The Syntax of Negative Questions and Their Answers in Chinese and English[①]

Xuhui Hu
Peking University

Abstract: This paper attempts to provide an account of the syntax of the negative questions and their answers in Chinese and English. In English, two polarity heads in hierarchically different positions can be targeted for the creation of an open value. The targeting of the higher polarity head gives rise to the interpretation of the truth -based system while the operation on the lower polarity head yields the interpretation of the polarity based system. The derivation of the negative question in Chinese only targets the higher polarity head, which explains why Chinese only exhibits the truth -based system's interpretation. The question particle *ma*, while being the result of the fusion of a negator and a pure question particle in a neutral yes/no question, serves as a single question particle providing a value to the Q head. This hypothesis is supported by the data from Yixing Chinese, where there is clear evidence that only a single question particle is involved in the derivation of a negative question, while the sentence final particle in the neutral yes/no question is the fusion of a negator and a pure question particle.

Key words: Negative quesitons, polarity heads, Chinese, English

1 Introduction

While the negative question exists in almost all attested languages, the answers to it are different cross -linguistically (cf. Kramer & Rawlins 2009, 2010). The

① This research is funded by China Key National Project of Philosophy of Science "Multiple Disciplinary Approach to Cognitive Studies" (12&ZD119)

following examples from Holmberg (2012) illustrate the different answers:

(1) Q: Are you not tired?[English]
A: No, I' m not tired.

(2) Q: Does he not drink coffee?
A: Yes, he does.

(3) Q: Kare -wa koohii -o noma nai no?[Japanese]
he -TOP coffee -ACC drink NEG Q
'Does he not drink coffee?'
A: Uun, nomu yo.
no drink PRT
(Lit.) 'No, he drinks (coffee) .'

(4) Q: Kimi tukarete nai?[Japanese]
you tired NEG
'Are you not tired?'
A: Un, tukarete nai.
yes tired NEG
(Lit.) 'Yes, I' m not tired.'

The above examples show that two systems are adopted in answering the negative question. In the English examples, a particle used for negative answers to neutral questions is taken to confirm the negative alternative, while a particle for negative answers to neutral questions is used to confirm the positive alternative. The Japanese examples exhibit a different system: the particle otherwise used for negative answers to neutral questions is taken to confirm the positive alternative in (3), while the particle for positive answers to neutral questions is used to confirm the negative alternative in (4). In the literature, the system exhibiting the features in (1) and (2) is called the polarity -based system, and the Japanese examples in (3) and (4) are assumed to take the truth -based system.

Holmberg (2012) attributes the adoption of the two systems to the parameter of the positions of the negation head. If the negation head is low, which is scoped over by the polarity head, then the properties of the truth -based system will show up; otherwise, the polarity -based system will show up. Chinese negative questions are also mentioned in Holmberg's research, which assumes that Chinese takes a low negation position and thus possesses the truth -based system; however, many important properties of Chinese negative questions are not investigated. Following Holmberg's parametric study, it seems that the cross -linguistic variation, regardless of what the underlying reason should be, is reflected by which one of the two particles, *yes* and *no* in English, or their counterparts in other languages, is chosen to answer the question. This, however, does not seem to be true:

(5) Q: Zhangsan bu xihuan yuyanxue ma[②]?
Zhangsan not like linguistics MA?
'Does Zhangsan not like linguistics?'
A1: Shi[③] de[④].
Yes DE.
(confirming the negative alternative: Zhangsan does not like linguistics)
A2: Xihuan de.
Like DE
(confirming the affirmative alternative: Zhangsan likes linguistics)

Following Holmberg's analysis, we would expect that in Chinese, a language adopting a truth -based system, when confirming the affirmative alternative, should involve a negator, like *bu* (no) or *bu shi*. However, although the negator can also be used to answer this question to confirm the affirmative alternative, the native speaker more often just takes the answer in A2 in (5).

② *Ma* is a question particle in Chinese yes/no questions.

③ The exact meaning and function of *shi* will be explained in detail in the course of the analysis.

④ *De* is a particle with multi -functions when used in different positions. When used at the end of a declarative sentence, it has the function of stressing the truth of the proposition.

The answer in A2, it should be noted, is also the answer to confirm the affirmative alternative in neutral questions in Chinese:

(6) Q: Zhang sanxihuan yuyanxue ma?
Zhangsan like linguistics MA?
'Does Zhangsan like linguistics?'
A: Xihuan .
Like.
'Yes, he does.'

The above example presents an interesting issue not yet covered in the previous studies on negative questions. Usually, if a negative question is derived within the truth -based system, such as the Japanese question in (1), then to confirm the affirmative alternative, the answer confirming the affirmative for neutral question is not used, as this is the strategy adopted in the polarity -based system. However, in Chinese, which is claimed to take the truth -based system, the answer confirming the positive alternative seems to take the strategy within the polarity -system: the repetition of the verb is the answer to confirm the affirmative alternative in the neutral question as is shown in (6), and this answer is also taken to confirm the affirmative alternative in the negative question as is shown by A2 in (5).

With the consideration of the neutral question, another unaddressed issue is that the yes/no type particles in English and other languages are assumed to be the answers to the neutral questions, such particles (*shi* and *bu shi*) usually are not taken to answer neutral questions in Chinese. In Holmberg's analysis, the particles like 'yes' and 'no' are taken to provide a value to the polarity head which has an unvalued polarity feature [*u*Pol]. Therefore, such particles can also be used to answer neutral questions, which also take the same [*u*Pol] feature:

(7) Q: Does John live in Cambridge?
Y1: Yes, he does.
Y2: No, he doesn't.

In Chinese, the particle *shi* is taken to confirm the negative alternative; following Holmberg's analysis, this particle provides a value to the [uPol] feature, which should also be fine to answer the neutral question. However, this is not the case:

(8) Q: Zhangsan xihuan yuyanxue ma?
Zhangsan like linguistics MA?
'Does Zhangsan like linguistics?'
Y1: * shi de.
Yes DE.
Y2: Xihuan
Like
'Yes, he does.'

The above puzzling issues concerning the answers to Chinese negative questions indicate that the syntax of negative questions needs further investigation. It's possible that either Holmberg's account is on the right track, and can be applied to Chinese negative questions when some special properties of Chinese are considered, or it is problematic. In this paper, we will show that a revised proposal on negative questions is needed, which, when combined with some special parameter -relevant factors, can provide a unified explanation for the puzzles in Chinese negative questions on the one hand, and can also explain the issues on English negative questions.

The rest of this paper is organized as follows. In Section 2, a detailed description of the syntactic properties of Chinese negative questions are provided. Section 3 reviews Holmberg's analysis, showing the potential problems involved. In Section 4, a new account of the syntactic nature of negative questions is presented, which is applied to the analysis of English negative questions and their answers. In Section 5, this account is extended to the analysis of Chinese negative questions as well as the differences between Chinese and English negative questions. A conclusion is provided in Section 6.

2 Chinese Negative Questions: A Description

The reason why Chinese is assumed to take the truth -based system is that often the particle *shi* and its negated form *bu shi* are taken to confirm the negative and affirmative alternatives respectively. Examples in (9) illustrate this point:

(9) Q: Zhangsan bu xihuan yuyanxue ma?
Zhangsan not like linguistics MA?
'Does Zhangsan not like linguistics?'
A1: Shi de.
Yes DE
'No, he doesn't.'
A2: Bu shi de.
Not yes DE.
'Yes, he does.'

In addition to the above strategy, Chinese can also adopt another strategy: repeating the verb to confirm the affirmative alternative and taking the 'negator+ V' chunk to confirm the negative alternative:

(10) Q: Zhangsan bu xihuan yuyanxue ma?
Zhangsan not like linguistics MA?
'Does Zhangsan not like linguistics?'
A1: Xihuan.
Like.
'Yes, he does'
A2: Bu xihuan.
Not like.
'No, he doesn't.'

Repeating the matrix verb is also the strategy taken to answer the neutral

questions in Chinese.

(11) Q: Zhangsan xihuan yuyanxue ma?
Zhangsan like linguistics MA?
'Does Zhangsan like linguistics?'
A1: Xihuan.
Like.
'Yes, he does.'
A2: Bu xihuan.
Not like.
'No, he doesn't.'

The above example then seems to indicate that Chinese also takes the strategy of the polarity -based system: ignoring the specific particles involved in the answers, the common feature of the polarity -based system is that the same particle/answer is used to confirm the positive or negative alternative in both negative and neutral questions.

It should be noted here that unlike English wherein *yes* and *no* can be used for both neutral and negative questions, in Chinese, *shi* and *bu shi* in normal cases cannot be taken to answer neutral questions. That is, the repetition of the verb is the only strategy for neutral questions:

(12) Q: Zhangsan xihuan yuyanxue ma?
Zhangsan like linguistics MA?
'Does Zhangsan like linguistics?'
A1: * Shi de.
Yes DE.
Intended meaning: 'Yes, he does.'
A2: * Bu shi.
Not yes.
Intended meaning: 'No, he doesn't.'

Although *shi* and *bu shi* cannot be used to answer neutral questions in most cases, two special situations will make these two answers legitimate. The first situation is when the predicate is preceded by an adverb:

(13) Q: Zhangsan *hen* xihuan yuyanxue ma?
Zhangsan very like linguistics MA?
'Does Zhangsan like linguistics very much?'
A1: Shi de.
Yes DE.
'Yes, he does.'
A2: Bu shi.
Not yes.
'No, he doesn't.'

In the above question, when the adverb *hen* is inserted before the matrix verb, the an suer hes to be *shi* or *bu shi*, the same expressions used for negative questions.

The second situation to use *shi* and *bu shi* for the answers to neutral questions is when the question particle is *a* instead of *ma*.

(14) Q: Zhangsan xihuan hua xue a?
Zhangsan very like chemistry A?
'Does Zhangsan like chemistry very much?'
A1: Shi de.
Yes DE.
'Yes, he does.'
A2: Bu shi.
Not yes.
'No, he doesn't.'

Note that *a* is not a neutral question marker, but indicates the speaker -oriented attitude, which involves the following information: the speaker in fact already

holds a belief in the proposition expressed in the question and is very surprised at the fact expressed by the proposition; he asks the question just to double confirm this fact.

When compared with English, there is another issue worth mentioning in Chinese negative questions. As is introduced in Holmberg (2012), in English, if the answer to a negative question is the bare *yes* or *no*, then the interpretation will be ambiguous:

(15) Q: Is John not coming today?
A: yes.
Speaker variation: 'John is not coming' or an indeterminate, infelicitous answer. Holmberg (2012)

This situation does not appear in Chinese:

(16) Q: Zhangsan jintian bu lai ma?
Zhangsan today not come MA?
'Is Zhangsan not coming today?'
A: Shi de.
Yes DE.
'No, he is not coming.'

The description summarised so far raises the following questions:

a. What is the mechanism underlying the special properties of Chinese negative questions and their answers?
b. What regulates the variation between Chinese and English negative questions?
c. Is there a universal core structural characterisation of negative questions and their answers? If so, what is this characterisation?

3 Holmberg (2012, 2013, 2015): A Parametric Account of Negative Questions and Their Answers

Holmberg's (2012, 2013, 2015) proposal consists of the following points:

a. There is a universal structure underlying the syntax of negative questions and their answers.
b. The parametric variation exhibited by the answers to negative questions reside in the positions of negation head in different languages.

The syntactic structure of a polarity question, be it negative or neutral question, is as follows:

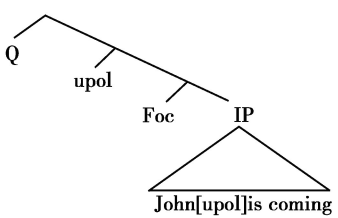
(17) [Q [x Foc [IP . . . x . . .]]

Holmberg (2012)

In the above structure, x represents a free variable, which is polarity in yes/no questions. This variable is moved to the [Spec FocP] position to get the focus interpretation. The functional head Q above the FocP encodes a request to the addressee to provide a value for the free variable, which is the source of the interpretation as a question. In terms of feature valuation in Minimalism, the polarity head in a question takes an unvalued polarity feature [*u*Pol], and the addressee's task is to provide a value to this feature.

We can still take Holmberg's example to illustrate the above operation:

(18)

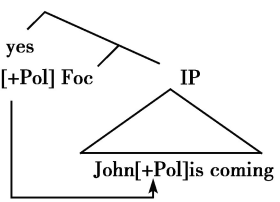


(18) is the structure of the neutral question *Is John coming?*. In the process of derivation, the polarity head (Pol) is merged in a high position in IP (TP). Holmberg does not give the accurate position of this head, but he does briefly mention that the Pol head is in the highest position in TP, which should then be

above the T head, and the subject is moved to [Spec Pol] position. Following Holmberg, we still term the phrase encoding the proposition as TP. After the derivation of TP, a higher functional head, Focus head (Foc) in the left periphery of CP, is merged. Since the free variable encoded by the [*u*Pol] feature on Pol head is the focus, this variable in the shape of [*u*Pol] is moved to the [Spec FocP], following Rizzi (1997).The higher Q head is further merged, requesting the addressee to provide a value to value the [*u*Pol] feature. In English, the answer *yes* or *no*, is merged in the [Spec FocP] position to value the [*u*Pol] feature.

Holmberg further proposes the syntax of answers to polarity questions. The central point is that the answer is in nature a full proposition, which is identical to the proposition expressed by the TP of the question except that the [*u*Pol] feature is valued. Because of this identity, the TP in the answer is elided. The structure of the answer is as follows:

(19)



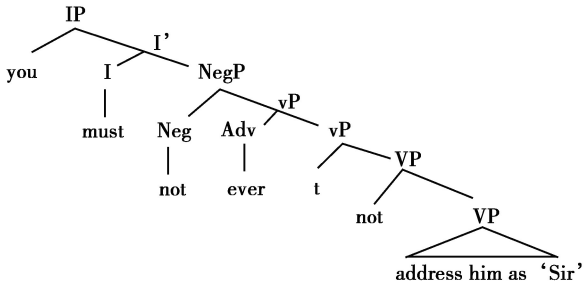
The answer *yes* provides a positive value [+Pol], the result being that the proposition encoded by IP in (19) has a positive value for the polarity head, that is, the proposition that John is coming is true. This IP is elided in the answer because it is identical to the IP in the question.

Concerning the answers to the negative question, Holmberg assumes that an IP might have two positions for the negation, one being the 'low negation' in the VP and the other being the 'middle negation' ⑤above vP. These two positions are illustrated by the following tree diagram:

---

⑤ In the original account provided by Holmberg, there is a third position for the negation, which is the highest position. This position is not directly relevant here.

(20)



The account of the differences between the polarity based and truth base systems lies in the positions of the negator in the negative question. If the negator is in the high position, then the interpretation of the polarity -based system will be attested. This is because, according to Holmberg (2012), the high negator is high enough to provide a negative value[-Pol] to the[*u*Pol] feature, which forms a chain with the answer *no*. What is noteworthy here is the proposal that when such a high negator is involved, although usually *no* has a value of[-Pol], it has an uninterpretable feature, which forms a negative concord chain with the negator. This explains the interpretation of polarity -based system. Take the following sentence for example:

(21) Q: Is John not coming?
A: No. ('John is not coming')

In the answer in (21), the negator *not* provides a negative value to the polarity head, and the particle *no*, with an uninterpretable feature, forms a negative concord with *not*. Following this analysis, the interpretation of the answer is derived like this: *not* provides the negative value, meaning it is not the case that John is coming. The adding of *no* does not change this interpretation because *no* in this sentence does not provide a negative polarity value, but only forms a negative concord with *not*. This is exactly the interpretation to be derived in a polarity -based system.

If the negator is in the low position, it cannot assign its value to the Pol head, because of the intervening effect of the adverbial. In this situation, only the

particle like *no* can provide the value. The consequence is that within the scope of the negative Pol value, there is a negation, which gives rise to the double negation, i. e. the interpretation of the truth -based system.

(22) Q: Is John sometimes not coming?

A: No. (It is not the case that John is sometimes not coming)

$[_{CP}$ [no -Pol] Foc $[_{TP}$John [is, -Pol] [sometimes $[_{VP}$ not coming]]]]

In the above example, *not* is in a low position, which cannot provide the value to the polarity head because of the intervening adverb *sometimes*. Therefore, before the particle *no* is merged, the proposition gets the interpretation that John is not coming, and this proposition still has a polarity feature to be valued. When *no* is merged, it provides a negative value to the polarity head, resulting in the double negation, which is the interpretation of the truth -based system.

In addition to the fundamental problem that Holmberg's account cannot explain the third research question, there are also theory -internal problems. Although in Holmberg's analysis, as is traditionally held in other studies, *yes* and *no* particles take interpretable [Pol] features, Holmberg also stipulates that sometimes the particle *no* (and its counterparts in other languages) will take an uninterpretable feature. It seems very odd to say *no* does not take an interpretable negative feature. In terms of the theoretical concern, as a functional item selected from the lexicon, within the minimalist framework, it should take interpretable instead of uninterpretable features (cf. Manrantz 1997; Borer 2005a, b, 2013) .

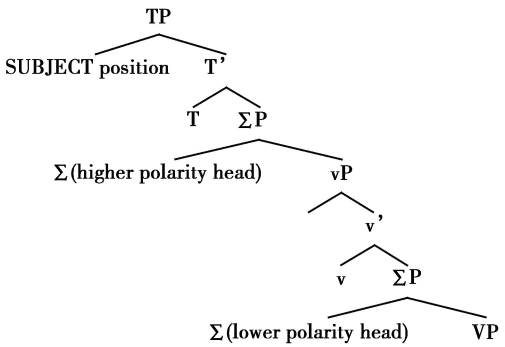
4. The Syntax of Negative Questions and Their Answers in English

4. 1 The Syntax of Yes/No Questions in English

Differing from Holmberg's analysis according to which there is only one polarity head with an uninterpretable Polarity feature ([*u*Pol]) to be valued, we assume that at least there are two potential polarity heads that can hold the [*u*Pol]

feature, the lower Pol head within vP (in between VP and v) and the higher Pol head above vP, in between vP and T⑥:

(23)



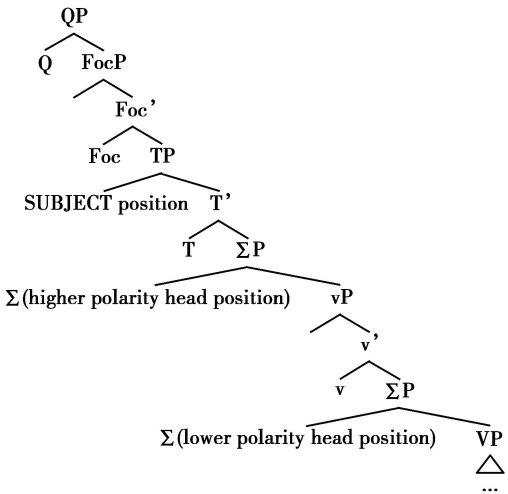
Following Laka (1990), we assume that any syntactic position that can hold a negative marker (like English *not*) is a polarity head position. In terms of the feature valuation mechanism in Minimalism (cf. Chomsky 1995, 2000), we argue that a polarity head is specified with an uninterpretable feature [*u*Pol]. In a declarative sentence, this [*u*Pol] feature needs a value, either a positive or negative one, which we call [-*i*Pol] feature for the former and [+*i*Pol] feature for the latter. The positive value is a default value and thus the valuation of [+*i*Pol] feature is phonologically null. The negative value, on the other hand, is provided with a negative value, such as *no* in English.

Following Holmberg (2001, 2003), we assume that two elements are crucial in deriving a yes/no question: first, there is a polarity head specified with an uninterpretable feature. This uninterpretable feature is taken as a variable, which is the focus of a question, and is thus moved to the specifier position of the Focus Phrase (FocP).Second, an illocutionary force feature Q encodes a request to the addressee to provide a value for the variable so as to indicate the truth value of the proposition encoded in the question. As we have stressed above, the

⑥ The higher Pol head might even be higher than T as is proposed in Zeijlstra (2004), Ernst (2002), Svenonius (2001), and Holmberg (2012, 2013).For the ease of exposition, we just place it in between T and vP, which does not make any difference from a potential higher Pol head above T for our current purpose.

difference between our structure and the one in Holmberg's is that the structure we propose has different polarity heads to specify an uninterpretable feature, to be fronted in [Spec FocP]:

(24)



Explanations for the above structure are in order. Firstly, Q and Foc heads are both in the left periphery of the CP domain (cf. Rizzi 1997). Secondly, although we have two polarity heads in the TP domain, we do not mean that in a single sentence, both are involved: we present the possible functional heads that can specify the uninterpretable [Pol] feature without claiming that both polarity phrases have to be projected. Note that in Holmberg's proposal, negation heads and polarity head are different heads: there is only one polarity head in a TP, which is above the negation heads. We argue that a negative marker equals with the negative value for a polarity head, and thus where there is a negative marker, there is a functional polarity head. This is in nature in line with the tradition endorsed by Jackendoff (1969, 1972), Lasnik (1975), Acquaviva (1997), and many others, according to which sentential negation should be defined in semantic rather than syntactic terms. To apply the spirit of this tradition in the present research, we argue that negation is a semantic effect that is related to the polarity head in the syntactic structure. Since a sentence can involve more than one negative effect, it is natural to assume that there are more than one polarity

head in the syntactic structure.

4.2 Accounting for Negative Questions in English

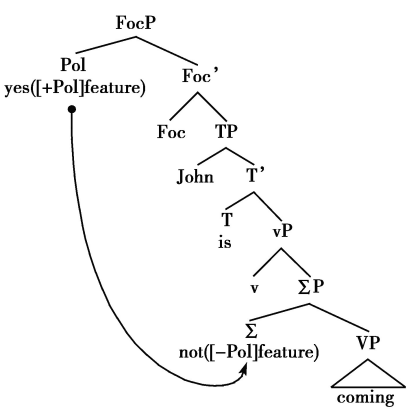
Negative questions in nature are yes/no questions in that such questions are also derived via the creation of an open value together with a Q head in the left periphery of CP. Let's take the following example to illustrate how the points presented in the last section can be applied to the account of negative questions in English.

(25) Q: Is John not coming?
A1: Yes. (He is not coming)
A2: No. (He is not coming).

(Holmberg 2012)

From the surface form, it is hard to judge whether the negative marker *not* is in the lower or higher Polarity head position. In theory, both are possible. If we take the first answer, A1, and suppose first that the focused polarity head in the CP domain is moved from the lower polarity head. This means that when the focused Pol head is valued, its value will be provided to the lower Pol head. The derivation then will be as follows:

(26)



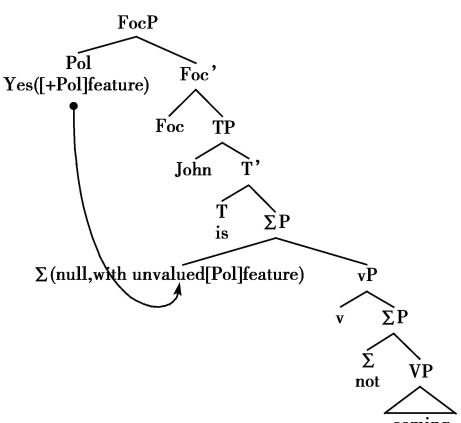
According to the above derivation, *yes* provides a positive value to the variable in the shape of Pol in [Spec FocP]. Since this variable is the one moved from the

lower Pol head, it means that the positive value will then be sent to the lower Pol head. At this point, a clash happens: on the one hand, *yes* provides a positive value to the lower Pol head, and on the other, the Pol head itself already has a negative Pol value, due to the existence of *not* in the sentence. This contradiction then rules out the above derivation. This means that with the answer *yes*, we cannot get the interpretation that John is coming.

The alternative is to take the Pol variable in the [Spec FocP] to be moved from the higher Pol head position. This will involve two possibilities. The first possibility is that *not* is actually attached in the higher Pol position. If this is the case, then again the positive value provided by the answer *yes* will be in contradiction with the negative value provided by *not*. So no acceptable interpretation will be derived.

The second possibility is that *not* is in the lower Pol head position, while the variable in the [Spec Foc] position is moved from the null higher Pol head position. A null Pol head position is not just a stipulation. As we have mentioned above, for non -negative yes/no questions, there always involves a null Pol head with an unvalued Pol feature, which is a variable moved to the [Spec FocP] position, waiting to be valued by the answer. The syntactic derivation of the second possibility is presented below:

(27)



The interpretation derived from the above structure is that the information scoped

over by the higher Σ head (higher polarity head) has a positive value, that is, it is true that John is not coming.

We follow Holmberg's proposal to explain why the whole TP can be elided in the answer:

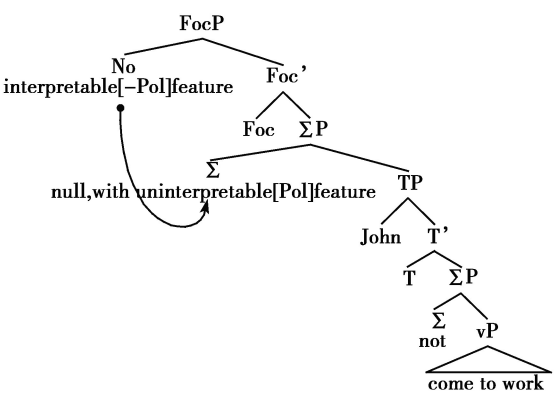
(28) A syntactic constituent α can be elided if it has a discourse -local antecedent which is identical with α at LF, up to assignment of values to variables.

(Holmberg 2012)

According to the above assumption, the antecedent can be in a higher clause or in the preceding independent sentence. In the case of the answer to negative questions, the TP following *yes* in (25) is identical to the TP in the question up to the assignment of values to variables. Therefore, TP is not spelled out. If it is spelled out, it should be *John is not coming*.

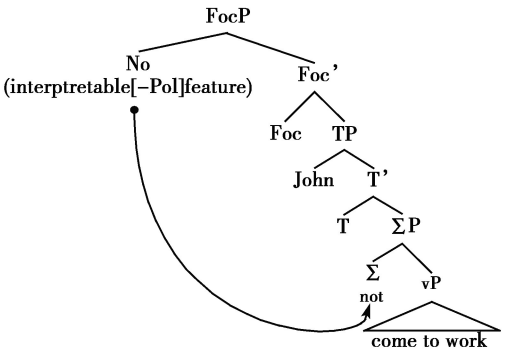
Following this line of explanation, a potential problem seems to arise when the answer *no* is considered: ideally, in the syntactic structure of this answer, the variable in [Spec FocP] position can be the result of movement from either the low or the high Pol head. If it is moved from the high Pol head, the value of *no* will be sent to value the [uPol] feature of the high Pol head. The corresponding interpretation will be that it is not the case that John does not come to work. The syntactic structure is as follows:

(29)



But the linguistic fact is that this interpretation does not appear. The only interpretation, following our explanation, can be derived if the variable in [Spec FocP] position is moved from the low negation position, illustrated by the following tree:

(30)



In the above derivation, the variable in [Spec FocP] is moved from the lower Pol head, and thus the [-Pol] feature of the answer *no* is provided to the lower head. Since there is already a negative particle *not* there, which takes the interpretable [-Pol] feature, the [-Pol] feature provided by *no* further confirms the negative interpretation. The interpretation of the whole sentence then is that John does not come to work.

Now the question is why only the derivation in (30) is attested while the interpretation derived by (29) is not acceptable. We propose the following general hypothesis to account for this issue:

Other things being equal, if either a phonologically covert or a phonologically overt syntactic object can be the target of a syntactic operation, the overt object is the default target.

It is an agreed wisdom that in syntactic derivations, empty categories are often the targets. The above hypothesis does not pose any threat to this assumption. What we emphasise here is that when two objects are equally qualified for a syntactic operation, the overt object is preferred. This is in line with the principle of economy as well as the mechanism of language acquisition: targeting the phonological overt object is more economical and thus conforms

with the principle of efficient computation, an element of the Third Factor in the sense of Chomsky (2005). Returning back to the specific issue of negative questions we study, for a question like (25), the variable can either be the result of movement from the lower Pol head or the higher Pol head. Since the lower Pol head is already marked with the phonological form *not*, this Pol head will be the default preferred target of the movement triggered by the Foc operator. Targeting the higher Pol head, as is illustrated in (29), does not violate any constraint in the narrow syntactic computation, but this choice is blocked because the lower Pol head is the default choice.

The phonologically null Pol head will be targeted, then, if targeting the overt lower head is ruled out by other constraint. This is exactly the case we considered in (27). In that case, as we have shown, if the lower head is the target of variable movement, the interpretable [+Pol] feature provided by *yes* and the interpretable [-Pol] feature on the lower head clashes, leading to the crashing of the derivation. Thus the phonologically null higher Pol head will be targeted by the variable movement operation.

Now we have to explain why when *not* is preceded by an adverb in an English negative question, the answer in the form of the negative particle will give the positive alternative:

(31) Q: Does John sometimes not come to work?
A1: Yes. (John sometimes does not come to work.)
A2: No. (it is not true that sometimes John does not come to work.)

Our account is based on the neo -Davidsonian approach (cf. Parsons 1990), which treats adverbs as predicates of events. We can take the following example as an illustration:

(32) Brutus stabbed Caesar in the back with a knife.
∃ e [Stab (e) & & Agent (e, Brutus) & Theme (e, Caesar) & In -the -back (e) & With -a -knife (e)] ?

"There was a stabbing whose agent was Brutus, whose theme was Caesar, which was a stabbing in the back, and which was a stabbing with a knife."

Herburger (2000: 5)

For our current purpose, the neo -Davidsonian approach clearly indicates that an adverb is an essential part of the expression of an event. We do not get involved in the details supporting this claim, but see Parson (1990) and Herburger (2000, Chapter One), among others.

If an adverb, serving as an event predicate, is within the event domain of a sentence, it is without doubt that the projections below the adverbial head is also within the event domain. In the case of (31), the adverb *sometimes*, serving as the event predicate, is within the domain, and there is evidence that *not* is within the domain scoped over by *sometimes*:

(33) John sometimes does not come to work.

If the scope of negation is within the domain scoped by *sometimes*, then the scope relationship will be as follows:

(34) [SOMETIMES[NEGATION]]

MEANING: John's not coming to work only happens on some certain days, but not all.

If, on the other hand, the adverbial scope is quantified over by negation, the following interpretation will be attested:

(35) [NEGATION[SOMETIMES]]

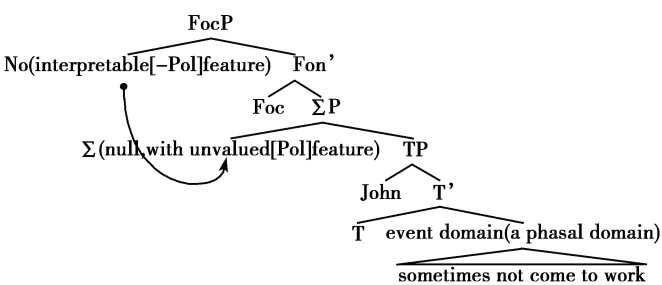
MEANING: It is not true that John's coming to work happens only on certain days. (Two possibilities: 'John never comes to work' or 'John always comes to work'.)

Since only the reading in (34) is attested, it is obvious that when *not* is preceded by

sometimes in (31), *not* is quantified over by *sometimes*. We have proposed above that adverbs like *sometimes* are event predicates, which means that *sometimes* is within the event domain, and it further follows that the negative particle *not* is in the event domain, considering that *not* is quantified over by *sometimes*. Following the agreed assumption that in syntactic computation the domain expressing the information of an event constitutes a phase (Borer 2005b, 2013, Marantz 2007), *not* in (31) is within a phrase. This is the reason why the answer *no* cannot provide a value to the lower Pol head in (31).The lower Pol head filled with *not*, as we have shown, is within a phase domain, i. e. the even domain. Since *not* is not in the edge of this phase, nor is it the head of the phase, following the Phase Impenetrability Condition (Chomsky 2000), no Agree relationship can be established between *not* and a syntactic object outside the event phase domain. If we take the variable to be moved from the low Pol head, the value provided by *no* cannot be sent to confirm the [-Pol] feature specified by *not* because Agree between *not* and *no* in [Spec FocP] cannot be established.

When the phonologically overt Pol head, i. e. *not*, cannot serve as the qualified target for the movement operation, the only remaining choice is to involve a phonologically null Pol head, i. e. the high Pol head. The syntactic derivation is as follows:

(36)



According to the above derivation, the [-Pol] feature taken by *no* is provided to the null Pol head above TP, which means that John's sometimes not coming to work is within the scope of the negation. Naturally, the interpretation of this sentence exhibits the property of the truth -based system.

To sum up, for a negative question with an adverb preceding the negative

particle, the low Pol head cannot be the target of variable movement because it is within a phase domain which blocks its Agree relationship with the answer *no* outside the event domain. This makes the null high Pol head the only legitimate target for variable movement, resulting in the interpretation of the truth -based system.

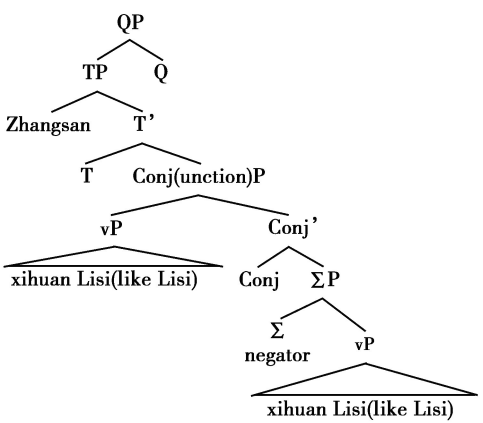
5. Accounting for Chinese Negative Questions and Their Answers

5.1 The Creation of Open Value in Chinese Yes/No Questions

In Section 4, we have shown, following Holmberg, that a yes/no question is formed because an open value on the polarity head is created in syntactic derivation, and the Q head requests the hearer to provide a value, either positive or negative. We assume the creation of an open value for the derivation of a yes/no question is universal, but the ways this open value are created vary across languages. In Chinese, like English, two positions are possible for the creation of such an open value, one being high and the other being low. What distinguishes Chinese from English yes/no question lies in how the open value is created for the low position.

Recall, in English, the open value is always specified on a single Pol head, either low or high. Chinese, however, can create an open value without resorting to a single head. Instead, a conjunction is employed to create a normal yes/no question. The structure is roughly as follows:

(37)



The question particle, *ma*, is the spelt out form and syncretism of the conjunction head plus the negative particle (and even the Q particle)⑦, while the vP following the negative particle, due to its identical form with the vP preceding the negative particle, is elided⑧. Therefore, what the Conjunction Phrase derives is an interpretation as follows: "Zhangsan likes Lisi or does not likes Lisi" .The Q head takes the function to ask the addressor to make a choice between the two alternatives .

The final interpretation then is equivalent to the English yes/no question *Does Zhangsan like Lisi?* But it is obvious that the process of derivation is different. For English, the open value (a variable) is specified on a single Pol head, while for Chinese, the open value is created via a conjunction which allows the addressor to make a choice between two alternatives. This process is the underlying reason for the difference concerning the answers to yes/no questions in these two languages. In English, a particle selected from the lexicon which provides a positive or negative Pol feature can be the answer to a yes/no question. But in Chinese, such a particle cannot be a legitimate answer to a normal yes/no question simply because the open value is not specified on a Pol head. To answer a normal yes/no question in Chinese, following the derivation in (37), we have to either utter VP if the positive alternative is chosen, or the ΣP. Following the condition for elision, only V or [negator V] is spelt out in the answer⑨. That's why we only use *xihuan* (like) or *bu xihuan* (not like) to answer the question derived in (37) while the counterparts of *yes/no* in Chinese such as *shi/bushi* do not work here, a puzzle that does not seem to find a natural answer either in Holmberg's account or anywhere else.

---

⑦ We will provide more explanation for this point shortly.

⑧ To involve a ConjunctionP in Chinese questions is not a novel hypothesis, see, for example, Tang (2015), who recently proposes that Chinese particles, including questions particles, all indicate a Conjunction Phrase.

⑨ There might be other possible reasons for such elision in Chinese; for example, the radical drop property might also be a reason. We do not entangle ourselves in this issue here, because whatever reasons are selected, our account for the syntax of yes/no questions in Chinese is not to be affected.

5.2 The Nature of Question Particle *Ma* in Mandarin

In the last section, we left an assumption unexplained: that *ma* is the result of fusion which consists of a negator and a question particle. Firstly, we have to explain why *ma* is related to a negator. The rich literature on the Chinese particle *ma* agrees on the point that *ma* developed from the negator *wu* in Tang Dynasty. We assume that originally, *ma* consists of two parts, the negator *me* and the question particle *a*. The negator *me* is only used in questions to be combined with the question particle *a*, while in declarative sentences, the negator is realised with another particle *bu*. Below we provided two pieces of evidence, arguing that there is a pure question particle *a* in Chinese and that a yes/no question particle involves a negator and a question particle.

The following example shows that *a* in Mandarin Chinese is a general question particle:

(38) Ni mingtian shenme shihou lai a?
You tomorrow what time come a?
'When will you come tomorrow?'

The hypothesis that a yes/no question particle consists of a negator and a pure question particle can be further supported by data from Yixing[10], a variety of Chinese Wu dialect, which has both fusion version as well as the separate version of the yes/no question particle. In Yixing, like many other Wu varieties, the yes/no question is related to the negator *fe*, and *a* which is a general question particle. A normal yes/no question in Yixing is as follows:

(39) a. Zangsa huexi Lisi fe a?
Zhangsa like Lisi FE A?
'Does Zangsan like Lisi?'

[10] For a more detailed description and analysis of Yixing, see Hu & Perry (forthcoming)

b. Zangsan huexi Lisi fa?
Zangsa like Lisi FA?
'Does Zangsa like Lisi?'

It is then obvious in Yixing that the normal yes/no question particle *fa* is the result of fusion of the negator *fe* and the question particle *a*. It should also be noted here that the answers to such normal yes/no questions are identical to those in Mandarin: we repeat either the verb or the negator plus the verb, showing that the process of derivation is the same in both Yixing and Mandarin in terms of the normal yes/no questions. This further supports our hypothesis that the Mandarin particle *ma* is a syncretism of a negator and a question particle. The difference between Mandarin and Yixing is that in the former, another negator is taken in declarative sentences and the negator and the general question particle are always fused, while in the latter the single negator is used for both yes/no questions and declarative sentences and the negator and the general question particle are separable. Such differences do not lead to any difference in terms of the derivation of yes/no questions in the two varieties of Chinese.

In the rest of this paper, for the ease of description, we still term *ma* as a question particle, although we know that it is in fact a particle containing something more than a question particle.

5.3 The Derivation of Negative Questions in Chinese

Now we turn to our core concern: the negative question in Chinese. We have shown in the previous sections that for a normal yes/no question, the open value is created by a conjunction that involves VP. But this strategy cannot apply if a negative question is to be formed. Recall that the possibility of the strategy of ConjP relies much on the availability of the particle *ma* which consists of a negator and a question particle. This means that if the ConjP strategy is taken, the coordinated phrase following the Conjunction head is always a ΣP. In a negative question, however, the phrase before the Conjunction head is also negated. The result is that before and after the conjunction there is the same

negated VP, not able to create any open value. We can take the following example to illustrate this point:

(40) Zhangsan bu xihuan Lisi ma?
Zhangsan not like Lisi MA?
'Does Zhangsan not like Lisi?'

If we assume that the ConjP strategy is involved to create an open value, what we get is something like this:

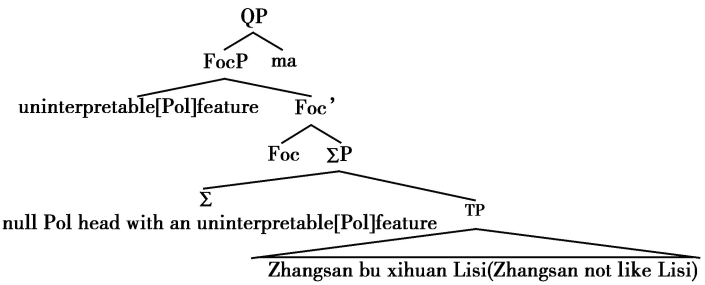
(41) not [like Lisi] or[not like Lisi]

Obviously, the above conjunction phrase cannot create any open value. Therefore, another strategy is taken for a negative question to create an open value. One potential problem is that still the same question particle *ma* is involved in the negative question, which would indicate that the same ConjP strategy is taken. We will return to this point later, showing that in fact the negative question particle *ma* and the *ma* in normal yes/no questions are homonyms. For now, let's suppose *ma* in a negative question is a pure question particle in the Q position.

We have shown that in a low domain the creation of an open value relies on the ConjP strategy, not the low Pol head. Now that in a negative question, the ConjP strategy is blocked, naturally another strategy is needed. At this point, we assume that like English, in Chinese there is a high Pol head which can specify an open value, i. e. an uninterpretable [Pol] feature. The variable with the open value will be moved to the [Spec FocP] position, while the Q head asks the addressor to provide a value to this value: this strategy is exactly the same with the operation of specifying an open value in the high Pol head in English. We can thus predict that the interpretation will also be the same with answers to the English negative questions that involve a higher Pol head. This prediction does hold: we have shown that when the open value is specified on the high Pol head in English, the answers exhibit the property of the truth -based system. The

detailed derivation of a Chinese negative question is as follows:

(41)



Just like the derivation of an English negative question involving a higher Pol head, in a Chinese negative question, a null Pol head specifies an uninterpretable [Pol] feature, i. e. an open value, which is further moved to [Spec FocP] position as a variable. The Q head asks the addressor to provide a value, positive or negative. In answering such a question, an item with an interpretable [Pol] feature from the lexicon is needed. In Chinese, *shi* and *bu -shi* provide the positive and negative [Pol] feature respectively. If the answer is *shi*, this particle is inserted in the [Spec FocP] position, providing the [+Pol] feature which values the uninterpretable Pol feature on the Pol head (the Σ head). The interpretation we get is that it is true that Zhangsan does not like Lisi. On the contrary, if *bu -shi* is the answer, we get the interpretation that it is not true that Zhangsan does not like Lisi. These interpretations precisely exhibit the property of the truth -based system.

Now we can summarise why in English the properties of both polarity and truth - based systems are exhibited, while in Chinese only the latter is involved. The crucial underlying reason is that in English the open value for a yes/no question can be specified on a single Pol head in either the lower VP domain or in a higher domain. When the lower domain is targeted, the polarity - based system property will be exhibited; the truth -based system will be exhibited if the higher Pol head is targeted. In Chinese, the open value created in the lower domain does not hinge upon a single Pol head, but is via the ConjP strategy, which is blocked in the derivation of the negative question. Therefore, the high Pol head is the only choice, and it follows that only the characteristic of the truth

-based system is displayed.

5.4 The Double Functions of *Ma:* Evidence from Yixing

In this section we provide an explanation for the hypothesis that the particle *ma* in Chinese has at least two functions, one being the syncretism of a negator and a question particle, and the other being a general particle. In the process of grammaticalisation, *ma* is developed from a negator into the final syncretism of negator plus question particle. Our hypothesis is that because of the frequent use of *ma* in normal yes/no questions that take the ConjP strategy to create the open value, it is further taken as a pure yes/no question particle merged in the Q position, which can then be used in negative questions which do not involve the ConjP. Taking *ma* as a pure Q particle for a negative question can be considered as a last resort, considering that no other suitable question particle is available. The question particle *ne* is only used for wh -questions, and the question particle *a* in modern Mandarin always indicates the speaker attitude (for example, the speakers' surprise). It should be noted that a particle (functional item) is taken to denote different functions is not uncommon: for example, the classifier in Chinese might be taken to value different features as is proposed in Cheng & Sybesma (1999), and the English numeral *a* is also taken to value a D feature in Borer (2005a).

The above explanation can be further substantially supported by the yes/no question forms in Yixing. As we have already shown, in Yixing the yes/no question takes the same structure with that of Mandarin. The difference concerning yes/no questions between Yixing and Mandarin lies in the choice of particles. The particle of the normal yes/no question in Yixing is *fa*, which consists of a negator *fe* and a question particle *a*. Unlike Mandarin which has to take the yes/no question particle *ma* in a negative question, when a negative question is expressed, the sentence final particle is *a*, instead of *fa*:

(42) Q: Zangsa fe huexi Lisi a?
Zangsa not like Lisi A
'Does Zangsa not like Lisi?'

A1: Si ge
Yes GE
'yes' (Zangsa does not like Lisi)
A2: Fe si.
Not Yes
'no' (Zangsa likes Lisi)

The above example shows that the negative question in Yixing and its answers are largely the same with their counterparts in Mandarin. The only difference is that Yixing does not take the normal yes/no question particle in the negative question. Without going into details, we assume at least two reasons contribute to this difference: firstly, in Yixing, the negator and the question particle can still appear separately, and thus the language acquirer will know that *fa* is not a single Q category.Secondly, in Yixing, the question particle *a* can be a neutral Q category, unlike its counterpart in Mandarin that has to express the speaker's attitude. Therefore, the language system does not need to take *fa* as a last resort to express a negative question.

Since *ma* is taken as a last resort to serve as a pure Q particle in negative questions, we may predict that speakers of Mandarin will gradually take *ma* in a normal yes/no question as a single pure Q category. This is indeed the case. Although standardly, it is the V and *bu* (not) -V, instead of *shi* and *bu -shi,* that are taken as the answers to normal yes/no questions in Mandarin, some speakers do feel at least *shi* and *bu -shi* are marginal. The reason, we assume, is that because *ma* is more and more used as a pure Q category, some speakers might take *ma* in a normal yes/no question as ambiguous between the syncretism of a negator and question particle, or a pure Q category. If *ma* is really taken as a single Q category, then ConjP is not involved, and thus the Q particle asks the speaker to provide a value to the single Pol head. If this is the case, *shi* and *bu -shi* will be the answers. At least currently, V and *bu* -V are the mostly widely used answers to normal yes/no questions which indicate the existence of ConjP in the question, and thus the primary linguistic input tells the language user that *ma* is a form of syncretism in the normal yes/no question. This explains why the

shi and *bu shi* answers to normal yes/no questions are only taken as marginal. If our account developed so far is on the right track, it can be further predicted that in Yixing, the *shi/bu -shi* style answers (*si* and *fe -si* in Yixing) will be taken as completely unacceptable for the normal yes/no questions. This is because the particle *fa* for the normal yes/no question consistently takes the function of the syncretism of negator and the Q particle, and is never taken as a last resort to serve as a pure Q category. This prediction does hold. The Yixing speakers we consult all reject the *si/fe -si* answers to the normal yes/no questions. In addition, other speakers of Wu varieties which exhibit the similar properties of yes/no questions also reject such answers. Such predictions thus further support our hypothesis about the syntactic nature of negative questions in Chinese.

6 Conclusion

The account of negative questions developed in this paper is based on the assumption that a yes/no question is derived when a polarity head is targeted, which, due to the lack of an interpretable polarity feature, conveys an open value. The Q head in the left periphery of CP requests the addressee to provide a polarity value. In English, two polarity heads in hierarchically different positions can be targeted for the creation of the open value. The targeting of the higher polarity head gives rise to the interpretation of the truth -based system while the operation on the lower polarity head yields the interpretation of the polarity -based system. The targeting of a polarity head in English will be blocked due to whether the polarity head is phonologically null, whether there is semantic contradiction, or whether the negator is involved in a vP phase.

Chinese differs from English in terms of yes/no questions due to the different ways of creating the open value. To derive a neutral yes/no question, Chinese takes the Conjunction Phrase strategy as is proposed in Tang (2015), and thus rejects the *yes/no* type particles as legitimate answers. In deriving the negative question, the Conjunction Phrase strategy is blocked, because the semantic interpretation yielded by this strategy is not compatible with the interpretation of a yes/no question. Thus the derivation of the negative question

in Chinese only targets the higher polarity head, which explains why Chinese only exhibits the truth -based system's interpretation. A central hypothesis in this account is that the question particle *ma*, while being the result of the fusion of a negator and a pure question particle, serves as a single question particle providing a value to the Q head. This hypothesis is supported by the data from Yixing Chinese, where there is clear evidence that only a single question particle is involved in the derivation of a negative question, while the sentence final particle in the neutral yes/no question is the fusion of a negator and a pure question particle. This research therefore sends the message that the study of non -standard linguistic varieties can be used to reach more general applicable conclusions.

References

Acquaviva, P. (1997). 'The Logical Form of Negation: A Study of Operator - variable Structures in Syntax'. Garland outstanding dissertations in linguistics. New York: Garland.

Borer, H. (2005a). *Structuring Sense*. Volume 1. In Name Only. Oxford: OUP.

Borer, H. (2005b). *Structuring Sense*. Volume 2. The Normal Course of Events. Oxford: OUP.

Borer, H. (2013). *Structuring Sense*. Volume 3. Taking Forms. Oxford: OUP.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, N. (2000). 'Minimalist Inquiries: The Framework'. In Martin, D. M & J. Uriagereka (eds). *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, Mass: MIT Press.

Chomsky, N. (2005). 'Three Factors in Language Design'. *Linguistic Inquiry* 36, 1–22.

Cheng, L. & R. Sybesma. (1999) Bare and not -so -bare nouns and the structure of NP. *Linguistic Inquiry* 30, 509–542.

Ernst, T. (2002). *The Syntax of Adjuncts*. Cambridge University Press.

Herburger, E. (2000). *What Counts*. Cambridge, MA: MIT Press.

Holmberg, Anders (2001). 'The syntax of yes and no in Finnish'. *Studia*

Linguistica 55: 141–174.

Holmberg, Anders (2003). 'Yes/no Questions and the Relation between Tense and Polarity in English'. In P. Pica (ed.) *Linguistic Variation Yearbook*. Amsterdam: John Benjamins, 43–68.

Holmberg, Anders (2012) 'The Syntax of Negative Questions and their Answers'. Proceedings of GLOW in *Asia* IX.

Holmberg, Anders (2013). The Syntax of Answers to Polar Questions in English and Swedish. *Lingua* 128: 31–50.

Hu, X. & Perry, J. (forthcoming) The syntax and phonology of non -compositional compounds in Yixing Chinese. *Natural Language and Linguistic Theory*.

Jackendoff, R. (1969). *Some Rules of Semantic Interpretation for English*. PhD dissertation, MIT.

Jackendoff, R. (1972). *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Kramer, R. & K. Rawlins (2011) 'Polarity particles: an Ellipsis Account.' The Proceedings of the 39th Annual Meeting of the North East Linguistic Society (NELS 39), GLSA, 2011.

Kramer, R. and K. Rawlins (2012) *An Ellipsis Approach to Answer Particles in Positive and Negative Contexts*. Talk presented at Workshop on the Syntax of Answers, Newcastle University, June 2012.

Laka, I. (1990). *Negation in syntax: On the Nature of Functional Categories and Projections*. PhD dissertation, MIT.

Lasnik, H. (1975). On the Semantics of Negation. In D. J. Hockney (ed.) *Contemporary Research in Philosophical Logic and Linguistic Semantics*, 279–311. Dordrecht: Reidel.

Marantz, A. (1997). No escape from syntax: don't try morphological analysis in the privacy of your own lexicon. University of Pennsylvania Working Papers in Linguistics (4), 201–225.

Marantz, A. (2007) 'Phases and words'. In S -H Choe et al (eds.) .*Phases in the Theory of Grammar*. Seoul: Dong In, 191–222.

Parsons, T. (1990) *Events in the Semantics of English*. Cambridge, MA: MIT Press.

Rizzi, L. (1997). The Fine Structure of the Left Periphery. In L. Haegeman (ed.), *Elements of Grammar*. Dordrecht: Kluwer.

Svenonius, P. (2001). Subject Positions and the Placement of Adverbials. In P. Svenonius (ed.), *Subjects, Expletives, and the EPP*. Oxford University Press, 199–240.

Tang, S. (2015). A Generalized Syntactic Schema for Utterance Particles in Chinese. *Lingua Sinica* 1: 3, 1–23.

Zeijlstra, H. (2004).*Sentential Negation and Negative Concord*. PhD dissertation, University of Amsterdam.

Zeijlstra, H. (2013) Negation and Negative Polarity. In den Dikken, M. (ed.) *The Cambridge Handbook of Generative Syntax*. Cambridge: CUP, 793–826.