jiu hui kanjian ta.
if yesterday you go Milan you then will see he
i. 'If you went to Milan yesterday, then you were going to see him.'(IND)
ii. 'If you had gone to Milan yesterday, then you would have seen him.'(CF)
b. **yaobushi** zoutian ni qu Milan, ni jiu hui kanjian ta.
YAOBUSHI yesterday you go Milan you then will see he
'If you hadn't gone to Milan yesterday, then you would have seen him.'(CF)

[1] The following abbreviations are used in this paper:
CL: classifier EXP: experiential FUT: future tense NEG: negation Prf: perfective s: singular

Yaobushi conditionals also contrast with *yaoshi* conditionals and English CF in that they require the proposition expressed by the clause embedded in *yaobushi* to be true and the proposition expressed by the consequent to be false, whereas no such a restriction is observed in *yaoshi* conditionals and English CF[2].

The research questions we will explore in this paper are as follows: first, why is an indicative interpretation not available in *yaobushi* conditionals? Second, what is the contribution of the negation morpheme *bu* 'not' in the complementizer? Finally, we will examine how the semantic composition of a *yaobushi* sentence is achieved and offer an account of the discrepancies between *yaobushi* and *yaoshi* clauses mentioned above

The paper is organized as follows: in section 2, we discuss previous analyses on CF, and show that they cannot be applied to *yaobushi* conditionals. In section 3, we explore the syntactic and semantic properties of *yaoshi/yaobushi* conditionals in depth, and demonstrate the similarities and differences between these two types of conditionals. We suggest that two covert operators, a factive operator and an *only*-type focus operator, together derive counterfactuality in *yaobushi* conditionals. In section 5, we conclude this study.

2. Literature

In this section, we review three papers on CF. The first paper is Iatridou (2000) on the ingredients of counterfactuality. Based on cross-linguistic observations on

[2] For the sake of convenience, in this paper the complement clauses of the complementizer *yaobushi/yaoshi* are referred to as p, and the full clauses including the complementizer *yaobushi/yaoshi* are labeled as the antecedent. We use q or the consequent clause interchangeably when we refer to the clause which follows the antecedent clause. Notice that in *yaobushi* conditionals, the propositions expressed by p and the antecedent clause are different; the latter, but not the former, contains the negation *bu* 'not' as part of the proposition.

Indo-European and Indo-Aryan languages, Iatridou proposes that the exclusion feature, which is conveyed by a form of past tense morphology, is the key ingredient of counterfactuality. Since Iatridou's exclusion feature analysis only applies to languages where tense morphology is available, Nevins (2002) extends his research to languages without overt tense morphology, including Mandarin Chinese, and associates the presence or absence of the exclusion feature strategy in a language with the ability to cancel the falsity of the proposition expressed by *if*-clauses. When a language uses the exclusion feature in the CF, the falsity of the proposition expressed by the *if*-clause can be cancelled, but it is not the case for languages without the exclusion feature. Nevertheless, his account does not explain how counterfactuality is derived in these languages without the exclusion feature. Lastly, we look at Jiang (1998). Jiang examines six potential grammatical expressions for counterfactuality in Mandarin and concludes that Mandarin does not have any counterfactual markers. He argues that sentences are understood counterfactually or indicatively depending on the current pragmatic context. However, as shown in the introduction, *yaobushi*-conditionals, unlike *yaoshi*-conditionals, are not ambiguous between an indicative and a counterfactual meaning; they only receive the interpretation of CF. Thus, the nature of counterfactuality in *yaobushi* conditionals remains mysterious under these three analyses. In the following sections, we shall take a closer look at *yaobushi* conditionals and provide an analysis in section 4.

2.1 An exclusion feature on counterfactuals in languages with overt tense Morphology (Iatridou 2000)

In her work on counterfactuality in Indo-European languages, Iatridou (2000) analyzes the past tense morphology in CF, such as (2), from Modern Greek, as an operator bearing an exclusion feature. The schematic meaning of this exclusion

feature is provided in (3), where T(x) stands for Topic(x), and C(x) is "the x that for all we know is the x of the speaker" (Iatridou 2000: 246). Assuming that tense is only past or present, and the future is modal, when the exclusion operator functions on the domain of time, the topic time (T(t)) excludes the utterance time (C(t)), and thus temporal exclusion results in so-called past tense; when the exclusion operator ranges over the domain of possible worlds, the actual world or the utterance world (C(w)) is excluded from the topic world (T(w)), and this modal exclusion results in counterfactuality.

(2) An eperne afto to siropi, θa γ$_1$inotan kala.
if take/Past/Imp this syrup FUT become/Past/Imp well
'If he took this syrup, he would get better.'

(Iatridou 2000:234)

(3) a. T(x) excludes C(x).
b. x can range over times or worlds.

Furthermore, based on data from Greek, Hindi, German and Italian, she claims that neither aspect morphology nor subjunctive/conditional mood is a necessary component of CF; instead, past morphology plays the main role in determining the meaning of counterfactuality. Iatridou's work is nevertheless restricted to languages which employ tense morphology in CF, and she does not address the issue of how counterfactuality is achieved when tense morphology is not available, as in Mandarin, among others.

2.2 Specialized complementizers in languages without overt tense morphology (Nevins 2002)

To our knowledge, Nevins (2002) is the first paper that brings up the issue of CF in languages which do not resort to tense information to encode counterfactuality. He

observes that languages like Mandarin, Turkish, Tagalog, Hebrew, and Slovenian choose a special form of complementizer in CF. We summarize his observations, along with Iatridou's (2000) findings in the table below:

(4) Strategies to form CF

Strategies	Languages
Double layers of tense	e.g. English, Modern Greek
Using a spatial displacement marker	e.g. Burmese
Using a special complementizer exclusively	e.g. Mandarin, Tagalog, Slovenian, Turkish
Using a special complementizer, or double layers of tense	e.g. Hebrew

Nevins notes a correlation between the cancellability property and the strategies languages employ to convey counterfactuality. He proposes a generalization that in languages with an exclusion feature in CF, the falsity of the proposition expressed by the *if*-clause can be cancelled; on the other hand, in languages with special complementizers in CF, the falsity of the proposition expressed by the *if*-clause cannot be cancelled. For instance, in English, a language which uses past tense as the exclusion feature in CF, the falsity of the proposition expressed by the antecedent is implied, rather than presupposed, and can thus be cancelled by a subsequent statement, which asserts the truth of the proposition expressed by the *if*-clause, without incurring contradiction (Anderson 1951, Stalnaker 1975, von Fintel 1998, among others)[3]. This

[3] Not all English CF have this cancellability property. As reported in Ippolito (2003), the falsity of the antecedent in English Mismatched Past CF cannot be cancelled as easily as English Past CF. Mismatched Past CF refer to a construction where the verbal morphology in the conditionals does not match the meaning of the temporal adverb in the antecedent:

(i) If Charles *had taken* his Advanced Italian test *tomorrow*, he would pass. (Ippolito 2003: 147)

In Mismatched Past CF, the falsity of the antecedent clause cannot be cancelled. Compare (ii) with (5).

(ii) #If Charles *had gone* to Boston by train *tomorrow*, Lucy would have found in his pocket the

is shown in (5).

(5) If the patient had taken arsenic, he would have shown just exactly those symptoms which he does in fact show. So it's likely that he took arsenic.

In contrast, in languages with a special form of complementizer in CF, the counterfactuality cannot be cancelled. The following Mandarin example illustrates this point:

(6) #yaobushi ta mei you fengzhen, tade pifu shang hui you bao.
YAOBUSHI he not have measles his skin surface will have bump

Qishi, yinwei tade pifu xianzai you zhei-yang-de bao, ta
Actually since his skin now have those-kind-DE bump he
hoaxing you fengzhen.
appear-to have measles

.'If it were not the case that he does not have measles, he would have bumps on his skin. Actually since he does have those kinds of bumps on his skin now, he appears to have measles.'

Given that this generalization holds cross-linguistically, it leaves us with the questions of how special complementizers contribute to counterfactuality in a language and how the property of cancellability relates to the use of special complementizers[4]. We next take a look at Jiang's (1998) examination of the

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ticket that she in fact found. So he must be going to Boston tomorrow. (Ippolito 2003: 147)

[4] A minor question about Nevins' work is that in languages like Hebrew, where both two strategies-past tense morphology, and a special complementizer, are available, what determines the speakers to choose one over another?

expression of counterfactuality in Mandarin.

2.3 No counterfactual markers in Mandarin (Jiang 1998)?

Jiang (1998) investigates whether there is any grammatical marker of counterfactuality in Mandarin. He examines six features: the adverb *zao* 'early', aspectual markers, sentential particle *le*, the adverb *zhende* 'really', negative complementizers, and contraposition. He argues that there is no counterfactual marker in Chinese and claims that counterfactuality is just an implicature derived from pragmatic deduction, and therefore, the meaning of counterfactual cannot be conveyed without an appropriate context.

We will not look at all the six features discussed in his paper. What is relevant here is that Jiang argues that the negation *bu* 'not' in *yaobushi* is not a counterfactual marker, despite the fact that *yaobushi* sentences are always counterfactual. In Jiang's account, counterfactuality in a *yaobushi* conditional is derived by negating the complement clause of *yaobushi*, i.e., the clause excluding the negative complementizer *yaobushi*. Jiang claims that the situation described in the complement clause of *yaobushi* generally obtains in the past, and thus becomes a fact, which cannot be changed anymore; *yaobushi* conditionals are understood counterfactually since the negation *bu* built into the complementizer negates such a fact. We agree with Jiang in that *bu* in *yaobushi* conditionals is not in-and-of-itself a counterfactual marker and also with his intuition that the negation *bu* operates on the proposition expressed by the complement clause of *yaobusi*, which must hold in the actual world. However, we disagree that the situation described in the embedded *yaobushi*-clause is always confined to the past; an embedded *yaobushi*-clause can introduce a situation which has not yet been carried out, and the sentence can still convey the

counterfactual meaning, as shown in (7).

(7) yaobushi mama mingtian hui lai, ta ye bu hui zai jia.
YAOBUSHI mother tomorrow will come he also not will at home
'If it were not the case that Mother is going to come tomorrow, he would not be at home.' (CF)

The event of mother's coming will obtain in the future, and thus, it seems that whether a *yaobushi* sentence is understood counterfactually is independent from the time interval in which the situation described in the antecedent clause unfolds. Moreover, it is not clear why negating the "fact" can induce the counterfactual meaning and why the proposition expressed by the complement clause of *yaobushi* clause must be a fact. Because of this, we do not adopt Jiang's analysis with respect to how counterfactuality is derived in *yaobushi* conditionals. Instead, we will present in section 4 an alternate analysis that accounts for the observations and intuitions mentioned in Jiang's work.

To recap, in this section, we have reviewed accounts of counterfactuality in both Mandarin and in other languages, pointing out their strengths and short-comings that require further analysis. We will now present our own account of *yaobushi* conditionals that addresses these remaining questions. We begin by reviewing the formal properties of *yaoshi* and *yaobushi* conditionals.

3. Formal properties of *yaoshi/yaobushi* conditionals

In this section, we examine the syntactic and semantic properties of *yaoshi/yaobushi* conditionals. First, we show that *yaoshi/yaobushi* conditionals involve adjunction rather than subordination or coordination. We also show that *yaobushi* conditionals are different from their *yaoshi* counterparts in that *yaobushi* clauses cannot move

around the matrix clause, whereas *yaoshi* clauses can either precede or follow the matrix clause. Third, we show that despite the presence of the negator *bu* 'not', *yaobushi* conditionals cannot license negative polarity items (henceforth NPIs), in contrast to *yaoshi* conditionals, where NPIs are licensed. Finally, we explore the differences between *yaoshi* and *yaobushi* conditionals with respect to their interpretation properties. We show that *yaobushi* conditionals presuppose the proposition expressed by the complement clause of *yaobushi*, that is, p, to be true, and entail that the proposition expressed by the consequent is false when the aforementioned presupposition is satisfied. Both of the properties are absent in *yaoshi* conditionals.

3.1 The syntactic properties of *yaoshi/yaobushi* conditionals

3.1.1 *Yaoshi/yaobushi*-clauses as adjuncts

In this section, we discuss the question of whether the antecedent clause and the consequent clause in *yaoshi/yabushi* sentences involve subordination or coordination. We believe that, like English *if*-clauses, which are argued to be adjuncts (Iatridou, 1991, Haegeman, 2003, and Bhatt and Pancheva, 2005), Mandarin *yaoshi/yaobushi* clauses are also adjuncts. The first piece of evidence comes from the separability of *yaoshi/yaobushi* clauses. *Yaoshi/yaobushi* clauses can front to the sentence-initial position on their own, as in (8b and 9b), while the whole conditional sentence must follow verbs such as *xiangxin* 'believe', as shown in (8a and 9a):

(8) a. John xiangxin [**yaoshi** Bill lai, Mary jiu hui lai].
John believe **if** Bill come Mary then will come
'John believes/believed that if Bill comes, then Mary will come.' (IND)
'John believes/believed/that if Bill came, then Mary would come.' (CF)
b. [**yaoshi** Bill lai]$_i$, John xiangxin [t_i, Mary jiu hui lai]
if Bill come John believe Mary then will come

(9) a. John xiangxin [**yaobushi** Bill lai, Mary jiu hui lai].
John believe YAOBUSHI Bill come Mary then will come
'John believes/believed that if Bill hadn't come, Mary would have come.' (CF)
b. [**yaobushi** Bill lai]$_i$, John xiangxin [t_i, Mary jiu hui lai]
YAOBUSHI Bill come John believe Mary then will come

Notice that in (8b) and (9b), there is no conditional relationship between Bill's coming and John's belief.

Second, like most adjuncts, *yaoshi/yaobushi* clauses can be omitted, leaving the matrix clauses alone without affecting the grammaticality of the sentences, though the conditional meaning disappears accordingly.

(10) a. (yaoshi John hen shengqi), ta hui zhao Mary.
if John very be.mad he will look.for Mary
'If John is mad, he will look for Mary.'
'If John were mad, he would look for Mary.'
b. (yaobushi John hen shengqi), ta hui zhao Mary.
YAOBUSHI John very be.mad he will look.for Mary
'If John weren't mad, he would look for Mary.'

Having established that the antecedent clauses in *yaoshi/yaobushi* conditionals are adjuncts, the next question is what position they are adjoined to. The surface word order suggests that *yaoshi/yaobushi* clauses are in a higher position than the matrix clause. However, there is a structural difference between *yaoshi* and *yaobushi* conditionals. While it is possible to postpose the antecedent clause in *yaoshi*

conditionals, it is not possible in *yaobushi* conditionals; *yaobushi* clauses must precede their consequents, as shown in (11) and (12).

(11) a. [**yaoshi** ta qu-le meiguo], ta mama hui banjia.
If he go-Prf America he mother will move
'If he went to America, his mother was going to move.' (IND)
'If he had gone to America, his mother would have moved.' (CF)
b. ta mama hui banjia,[**yaoshi** ta qu-le meiguo].
he mother will move, if he go-Prf America

(12) a.[**yaobushi** ta qu-le meiguo], ta mama bu hui banjia.
YAOBUSHI he go-Prf America he mother not will move
'If he hadn't gone to America, his mother would not have moved.' (CF)
b. *ta mama bu hui banjia,[**yaobushi** ta qu-le meiguo].
he mother not will move YAOBUSHI he go-Prf America

We claim that the sentence-final *yaoshi* clause is right-adjoined to a position lower than IP but higher than VP, when it appears after the consequent. This is shown in (13). Coreference between *ta* 'she' and *Mary* is possible in (13b) but prohibited in (13a); this indicates that the sentence-final *yaoshi*-clause is c-commanded by the matrix subject but not the matrix object, which we take to mean that it is higher than the object.

(13) a. *ta_i hui jiagei John, [**yaoshi** $Mary_i$ qu-le meiguo].
She will marry.to John, if Mary go-Prf America
b. John hui qu ta_i,[**yaoshi** $Mary_i$ qu-le meiguo].
John will marry her, if Mary go-Prf America
'John was going to marry her if Mary went to America.' (IND)
'John would have married her, if Mary went to America.' (CF)

However, VP adjunction is unavailable to *yaobushi* clauses. We will discuss the restriction on the position of *yaobushi* clauses in section 4.

3.1.2 The scope of the negator *bu* 'not': evidence from NPIs licensing

Thee two most frequently-used negation markers in Mandarin are *mei* and *bu*. *Mei* typically negates eventive predicates[5]. On the other hand, *bu* negates adjectives, stative verbs, or modal auxiliaries (Lin 2003: 429). The following examples demonstrate the differences between *mei* and *bu* regarding the facts discussed above.

(14) a. ta mei/*bu chi-wan fan. (with a change-of-state predicate)
henot eat-finish meal
'He did not finish the meal.'
b. ta *mei/bu piaoliang. (with an adjective)
she not beautiful
'She is not beautiful'
c. ta *mei/bu keneng/yigai lai. (with modals)
he not possible/should come
'It is impossible for him to come/He should not come.'

Both *Mei* and *bu* as well as *yaoshi* conditionals can license NPIs like *renhe* 'any' and *renheren* 'anyone'. (15) shows that *renhe* 'any' and *reheren* 'anyone' cannot survive in a declarative sentence without the help of the negations *mei* and *bu*.

[5] The only exception comes from the predicate *you* 'have'. Due to its idiosyncratic properties, *you* 'have' is stative but can only be negated by *mei*, this is shown in (i).

(i) ta mei/*bu you qian.
He not have money
'He has no money.'

(15) a. ta ***(mei)** you **renhe** wuqi.
he **not** have **any** weapon
'He does/did not have any weapons.'
b. ta ***(bu)** xiangxin **renheren.**
he **not** believe **anyone**
'He does not believe anyone.'

NPIs are licensed in the antecedent of a *yaoshi* conditional without the existence of the negation marker, as shown in (16).

(16) a. **yaoshi** ta you **renhe** wuqi, haiguan jiu bu hui kouliu ta.
If he have **any** weapon Customs then not will detain he
'If he has any weapons, the Customs will not detain him.'(IND)
'If he had any weapons, the Customs would not detain him.'(CF)
b. **yaoshi** ta xiangxin **renheren**, ta jiu bu hui shibai.
If he believe **anyone** he then not will fail
'If he believes anyone, he will not fail.' (IND)
'If he believed anyone, he would not fail.' (CF)

However, a *yaobushi*-clause cannot license *renhe* 'any' or *renheren* 'anyone'; the additional negation markers *mei* and *bu* are obligatory to render the sentences (17a) and (18a) grammatical.

(17) a. ***yaobushi** ta you **renhe** wuqi, haiguan jiu bu hui kouliu ta.
YAOBUSHI he have **any** weapon Customs then not will detain he
b. **yaobushi** ta **mei** you **renhe** wuqi, haiguan jiu hui kouliu ta.
YAOBUSHI he **not** have **any** weapon Customs then will detain he
'If it were not the case that he does/did not have any weapons, the Customs would detain him.' (CF)

(18) a. ***yaobushi** ta xiangxin **renheren**, ta jiu bu hui shibai.
YAOBUSHI he believe **anyone** he then not will fail

b. **yaobushi** ta **bu** xiangxin **renheren**, ta jiu bu hui shibai.
YAOBUSHI he **not** believe **anyone** he then not will fail

'If it were not the case that he does not believe anyone, he would not fail.' (CF)

Some NPIs require a local binding relationship with their licensors. For instance, as Hsieh (2004) notes, *ban-dian* 'half-bit' requires a clausemate negation, as in (19a). In (19b), the NPI *ban-dian* 'half-bit' and its licensor *mei* 'not' appear in different clauses, and the sentence is judged as ungrammatical.

(19) a. ta ***(mei)** he **ban-dian** jiu.
he not drink **half-bit** wine
'He did not drink any wine.'
b. *ta **mei** xiangdao [ta he-le **ban-dian** jiu].
he **not** think he drink-Prf **half-bit** wine

Note that, *ban-dian* 'half-bit' requires negation even in *yaoshi* clauses. This is shown in (20). Unlike *renhe* 'any' or *renheren* 'anyone', *ban-dian* 'half-bit' cannot be licensed in conditionals without negation (cf. (16)).

(20) a. ***yaoshi** ta he-le **ban-dian** jiu, ta laopo hui zhidao de.
if he drink-Prf **half-bit** wine he wife will know Part
b. **yaoshi** ta **mei** he **ban-dian** jiu, ta laopo hui zhidao de.
if he **not** drink **half-bit** wine he wife will know Part
'If he did not drink any wine, his wife was going to know.' (IND)
'If he hadn't drunk any wine, his wife would have known.' (CF)

The negator *bu* in *yaobushi* conditionals still cannot license *ban-dian* 'half-bit', as shown in (21a-b)[6].

[6] Though *yaobushi*-clauses cannot license *renhe* 'any', they nonetheless can license indefinite *wh*-words. Mandarin *wh*-words are considered as variables bound by various operators, and receive

(21) a. ***yaobushi** ta he-le **ban-dian** jiu, ta laopo bu hui shengqi.
YAOBUSHI he drink-Prf **half-bit** wine he wife not will be.mad
b. **yaobushi** ta **mei** he **ban-dian** jiu, ta laopo yiding hui shengqi.
YAOBUSHI he **not** drink **half-bit** wine he wife must will be.mad
'If it were not the case that he did not drink any wine, his wife must get mad.'

The last point about polarity licensing in *yaoshi/yaobushi* conditionals is that though *yaobushi* clauses cannot license NPIs, positive polarity items (henceforth, PPI)

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different interpretations (Cheng and Huang 1996, Cheng 1997):

(i) a. ta tingdao-le sheme? *covert [+Q]*
he hear-Prf what
'What did he hear?'
b. ta **sheme** **dou** ting. *universal quantifier introduced by dou 'all'*
he what all hear
'He listens to everything (any kinds of music).'
c. **yaoshi** ta tingdao-le **sheme**, ta hui gaoshu women. *covert existential quantifier*
if he hear-Prf **what** he will tell us
'If he heard something/anything, he was going to tell us.' (IND)
'If he had heard something/anything, he would have told us.' (CF)
d. **yaobushi** ta tingdao-le **sheme**, ta yei bu hui shengqi.
YAOBUSHI he hear-Prf **what**, he also not will be.mad
'If he hadn't heard anything, he would not have been mad.' (CF)

In (i a-c), the *wh*-word *sheme* 'what' can be bound by a Q-operator, a universal quantifier introduced by the adverb *dou* 'all', and an existential operator in *yaoshi* conditionals (see Cheng and Huang 1996 for the existence of an existential operator in Mandarin conditionals). (i d) shows that *sheme* 'what' gets an indefinite reading in *yaobushi* conditionals like (i c). These facts suggest the distribution of indefinite *wh*-phrases is broader than that of *renhe* 'any'.

In fact, Kuo (2003) proposes that indefinite *wh*-phrases are licensed by non-veridical operators; NPI *any* is licensed by downward-entailing operators; NPI *renhe* is licensed by anti-additive operators; NPI-minimizers, such as *bian-dian* 'half-bit', are licensed by antimorphic operators. These operators are in a proper subset relation as shown in (ii).

(ii) non-veridical operator ⊃ downward-entailing operators ⊃ anti-additive operators ⊃ antimorphic operators

The super-subset relation between the licensors explains different distributions of NPI *renhe* and *wh*-indefinites. Here we will not discuss the semantics of each type of operator, but simply point out that NPIs are not homogeneous in Mandarin; see (Zwarts 1998, Giannakidou 1998) for more details.

are legitimate in both *yaoshi* and *yaobushi* clauses[7]. For instance, as (22) shows, *yixie* 'some' cannot be licensed in the scope of negation. *Yaoshi* and *yaobushi* clauses behave the same with respect to licensing *yixie* 'some' as shown in (23) and (24), although *yaobushi* contains the negative morpheme *bu* 'not'.

(22) a. ta he-le yixie jiu.
he drink-Prf some wine
'He drank some wine.'
b. *ta **mei** he yixie jiu.
he not drink some wine
* 'He did not drink some wine.'

(23) **yaoshi** ta he-le **yixie** jiu, ta laopo jiu hui shengqi.
if he drink-Prf **some** wine he wife then will be.mad
'If he drank some wine, then his wife was going to be upset.' (IND)
'If he had drunk some wine, then his wife would have been upset.' (CF)

(24) **yaobushi** ta he-le **yixie** jiu, ta laopo bu hui zheme shengqi.
YAOBUSHI he drink-Prf **some** wine he wife not will this be.mad
'If it were not the case that he drank some wine, his wife wouldn't have been this mad.' (CF)

We have seen that, first, the negation *bu* contained in *yaobushi* cannot license NPIs in the antecedent clauses; second, *yaobushi* clauses and *yaoshi* clauses pattern

[7] Note that the consequents of *yaoshi/yaobushi* conditionals behave alike in that they can license PPIs but not NPIs, when there is no overt negation in the consequent clause.

(i) yaoshi John lai-le, wo hui zhunbei yixie/*renhe jiu.
If John come-Prf I will prepare some/*any wine
'If John came, I will prepare some/*any wine' (IND)
'If John had come, I would have prepared some/*any wine.' (CF)

(i) yaobushi John lai-le, wo hui zhunbei yixie/*renhe jiu.
YAOBUSHI John come-Prf I will prepare some/*any wine
'If John hadn't come, I would have prepared some/*any wine.' (CF)

alike in that they are able to license PPIs. In the next section, we will investigate more semantic properties of *yaobushi* conditionals.

3.2 The semantic properties of *yaoshi/yaobushi* conditionals

In the last section, we examined the syntactic properties of *yaoshi/yaobushi* conditionals, and reached the conclusion that they both involve adjunction structurally, although the position of *yaobushi* clauses is more restricted than *yaoshi* clauses. We have also shown that the negator *bu* in *yaobushi* conditionals cannot license NPIs. The next step is to understand the meaning of *yaoshi/yaobushi* conditionals. As mentioned in the introduction, in *yaobushi* conditionals, p must be true and q must be false. In this section, we will explore this semantic requirement in depth.

3.2.1 The proposition expressed by a *yaobushi*-clause is presupposed to be false

In his paper on Mandarin CF, Nevins (2002) makes two important observations: first, *yaobushi* is not compatible with indicative conditionals, i.e., it can only be understood counterfactually. This point is illustrated in (25):

(25) **yaobushi** ni gen wo lai kan dianying, wo jiu hui yi-ge ren qu.
YAOBUSHI you with me come watch movie I then will one-CLperson go
'If you weren't coming with me to the movie, I would go alone.' (CF)
*'If you don't come with me to the movie, I will go alone.' (IND)

Second, the falsity of the proposition expressed by the antecedent is presupposed in *yaobushi* conditionals, and cannot be cancelled, whereas the counterfactuality conveyed in English CF is merely a conversational implicature, and is thus subject to cancellability. The relevant examples are repeated below.

(26) 'If the patient had the measles, he would have exactly the symptoms he has now. We conclude, therefore, that the patient has the measles.'

(27) #**yaobushi** ta mei you fengzhen, tade pifu shang hui you bao.
YAOBUSHI he not have measles his skin surface will have bump

Qishi, yinwei tade pifu xianzai you zhei-yang de bao, ta
Actually since his skin now have those-kind DE bump he
hoaxing you fengzhen.
appear-to have measles

'If it were not the case that she does not have measles, she would have bumps on her skin. Actually since she does have those kinds of bumps on her skin now, she appears to have measles.'

In (27), the proposition 'She did not have measles' is taken by the speaker as a fact, and therefore, the subsequent utterance cannot contradict this. In fact, any expression with the meaning of uncertainty is generally not compatible with *yaobushi*-clauses. This is shown in (28) and (29). The subjunctive morpheme *dehua* 'the.case' is allowed in the *yaoshi*-clause but is disallowed in the *yaobushi*-clause[8]:

(28) a. **yaoshi** ta qu-le meiguo **(dehua)**, ta mama jiu hui banjia.
if he go-Prf America **the.case** he mother then will move
'If he went to America, his mother will move.' (IND)
'If he had gone to America, his mother would have moved.' (CF)
b. (**yaoshi)** ta qu-le meiguo **dehua**, ta mama jiu hui banjia.
if he go-Prf America **the.case** he mother then will move

[8] Notice that in a situation where the speaker believes the truth or falsity of the preposition expressed by the antecedent, the subjunctive marker *dehua* cannot be used even in *yaoshi* conditionals.

(29) **yaobushi** ta qu-le meiguo (***dehua**), ta mama bu hui banjia.
YAOBUSHI he go-Prf America **the.case** he mother not will move
'If he hadn't gone to America, his mother would not have moved.' (CF)

As shown in (28), *yaoshi* 'if' can be omitted when the subjunctive marker *dehua* 'the.case' appears, and the sentence can still be understood as a conditional. (29) shows that *yaobushi* cannot co-occur with *dehua*. By using the subjunctive marker, the speaker does not commit himself to the truth/falsity of the proposition expressed by the antecedent. We suggest that this makes the utterance incompatible with *yaobushi* clauses, which requires authentication from the speaker on the truth of p. This predicts that expressions like *wanyi* 'by any chance' cannot occur in the context of *yaobushi*-clauses as well. This prediction is borne out as shown below:

(30) a. **yaoshi wanyi** ta qu-le meiguo, ta mama jiu hui banjia.
if **by.any.chance** he go-Prf America he mother then will move
'If, by any chance, he went to America, his mother will move.'(IND)
'If, by any chance, he had gone to America, his mother would have moved.'(CF)
b. ***yaobushi** **wanyi** ta qu-le meiguo, ta mama bu hui banjia.
YAOBUSHI **by.any.chance** he go-Prf America he mother not will move

According to Stalnaker (1973, 1974) and Kadmon (2002), presupposition is considered as old information, and part of the common ground shared by the participants, whereas assertion carries new information to the addressee. Yes/no questions also constitute a good test for presupposition, since the speaker does not commit himself to the truth or falsity of the proposition in question. Given these assumptions, consider the following scenario:

(31) A: Did John go to school yesterday?

B: #a. **yaobushi** John mei qu xuexiao,
YAOBUSHI John Neg go school
jiaokuan bu hui da tianhua gei ta.
instructor Neg will hit telephone to him
'If it were not the case that John did not go to school, the instructor would not have given him a call.' (CF)

b. **yaoshi** John qu-le xuexiao,
if John go-Prf school
jiaokuan bu hui da tianhua gei ta.
Instructor Neg will hit telephone to him
'If John went to school, the instructor will not give him a call.' (IND)
'If John had gone to school, the instructor would not have given him a call.'(CF)

Here, it is inappropriate to answer the question with a *yaobushi* conditional, since in that case, the speaker B must assume that the hearer A knows the truth of the p, i.e., 'John did not go to school'.

So far, we have seen that the proposition expressed by the complement clause of *yaobushi* is a presupposition, and it is required that this proposition be true. In what follows, we will show that *yaobushi* conditionals require that the consequent clause, q, be false.

3.2.2 The proposition expressed by the consequent clause must be false in *yaobushi* conditionals

Another interesting semantic property of *yaobushi* conditionals is that not only must p be true, but it is also required that q be false.

Let us illustrate with the following scenario. Mary did not pass the test this time, and her mother scolded her. Imagine further that Mary's mother scolds her regardless of whether Mary passed the test or not. In such a scenario, the speaker cannot utter the

yaobushi sentence in (32a). Instead, (32b) should be used.

(32) a. #**yaobushi** Mary mei tongquo kaoshi, ta mama haishi hui ma ta.
YAOBUSHI Mary not pass test her mother still would scold her
'If Mary had passed the test, her mother would still have scolded her.'
b. **yaoshi** Mary tongquo kaoshi, ta mama haishi hui ma ta
if Mary pass test her mother still would scold her
'If Mary had passed the test, her mother would still have scolded her.'

Similarly, a *yaobushi* sentence is infelicitous in a situation where the consequent must hold according to our knowledge about the actual world. This is shown in (33).

(33) a. **yaoshi** ni si-le, mingtian taiyang haishi hui cong dong bian shengqi.
if you die-Prf tomorrow sun still will from east side rise
'If you died, the sun would still rise from the east tomorrow.'
b. #**yaobushi** ni mei si, mingtian taiyang haishi hui cong dong bian shengqi.
YAOBUSHI you not die tomorrow sun still will from east side rise
'If you died, the sun would still rise from the east tomorrow.'

Thus, to summarize the formal properties of *yaoshi* and *yaobushi* clauses, in section 3.1.1, we argued that *yaoshi*/*yaobushi* clauses are adjuncts and that they are attached to a position above TP, higher than the matrix subject. In section 3.1.2, we examined the properties of the negative element *bu* 'not' contained in *yaobushi*. We showed that on one hand, the negator *bu* in *yaobushi* fails to license NPIs, and on the other hand, PPIs are licensed in *yaobushi* clauses. In section 3.2, we discussed the semantics of *yaobushi* conditionals, especially the requirements that the proposition expressed by the embedded *yaobushi* clause be presupposed to be true, and that the proposition expressed by the consequent be false. Evidence for the first part of the requirements- the proposition expressed by the embedded *yaobushi* clause is a presupposition- comes from the following three pieces of evidence: First of all, the

counterfactuality of *yaobushi* conditionals cannot be cancelled; second, the speaker cannot utter a *yaobushi* conditional if the hearer is agnostic about the truth of the proposition expressed by the embedded *yaobushi* clause; third, a *yaobushi*-clause cannot co-occur with any expressions which convey the speaker's uncertainty toward the truth/falsity of the proposition expressed by the antecedent, such as the subjunctive morpheme *dehua* 'the.case' and the adverb *wanyi* 'in any possibility'. The fact that the proposition expressed by the consequent in *yaobushi* conditionals must be false is also supported by the infelicitous *yaobushi* cases where the consequents necessarily hold in the actual world.

We will next propose an explanation of these formal properties of *yaobushi* conditionals.

4. An *only-if* analysis of Mandarin *yaobushi* conditionals

In this section, we will resolve the following puzzles raised in the previous discussion, and provide an adequate semantic analysis of *yaobushi* conditionals.

(i) How do we account for the failure of NPI licensing in *yaobushi* antecedents?

(ii) How do the semantic requirements on the truth or falsity of propositions arise in *yaobushi* conditionals?

(iii) Why is the word order [q, *yaobushi* p] not attested?

4.1 A factive operator blocks NPI licensing in *yaobushi* antecedent clause

The first issue we are concerned with is the licensing of NPIs in *yaobushi* clauses. It is well-known that NPIs are licensed in the context of downward entailment (DE) (Fauconnier 1975, Ladusaw 1980). Fauconnier (1975) and Ladusaw (1980) argue that an NPI is licensed iff it is in the scope of a DE operator (Progovac 1993: 152).

Examples in (34) show that *yaoshi* clauses, but not *yaobushi* clauses, can be a DE environment, and therefore, NPIs are licensed in the former but not in the latter.

(34) a. DE context: NPI licensed

yaoshi ta you **renhe** wuqi, haiguan jiu bu hui kouliu ta.
if he have **any** weapon Customs then not will detain he
'If he had/has any weapons, Customs will not detain him.' (IND)
'If he had had/had any weapons, Customs would not have detained him.'(CF)

b. Non-DE context: NPI not licensed

***yaobushi** ta you **renhe** wuqi, haiguan jiu bu hui kouliu ta.
YAOBUSHI he have **any** weapon Customs then not will detain he

Adopting Zwarts's (1995) and Giannakidou's (1998) analyses of NPIs, we assume that a factive operator is present in *yaobushi* clauses, and as an upward-entailing operator, it blocks the negator *bu* from licensing NPIs, but warrants the presence of PPIs. The relevant examples are repeated in (35). The notion of veridicality/factivity is defined in (36):

(35) a. ***yaobushi** ta you **renhe** wuqi, haiguan jiu bu hui kouliu ta.
YAOBUSHI he have **any** weapon Customs then not will detain he
b. **yaobushi** ta he-le **yixie** jiu , ta laopo bu hui zheme shengqi.
YAOBUSHI he drink-Prf **some** wine he wife not will this be.mad
'If it were not the case that he drank some wine, his wife wouldn't have been this mad.'

(36) Definition of (Non)veridicality (Giannakidou 1998: 106)
Let *Op* be a monadic propositional operator. The following statements hold:
(i) *Op* is veridical just in case *Op* $p \rightarrow p$ is logically valid. Otherwise, *Op* is nonveridical.
(ii) A nonveridical operator *Op* is antiveridical just in case *Op* $p \rightarrow \neg p$ is logically valid.

This intervention effect is manifested in other veridical contexts as well. Kuo (2003) observes that the Mandarin NPI *renhe* 'any' is ungrammatical when it is

embedded under assertive verbs and factive adversatives, as shown in (37) and (38) respectively.

(37) a. ta bu **xiwang** (you) **renhe** ren lai chao ta.
he not hope have any people come bother he
'He does not hope that anyone comes to bother him.'

b. *ta bu zhidao you **renhe** ren lai zhao ta.
He not know have any people come seek he
'He does not know that anyone came to see him.'

(Kuo 2003: 262)

(38) a. Zhangsan mei-you houhui qu-quo na-ge defang.
Zhangsan not-have regret go-EXP that-CL place
'Zhangsan did not regret that he had gone to that place.'

b.*? Zhangsan mei-you houhui qu-quo **renhe** defang.
Zhangsan not-have regret go-EXP any place
'Zhangsan did not regret that he had gone to any place.'

(Kuo 2003: 230)

4.2 The semantic requirements on *yaobushi* conditionals

The second question we examine has to do with the semantic requirements discussed in the last section - the proposition expressed by the embedded *yaobushi* clause must be true and the proposition expressed by the consequent must be false. Before we offer an account, let us take a look at the truth conditions of *yaobushi* conditionals, given in (39).

(39) Truth conditions of *yaobushi* p, q

	p	¬p	q	¬p→q
Possibility #1	1	0	1	0
Possibility #2	1	0	0	1
Possiblity #3	0	1	1	*
Possibility #4	0	1	0	*

Here p stands for the proposition expressed by the embedded *yaobushi* clause, and the proposition expressed by the antecedent clause is ¬p. 1 represents a proposition that is true in the evaluation world, and 0 represents a proposition that is false in the evaluation world. Let us illustrate with the sentence in (40).There are four possibilities regarding the truth of the statement in (40).

(40) **yaobushi** [$_p$ John$_i$ huijia-le], [$_q$ ta$_i$ mama jiu hui qu shichang].
YAOBUSHI John come.home-Prf he mother then will go supermarket
'If John hadn't come home, his mother would have gone to the supermarket.'

Possibility #1 is that John came home, and his mother went to the supermarket. The requirement on the truth of p is satisfied, but since the consequent is also true, contrary to the semantic requirement we discussed earlier; the conditional is judged as false. Possiblity #2 is that John came home, and his mother did not go to the supermarket. The requirement on the truth of p is satisfied, and the consequent is false; both of the semantic requirements are fulfilled and the conditional is judged as true. Possibility #3 is that John did not come home, and his mother went to the supermarket. In this situation, the truth of the sentence is undefined due to presupposition failure. This is signalled as * in the truth table. Possibility #4 is that John did not come home, and his mother went to the supermarket. In this situation as well, the truth of the sentence is undefined due to presupposition failure.

The truth table above shows that the only situation which makes *yaobushi* conditionals true is a situation where p is true (or ¬p is false) and q is false. We argue that the first part of the requirements is due to a factive operator, which takes p as its complement and brings to the sentence the presupposition that p is true. Regarding the requirement that q is false, we suggest that it is a result of an inference drawn from the combination of the presupposition and the entailment, as shown in

(41). The property of exclusiveness (i.e., q must be false for the conditional to be true) is reminiscent of the property of *only if*-conditionals. We therefore propose that there is a covert *only* focus element, which operates in *yaobushi* conditionals and entails that [$p \rightarrow \neg q$].

(41)
yaobushi p, q = [only if $\neg p$], q
Presupposition: p=1
Entailment: $p \rightarrow \neg q$
$\therefore q=0$

4.3 Unavailability of the order of [q, *yaobushi* p]

The last issue we will deal with concerns the order of the *yaoshi/yaobushi* clause with respect to the matrix clause. As mentioned above, that is, *yaoshi* clauses can either precede or follow the matrix clause, but the second option is not available for *yaobushi* clauses. Haegeman (2002) argues that adverbial clauses should be divided into two subgroups: central and peripheral adverbial clauses. Central adverbial clauses, whose semantic function is to structure the event expressed in the associated clause, are deficient in the CP domain and lack the functional projection which encodes speaker-related functions (speech time, epistemic modality, illocutionary force); peripheral adverbial clauses, which are syntactically less integrated with the matrix clause, tolerate Main Clause Phenomena[9] (Haegeman 2002: 63). Examples in (42) exemplify this dichotomy. The functional hierarchies in the left periphery of the two adverbial clauses are presented in (43):

9 Main Clause Phenomena refer to certain syntactic operations such as epistemic modals, argument fronting, tag question formation, and rhetorical question formation, which are restricted to main/root clauses.

(42) a. If your back-supporting muscles tire, you will be at increased risk of lower-back pain. (central *if*-clause)
(Haegeman 2003: 319, cited from Independent on Sunday, Sports, 14.10.1, p. 29, col. 3)

b. If we are so short of teachers ('Jobs crisis grows as new term looms', August 30), why don't we send our children to Germany to be educated? (peripheral *if*-clause)
(Haegeman 2003: 319, cited from Letters to the editor, Eddie Catlin, Norwich, Guardian, 31.8.1, p. 9, col. 5)

(43)

Central adverbial clause (adjoin to vP or IP):	Sub				Fin
Peripheral adverbial clause (adjoin to CP):	Sub	Force	Top	Focus	Fin

We suggest that the distinction between central adverbials and peripheral adverbials is reflected in *yaoshi/yaobushi* clauses as well. We associate *yaobushi* clauses with peripheral clauses, since they always carry a presupposition, a type of illocutionary force, and also because they adjoin to CP. On the other hand, *yaoshi* clauses, like English *if*-clauses, are ambiguous: they can be peripheral or central adverbials, depending on the semantic function they carry in the sentences- when they express a condition for the realization of the event expressed in the main clause, they are central adverbials and adjoin to IP/VP; they can also be peripheral adverbials, if they provide a proposition that serves as a background assumption, which combines with the assertion of the associated clause and yields additional inferences (Haegeman 2002:62)[10].

In the previous subsections, we have provided an account of the three puzzles

[10] Elizabeth Cowper pointed out (personal communication) that restrictive relative clauses may serve as a presupposition, although syntactically they are adjoined low in the structure. I have no full answer for that, but the restriction on the position of restrictive relative clauses could potentially be related to the fact that restrictive relative clauses invariably modify head nouns but not clauses. Adverbials in the discussion of Haegeman (2002), including *if*-clauses, modify clauses and are either associated with the event or the proposition expressed by the modified clause.

mentioned at the beginning of section 4, and made the following claims: first, the presence of the factive operator in *yaobushi* antecedent blocks NPI licensing from the negator *bu*. Second, *yaobushi* conditionals are semantically equivalent to *only-if* conditionals with a presupposition that p is true. Finally, *yaobushi* clauses are peripheral adverbials and syntactically are attached to CP. In the next section, we will present a semantic analysis for *yaobushi* conditionals.

4.4 Semantics of *yaoshi* and *yaobushi* conditionals

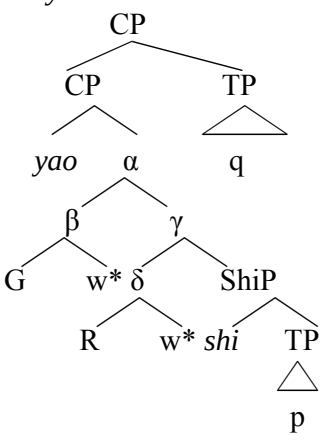
We make the following assumptions before we give the semantic representation of *yaoshi/yaobushi* conditionals. First, instead of being sentential connectives, the complementizers *yaoshi/yaobushi* function as restrictors for the domain of the epistemic modal *yao*, and *yaoshi/yaobushi*-clauses are interpreted in the restriction of the modal *yao*, whereas the consequent is interpreted in the nuclear scope (see Lewis (1975), and Kratzer (1986) for such proposal for English conditionals). In the framework of possible world semantics, Kratzer (1991) argues that modals are sensitive to two context-dependent elements: a modal base (R), a conversational background which determines the worlds accessible from the evaluation world, and an ordering source (G), which ranks those accessible worlds according to how similar they are to the evaluation world. We adopt this analysis of double relative modality on conditionals, and agree with Krazter's view that CF involve an empty modal base and a totally realistic ordering source. These two elements together give us "all possible worlds in which the antecedent p is true, are ordered with respect to their being more or less near to what is actually the case in the world under consideration" (Kratzer 1981:69).

With these basic tools of possible world semantics, we are able to develop the semantics of *yaobushi* conditionals. In the representation of *yaoshi* conditionals in

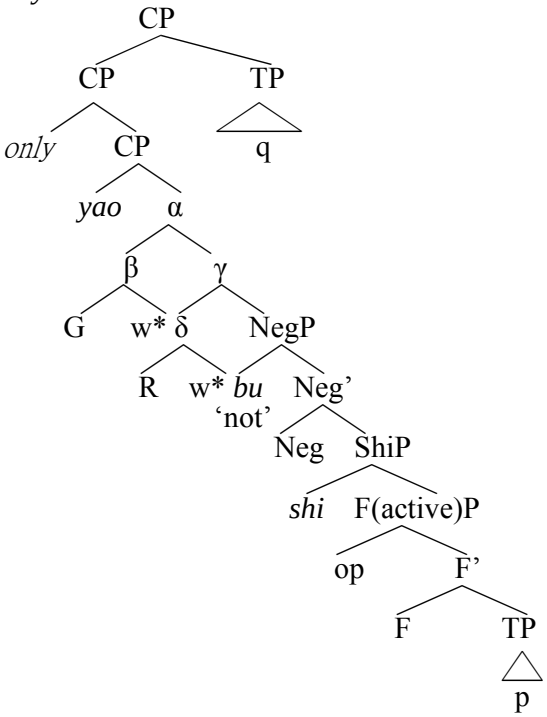
(44a), the modal *yao* in *yaoshi* quantifies over two sets of worlds: one is the set of best p worlds given by the modal base (G) and the ordering source (R), and another one is the set of q-worlds. The modal *yao* determines that among those best worlds where p holds, q holds. On the other hand, in (44b), the modal *yao* also takes the set of best p worlds as the first argument, and later takes the set of q-worlds as its second argument. The factive operator, which occupies the specifier of Factive P, adds the presupposition that p-worlds are true in the actual worlds, and the covert *only* brings the entailment that p-worlds are not q-worlds.

(44) Structures for *yaoshi* and *yaobushi* conditionals[11]:

a. *yaoshi* conditionals



b. *yaobushi* conditionals



Taking all the pieces of information we have so far, we give the semantics of a *yaobushi* conditional in (45).

[11] In the tree diagrams, the labels of the projections of modal base (G) and ordering source (R) are not crucial for our discussion. Given this, we use the Greek symbols for convenience of exposition.

(45) $[[only]]^{w,g}([[yao]]^{w,g}([G(w)([R(w)(\neg([[op]](p)))])])(q))$ is defined iff
p(w*)=1, if defined,
$[[only]]^{w,g}([[yao]]^{w,g}([G(w)([R(w)(\neg([[op]](p)))])])(q))$
$=[[only]]^{w,g}([[yao]]^{w,g}([G(w)([R(w)(\neg p)])])(q))$
$=1$ iff $\forall w' \in W[w' \in p \,\&\, \neg \exists z \in W[z \in p \,\&\, z \leq_{g(w)} w']: \neg q(w')=1$

In (45), the conditional is defined if and only if p is true in the evaluation world. This conditional has its truth value=1 if and only if the following conditions hold: in every world w' where p is true, there is no such a world z in which p is true and z is more similar to the evaluation world than w', and q is false in w'.

The *only-if* analysis proposed in this paper offers a natural explanation of two additional phenomena. First, *yaobushi*-clauses cannot be modified by a focus element, whereas no such a restriction is found in *yaoshi*-clauses:

(46) **jishi** yaoshi ni bu lai, ta ye hui dengni.[12]
even if you not come he also will wait you
'Even if you didn't come, he will wait for you, too.' (IND)
'Even if you hadn't come, he would wait for you, too.' (CF)

(47) ***jishi** yaobushi ni lai, ta ye hui dengni.
even YAOBUSHI you come he also will wait you
(Intended) 'Even if you hadn't came, he would wait for you, too.'

In (46), the complementizer *jishi* 'even if' plays a dual role semantically- it not only expresses the conditional meaning but it also contributes the focus meaning to the sentence. As shown in the examples above, while *yaoshi* can appear with *jishi* 'even if', *yaobushi* cannot co-occur with it. We suggest that this restriction may due to the presence of a covert focus operator *only* in the structure of *yaobushi* conditionals,

[12] It is possible to drop *yaoshi* 'if' in (46) without affecting the meaning.

which is semantically incompatible with the focus operator *jishi* 'even'[13].

Second, when the consequent forms a question, it can only be interpreted as a rhetorical question. To see how this property falls out from the current analysis, it is necessary to take a look at the semantics of rhetorical questions. Rhetorical questions are unlike true questions in that an answer is not elicited from a hearer. The linguistic function of a rhetorical question is that of an emphatic assertion. In general, a rhetorical question has the illocutionary force of an assertion of the "opposite" polarity from what is apparently asked (Sadock 1971, 1974). That is, an "affirmative" rhetorical question expresses a "negative" assertion, while a "negative" rhetorical question expresses an "affirmative" assertion. This is illustrated by the following examples.

(48) a. **Did** I tell you that writing a dissertation was easy?
(assertion: I **didn't** tell you that writing a dissertation was easy)
b. **Didn't** I tell you that writing a dissertation was easy?
(assertion: I *told* you that writing a dissertation was easy)

In the *yaoshi* conditional in (49), the consequent forms a question. Here, the question can be a rhetorical or true question.

[13] The incompatibility may be due to the semantic conflict between *only* and *even*, when these two focus particles are associated with the same focus site (Nakanishi 2006). For instance, in (i), *even* triggers an existential presupposition that there is some x ≠ Maria such that John greeted x, while in (ii) *only* conveys the meaning that there is no x ≠ Maria such that John greeted x. The two meanings above are in contradiction, and thus it explains the incompatibility of *only* and *even* when they scope over the same constituent.

(i) John even greeted [$_F$ Maria].

(ii) John only greeted [$_F$ Maria].

(49) yaoshi ta shengbing-le, ta hui quexi ma? *Y-N Q /rhetorical Q*
if he be.sick-Prf he will absent Q
'If he was sick, will he be absent?' (IND)
'If he were sick, would he be absent?' (CF)

However, the true question interpretation is not available in *yaobushi* conditionals as shown in (50).

(50) yaobushi ta shengbing-le, ta hui quexi ma? **Y-N Q/rhetorical Q*
YAOBUSHI he be.sick-Prf he will absent Q
'If he hadn't been sick, would he be absent?' (CF)
(Assertion: if he hadn't been sick, he wouldn't be absent.)

The question in the consequent of a *yaobushi* sentence can only be interpreted as a rhetorical question. It is pragmatically odd if the hearer replies to (50) with an answer, while it is possible to do so in (49). The point can be clearly demonstrated by adding to (49) and (50) the phrase *you-mei-you keneng* 'is it possible that', an information-seeking phrase, which is not compatible with rhetorical questions.

(51) a. ta mei qu ni jia? *Y-N Q /rhetorical Q*
he not go your house
'Didn't he go to your house?'
b.ta [you-mei-you keneng] qu ni jia? *Y-N Q /*rhetorical Q*
he have-not-have possible go your house
'Is it possible that he went to your house?'

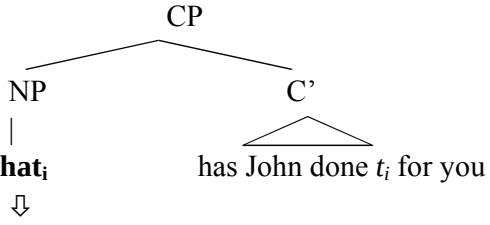
In (51b), by adding the phrase *you-mei-you keneng* 'is it possible that' to a question, the rhetorical question interpretation is blocked. As shown below, in a *yaobushi* conditional, inserting *you-mei-you keneng* 'is it possible that' leads to ungrammaticality.

(52) **yaoshi** ta shengbing-le, [you-mei-you keneng] ta hui quexi ma?.
If he be.sick-Prf have-not-have possible he will absent Q
'If he was sick, is it possible that he will be absent?' (IND)
'If he were sick, would it be possible that he was going to be absent?' (CF)

(53) ***yaobushi** ta shengbing-le, [you-mei-you keneng] ta hui quexi ma?
YAOBUSHI he be.sick-Prf have-not-have possible he will absent Q

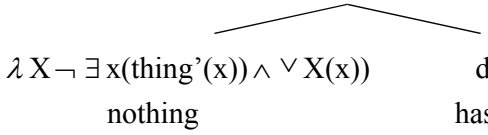
Han (2002) addresses the issue of why a rhetorical question has the interpretation of an assertion of the opposite polarity. She suggests that rhetorical questions involve a mapping from a post-LF representation to the semantic interpretation. Specifically, she proposes that the *wh*-word in wh-questions and the covert *whether* in yes-no questions map onto a negative quantifier and a negative polarity respectively at a post-LF derivation, as illustrated in (54b) and (55b), and the questions are interpreted as negative assertions in (54c) and (55c).

(54) *Wh*-rhetorical questions (Han 2002: 220):
a. What has John done for you? (Assertion: John has done nothing to you.)
b.



⇩
nothing

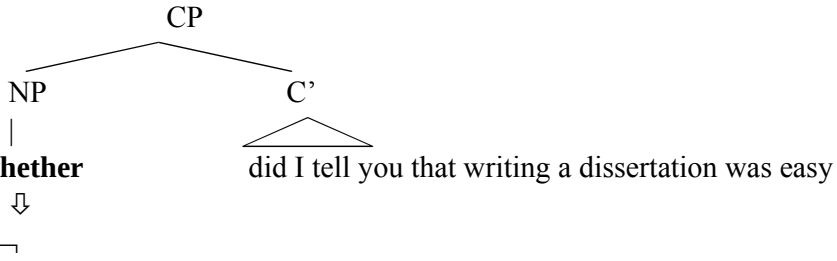
c. $\neg \exists x(\text{thing}'(x) \wedge \text{done}'(\text{John}', x))$ λ-conversion
$\neg \exists x(\text{thing}'(x) \wedge \lambda x_i \text{done}'(\text{John}', x_i)(x))$ $\vee \wedge$-elimination
$\neg \exists x(\text{thing}'(x) \wedge \vee \wedge \lambda x_i \text{done}'(\text{John}', x_i)(x))$ λ-conversion
$(\lambda X \neg \exists x(\text{thing}'(x)) \wedge \vee X(x))) \wedge \lambda x_i \text{done}'(\text{John}', x_i)$ quantify-in



(55) Y/N rhetorical questions (Han 2002: 219):

a. Did I tell you that writing a dissertation was easy?

b.



c. ¬[I told you that writing a dissertation was easy]

Adopting Han's post-LF negation analysis on rhetorical questions, we assume that in the case of *yaobushi* conditionals, the negation contained in the inference that ¬q is true, repeated in (56), is related to the interpretation of rhetorical questions, when the consequent of the *yaobushi* conditional is a question. However, we will leave aside the details of the semantic mechanism underlying rhetorical questions in *yaobushi* conditionals.

(56)

yaobushi p, q = [only if ¬p], q

Presupposition: p=1

Entailment: $p \rightarrow \neg q$

$\therefore \neg q=1$(or q =0)

In conclusion, [*yaobushi* p, q] has the semantics of [only if ¬p, q] with a presupposition that p is true brought forth by the factive operator. That's why native speakers of Mandarin have the intuition that the proposition expressed by *yaobushi* clauses (with the negation *bu* 'not') is contrary to the fact. The idea that counterfactuality is related to factivity/veridicality is supported by data from Slovenian. As pointed out by Nevins, Slovenian uses a special complementizer *da* in CF, and the counterfactuality is non-cancellable, as in their Mandarin *yaobushi*

counterparts, as shown in (57). Interestingly, it is reported that *da* is also used to introduce the complement of factive verbs.

(57) *Da ima oSpice, bi imel toCno take simptome, kot jih ima sedaj.
Torej, pacient ima oSpice.
'*If the patient had the measles, he would have exactly the symptoms he has now. We conclude, therefore, that the patient had the measles.'
(Nevins 2002:449)

To sum up, we have argued that first, *yaobushi* clauses are peripheral adverbial clauses, and have a fixed syntactic position due to their illocutionary forceSecond, *yaobushi* clauses contain a factive operator, which blocks the negator *bu* 'not' from licensing NPI *renhe* 'any'. Third, [*yaobushi* p, q] has the semantics of [only if ¬p, q]. Coupling the presupposition that p is true with the entailment brought by the covert *only* focus operator, we can infer that q is false. Finally, we suggest that counterfactuality can be derived by negating a proposition which is presupposed to be true.

5. Conclusion and remaining issues

Although *yaobushi* conditionals look similar to their *yaoshi* counterparts, they have very different semantic and syntactic properties: semantically, *yaobushi* conditionals carry a presupposition that the proposition expressed by the embedded *yaobushi* clause is true and also requires the proposition expressed by the consequent to be false; in addition, unlike *yaoshi* clauses, *yaobushi* clauses cannot appear after the main clause. Moreover, they cannot license NPIs in spite of the presence of the negator *bu* 'not'.

We have argued that this special semantic condition stems from the presence of a

factive operator and the semantics of a covert focus element *only*: the factive operator takes p, which is presupposed to be true, as its complement, and the covert focus operator *only* brings the entailment that if p then $\neg$q; when the presupposition that p is true is satisfied, we can infer that q is false. The failure to license NPIs and the restriction on the syntactic position of *yaobushi* conditionals are also accounted for in this factive operator analysis if we assume that the factive operator intervenes between the negator *bu* and the NPI *renhe* 'any', and adopt Haegeman's categorization on adverbials.

We conclude with two questions that remain open. First, what is the relationship between the negation *bu* and the factive operator, given that the factive operator is not generated in *yaoshi* conditionals? There are two pieces of evidence that suggest that negators may have a close relation with factivity. First, in Tagalog CF, as illustrated in (58), a special complementizer *kundi* 'if-not', which composes *kung* 'if' and the negation particle *hindi* 'not', is used.

(58) Tagalog CF:
kundi napakalayo ng Maynila, papag-aaralin ko sana siya roon.
if.not.that very.far case Manila cause-study I SANA him there
'If Manila weren't so far away, I would send him to study there.'
(Nevins 2002:444)

Second, Paduan exclamatives, exemplified in (59), use an expletive negation, and this construction is claimed to involve factivity by Zanuttini and Portner (2003).

(59) Paduan exclamatives:
No ga-lo magnà tuto!
NEG has-S.CL eaten everything
'He ate everything!'
(Zanuttini and Portner 2003: 53)

While these data are suggestive, it is not fully understood how negation relates to factivity/veridicality.

Second, if counterfactuality is derived by negating a proposition that is presupposed to be true, as claimed in the last section, does that imply that in languages that have the property of non-cancellability in CF, the presence of an overt negator is required to derive counterfactuality? We call for further research into these matters.

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