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Neg-raising and Aspect: Evidence from Mandarin

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Abstract

Two canonical negatives in Mandarin, *mei* and *bu*, display an asymmetry with respect to the presence of neg-raising inferences. In particular, *mei* prefers non-neg-raising readings, while *bu*, unless attaching to a functional category, is forced to be interpreted as neg-raising. This paper aims to explore an approach to address this asymmetry based on interactions between negation and aspect in both syntax and semantics. I argue that the asymmetry between *mei* and *bu* is resulted from their syntactic positions relative to aspect, and their licensing conditions especially selections of event variable binders.

Neg-raising and Aspect: Evidence from Mandarin

Yimei Xiang*

1 Introduction

Negative raising (abbreviated neg-raising) is a scope phenomenon involving sentential negation and sentence-embedding predicates. When a sentence-embedding predicate (e.g., *think* and *want*) is negated, it implies a corresponding sentence in which negation takes scope over the embedded clause. For instance, (1a) is interpreted as (1b) by default. The narrow scope reading of negation is termed as “neg-raising reading”, while the one with a wide scope is called “non-neg-raising reading”. Predicates like *think* triggering the neg-raising reading are called “neg-raising predicates”. For sake of comparison, (2a) does not necessarily imply the reading in (2b) since the matrix verb *know* isn’t a neg-raising predicate.

- (1) a. John doesn’t think Mary is coming.
b. John thinks that Mary isn’t coming.
(2) a. John doesn’t know Mary is coming.
b. John knows that Mary isn’t coming.

It is interesting to note that two canonical Mandarin negatives, *mei* and *bu*, display an asymmetry with respect to the presence of neg-raising inference.¹ When followed by a neg-raising trigger such as *xiang* ‘want’, *mei* intuitively doesn’t go with the neg-raising inference, while *bu* must be interpreted as neg-raising. For instance, (3b) is infelicitous since the forced neg-raising reading of *bu* in the former clause conflicts with the cancellation in the latter clause.

- (3) a. *Wo mei xiang likai zheli*, but I don’t feel bad if you ask me to leave.
1SG NEG want leave here
‘I don’t have the desire of leaving here, but I don’t feel bad if you ask me to leave.’
b. #*Wo bu xiang likai zheli*, but I don’t feel bad if you ask me to leave.
1SG NEG want leave here
‘I have the desire of staying here, but I don’t feel bad if you ask me to leave.’

Although neg-raising has been conceived of as a semantic or pragmatic matter in the now-popular theories (Bartsch 1973, Horn 1978, Gajewski 2005, 2007, among the others), the asymmetry between *mei* and *bu* inspires me to explore an approach from the perspective of syntax-semantics interface. I argue that this asymmetry is subject to their scope difference with respect to aspect, which, leads to a subtle but significant distinction on their interactions with event variable binders, especially the existential closure. Underlying this approach I advocate are two assumptions, both of which I accept. The first assumption comes from Gajewski (2007) that a non-neg-raising inference arises if the excluded middle presupposition is cancelled. The second one is the basic assumption in the Neo-Davidsonian account that event variables exist and need to be existentially or generically bound.

This paper has two main goals. The first is to defend an interface-based approach to neg-raising cross-linguistically. The second goal is to simultaneously defend a new way to address the syntactic and semantic differences between *mei* and *bu* based their distributions with aspectual markers and licensing conditions.

The remainder of this paper proceeds as follows. Section 2 discusses Gajewski’s (2007) presupposition-based account and the canceling effect from the floating operator *A*. My assumptions

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¹Sentences containing overt functional items are not considered in the first three sections since the scope of *bu* is greatly changed once it attaches to a functional element. I will come to relevant cases in Section 4.

about neg-raising and detailed arguments are given in Section 3. First, based on the distributional pattern between negatives and aspectual markers, I present my syntactic proposal of *mei* and *bu* and argue for a c-command relation “*mei* > aspect > *bu*” in both overt syntax and logical form. Second, I show that how the hierarchical relation with respect to aspect affects their interactions with event variable binders in the Neo-Davidsonian semantics. Third, I show the existential binder makes a difference to the interpretation of neg-raising inferences. Section 4 briefly extends the idea to variants of *bu* and other negatives in Mandarin.

2 Presupposition-based Account and the Floating Operator *A*

Gajewski (2005, 2007) develops a presupposition-based account to explain the neg-raising inference. He argues that neg-raising inferences are derived from the literal interpretations of negative statements and the so-called *Excluded Middle (EM) presuppositions*, which are presupposed by neg-raising predicates such as *believe* or *want* to indicate the existence of attitude biases. For instance, the proposition *John believes p* evokes the attitude bias that *John either believes p or believes not-p*, which projects over negation as a soft presupposition. As formalized in (4), the truth condition in (4a) together with the EM presupposition in (4b) entails the neg-raising reading.

- (4) a. $\neg\forall w (w \in M(j) \rightarrow w \in p)$ *John doesn't believe p.* (Truth-condition)
 b. $\forall w (w \in M(j) \rightarrow w \in p) \vee \forall w (w \in M(j) \rightarrow w \notin p)$ (EM Presupposition)
 $\therefore \forall w (w \in M(j) \rightarrow w \notin p)$ *John believes not-p.* (Neg-raising reading)

In some cases, a non-neg-raising inference arises when there is a stress on a negative or an auxiliary, as exemplified in (5a) (caps indicating stress). Gajewski (2007) argues that this phenomenon is a result of a so-called *floating operator A* cancelling the EM presupposition.

- (5) a. *John DOESN'T believe that John is coming.*
 b. NEG [*A* [John believes that John is coming]]

The idea of the *A*-operator dates back as far as Bochvar (1939) and was extensively discussed in Beaver and Krahmer (2001) to account for presupposition projection and presupposition accommodation under partial propositional logics. In partial semantics, a proposition ϕ is assigned with a third-value (noted by N(either)) when suffering from presupposition failure. In such cases, the *A*-operator wipes out all trivial cases by mapping an N(either) value to an F(false) value, as illustrated by the truth table in (6).

- (6) Truth table of the floating operator *A*

ϕ	$\neg\phi$	<i>A</i> ϕ	\neg <i>A</i> ϕ
T	F	T	F
F	T	F	T
N	N	F	T

This system helps to explain the process of how to salvage presupposition failures in utterances such as (7). First of all, the *A*-operator applies to the prejacent ϕ : *the king of France is bald* (which is locally assigned with an N value), eliminating its triviality, and converting it into a statement like: *it is true that the king of France is bald* (with an F value). Next, negation applies to *A* ϕ as a whole and makes a True denial: *it is not true that the kind of France is bald*, which is coherent with the presupposition cancellation in the latter clause.

- (7) The king of France is **not** bald, because there is no king of France.

Let me now return to the initial question: why do *mei* and *bu* show an asymmetry with respect to the presence of neg-raising inferences? One possible answer is to assume that *mei* optionally takes scope over the *A*-operator while *bu* has to be embedded under *A*. Accordingly, a non-neg-

raising inference appears when the *A*-operator cancels the EM presupposition. However, this assumption is unpromising due to three problems. First of all, *A* is traditionally used for meta-assertions $A\phi$ or meta-denials $\neg A\phi$; however, it's unreasonable to assume *mei* to be essentially a speech-act. Second, the *A*-operator is normally used for analyzing the presence of verum focus, which is realized by stressing negatives or auxiliary elements, while a statement denied by *mei* allows focus to occur in argument positions. Third, since *A* is a propositional operator of type $\langle t, t \rangle$ which affects only truth-values, there is no clear theoretical reason to exclude the possibility of having *A* scope over *mei* or below *bu*.

Therefore, employing the floating operator *A* only helps to address part of non-neg-raising cases. To address the remnant especially those with *mei*, I adopt the Gajewski's assumption about EM presuppositions, but argue that in the remnant cases it isn't the floating operator *A* but rather an existential event variable binder that wipes out EM presuppositions and eliminates neg-raising inferences.

3 A New Approach

What is the most essential difference between *mei* and *bu*? The immediate response would be that *mei* is not a pure negation but a blending of a negative morpheme and a perfective morpheme (Wang 1965, Huang 1988). In particular, the perfective auxiliary *you*, which is originally used as a possessive predicate 'to have', can be freely inserted after *mei* without creating any change in interpretation. The auxiliary use of *you* is commonly seen in negative answers, and sometimes appears in interrogatives and positive answers in the Southern Mandarin. (See Wang 1965, Huang 1988 and Lin 2003 for discussions of *you*.)

- (8) a. “*Ta qu -guo meiguo ma?*” “*Mei -you.*”
 3SG go -EXP America Q NEG -PERF
 ‘Have he ever been to America?’ ‘No.’
- b. “*Ta dai -zhe maozi ma?*” “*Mei -you.*”
 3SG wear -DUR hat Q NEG -PERF
 ‘Is he wearing a hat?’ ‘No.’
- c. “*Ta zai tiaowu ma?*” “*Mei -you.*”
 3SG -PROG dance Q NEG -PERF
 ‘Is he dancing?’ ‘No.’
- (9) a. “*Ni you chi fan ma?*” “*Wo you chi fan.*”
 2SG PERF eat rice Q 1SG PERF eat rice.
 ‘Have you had dinner?’ ‘I have had dinner.’

Since the salient *you* and the canonical perfective aspectual marker *-le* are allomorphs of the same perfective morpheme, *mei* and *-le* are complementarily distributed. Following examples are quoted from Lin (2003).

- (10) a. *Ta mai -le fangzi.*
 3SG buy -PERF house
 ‘He bought a house.’
- b. *Ta mei (you) mai fangzi.*
 3SG NEG PERF buy house
 ‘He didn't buy a house.’
- c. **Ta mei (you) mai -le fangzi.*
 3SG NEG PERF buy -PERF house
 ‘He didn't buy a house.’

This silent perfective allomorph in *mei* gets me to think that the asymmetry between *mei* and *bu* with respect to the presence of neg-raising inferences is actually attributed to their interactions with aspect. More interestingly, as suggested by Jim Huang (p.c.), it seems to be a cross-linguistic issue that aspect affects neg-raising inferences. As illustrated by the English examples below, sentences like (11a) and (12a) in which negation takes scope over perfectives or progressives do not

imply the corresponding neg-raising interpretations in (11b) and (12b).

- (11) a. I haven't thought that John is coming.
 b. I have thought that John is **not** coming.
 (12) a. I am **not** thinking that John is coming.
 b. I am thinking that John is **not** coming.

Based on these two concerns above, it is plausible to assume that the core distinction (in both syntax and semantics) between *mei* and *bu* is strongly related to their interactions with aspect. In the following sections, I will start from their syntactic relations (especially the c-command relation with aspect) and then move onto a more exciting issue of how those syntactic relations affect their semantic interpretations.

3.1 Locating *Mei* and *Bu* via Aspectual Markers

This section looks into the interactions between negatives and aspectual markers, especially the durative *-zhe*, the experiential *-guo* and the perfective *-le*.² Structures containing an aspectual cluster such as *chi-guo-le* 'eat-DUR-PERF' hint that the aspectual system in Mandarin contains multiple projections, and in particular, the perfective *-le* c-commands the remnant, as illustrated in (13).

- (13) [Asp₁' {-le} [Asp₂P [Asp₂' {-zhe/-guo} VP]]]

To realize the linear order of [V-Asp] and to check off aspect features, aspectual affixes hop to verb stems under adjacency. This adjacency condition predicts that nothing can be overtly inserted into a head node between aspect and a verb stem. For example, the ungrammaticality of (14a) results from the intervening effect of the ability modal *neng*, which is located between aspect and the matrix verb *chi* 'eat'. For sake of comparison, the epistemic modal *keneng* in (14b) doesn't violate the adjacency requirement of affix-hopping as it takes scope over aspect.

- (14) a. *Ta neng chi>(*le) san wan fan.*
 3SG MOD_{Ability} eat-PERF three bowl rice
 'He is able to eat three bowls of rice.'
 b. *Ta keneng chi-le san wan fan.*
 3SG MOD_{Epistemic} eat-PERF three bowl rice
 'It might be the case that he has had three bowls of rice.'

As for the distributions of negatives, as exemplified in (15), *mei* can co-occur with all aspectual markers except the perfective *-le*; while *bu*, without attaching to a functional category, cannot co-occur with any.

- (15) a. *Wo mei dai-zhe/ dai-guo/ dai(*le) maozi.*
 1SG NEG wear-DUR/ wear-EXP/ wear-PERF hat
 'I'm not wearing a hat./ I haven't worn any hat./ I didn't wear a hat.'
 b. **Wo bu dai-zhe/ dai-guo/ dai-le maozi.*
 1SG NEG wear-DUR/ wear-EXP/ wear-PERF hat
 'I'm not wearing a hat./ I haven't worn any hat./ I didn't wear a hat.'

Based on the syntactic structure in (13), I argue that the distributions of *mei* and *bu* in (15) can also be accounted for in terms of their position difference: *mei* is located at the higher aspect head while *bu* stays below aspect, as illustrated in (16). As a corollary, the presence of *bu* intervenes the

²Apart from these three aspectual markers, the progressive marker *zai-* is also a frequently used aspectual marker in Mandarin. However, the case of *zai-* is much more sophisticated. On the one hand, *zai-* precedes the verb stem in the linear order, (e.g., *zai-chi* 'PROG-eat') and hence supposedly doesn't take affix-hopping. On the other hand, there is variation with respect to the acceptance of *bu-zai* 'not-PROG' among native speakers. I leave this question open for the time being.

affix-hopping of aspectual markers; while *mei*, located at the higher aspect head, doesn't display this blocking effect.

(16) [Asp₁' {*mei*, -*le*} [Asp₂P [Asp₂' {-*zhe*/-*guo*} [NegP *bu* VP]]]]

Furthermore, since interpreting a propositional or quantificational operator in Mandarin is typically isomorphic, the c-command relation between *mei* and *bu* with respect to aspect also leads to an analogous hierarchy in the logical form as in (17). I specifically call it "Generalization I" to highlight its importance in my approach to addressing the asymmetry between *mei* and *bu*.

(17) **Generalization 1:**
mei > aspect > *bu*

3.2 Syntax-semantics Mapping: Event Variable Binders in Aspect

So far I have postulated a story to describe how negatives and aspectual markers are syntactically distributed in Mandarin. Here arises a question as to how the syntactic interactions with aspectual markers affect semantic interpretations.

Focusing on the differences in aspectual selection, Lin's (2003) account below also links the distributions of *mei* and *bu* with aspect.

- (18) Aspectual selections of *bu* and *mei* (Lin 2003)
- a. *Bu* aspectually selects as its complement a stative situation that requires no input of energy in order to obtain that situation.
 - b. *Mei* aspectually selects an event as its complement.

Regardless of whether aspectual selection is directly related to syntax, I doubt the generalization in (18) since it places much more constraints on the definition of "states" than the one in the normal sense, and consequently leads to an excessively broad definition of "events". I adopt Lin's observations but disagree on his classification methodology. In particular, as far as I see, what is said to be "stative" in Lin's account is actually resulted from the generic or universal force in a generic operator or a covert modal, as evidenced by the following facts.

First of all, as illustrated in (19), *bu* can freely co-occur with individual-level adjectives and verbs, a class of predicates expressing properties of individuals that are permanent or tendentially stable. Chierchia (1995) argues that individual-level predicates are inherent generics and must be locally licensed by a covert generic operator *Gen*.

- (19) a. *Ta bu congming.*
3SG NEG intelligent
'He is not intelligent.'
- b. *Ta bu xihuan wo.*
3SG NEG like 3SG
'He doesn't like me.'

Second, sometimes *bu* can also co-occur with stage-level predicates, however, as indicated by Huang (1988), those cases actually contain an empty volitional or future modal verb, and what *bu* negates are the empty modal verbs, (also see Lin 2003). In addition, those covert modals (marked in brackets) can be interpreted as neg-raising triggers like *plan*, *want*, or *will*.

- (20) a. *Wo jintian bu (dasuan)qu shangxue.*
1SG today NEG plan go school
i. 'I don't have the plan to go to school today.'
ii. 'I have the plan of not-going to school today.'
- b. *Ta bu (ken) bang wo xie zuoye.*
3SG NEG will help 1SG write homework
i. 'He doesn't want to help me with my homework.'

- ii. ‘He wants not to help me with my homework.’

In addition to the covert modal reading, *bu* is also licensed under a habitual or generic context. Chierchia (1995) treats the generic reading as a variant of neg-raising inference. For instance the reading in (21i) implies the one in (21ii) in which negation takes a narrow scope. The semantic representation of (21) is given in (22) in which *bu* is interpreted in the nuclear scope of the generic operator *Gen*. $C(j, x, s)$ denotes a set of contextually (*C*) specified occasions involving *John* (*j*) and the individual variable *x*, and *Gen* quantifies over this set of occasions *s*.

- (21) *Yuehan bu chi niurou.*
 John NEG eat beef
 i. ‘John doesn’t have the habit of eating beef.’
 ii. ‘John has the habit of not-eating beef.’
 (22) *Gen s* [_{Restriction} beef’ (*x*) $\hat{C}(j, x, s)$] [_{Scope} *bu* [eat’ (*j, x, s*)]]

Finally, for sake of comparison, even if co-occurring with an individual-level predicate *ai* ‘love’, *bu* is not legalized when the aspect is perfective or experiential, which, contrary to generics and covert modals, displays an existential force. This fact shows that what matters to the legitimacy of *bu* is neither the type of its co-occurring predicates, nor the eventuality of its complement, but rather the quantificational force from aspect.

- (23) *Wo bu ai (*-le /*-guo) ni.*
 1SG NEG love PERF EXP 2SG
 ‘I have never loved you.’

The facts above can be generalized by saying *bu* must be associated with a covert modal or a predicate (overtly or covertly) licensed by *Gen*, and this is tantamount to say *bu* has to be licensed in a context with universal force. As suggested by Irene Heim (p.c.), this distinction is no mere accident as long as one believes that *Gen* is complementarily distributed with other aspectual items which are specified with existential force.

Contrary to *bu*, *mei* can be freely associated with a stage-level predicate and never gather a generic/habitual reading, as shown in (24) and (25), respectively. These characteristics of *mei* are strongly evidenced by its interactions with the stative predicate *zui* ‘drunk’, which is both stage-level and stative.

- (24) *Wo mei/??bu zui.*
 1SG NEG/NEG drunk
 ‘I’m not drunk.’
 (25) *Yuehan mei chi niurou.*
 John NEG eat beef
 ‘J didn’t eat beef.’
 #‘J had the habit of not-eating beef.’

Now the main semantic difference between *mei* and *bu* can be summarized in terms of their licensing conditions especially their requirements on the quantificational force.

(26) **Generalization 2:**

- a. *Bu* is licensed in a context in which the aspect displays a generic or universal force.
 b. *Mei* is licensed in a context in which the aspect displays an existential force.

It is no coincidence that *mei* and *bu* have different scopes with respect to aspect (see Generalization 1) and different selections on the quantificational force (see Generalization 2). On the Neo-Davidsonian approach, in order to complete the interpretation of an event/state and make it into a true or false statement, we have to assume that the set of events/states is closed by an existential closure *E* or bound by other sorts of quantifiers such as a generic operator *Gen* which operates on

an implicit restriction and exhibits a universal force.³ (Krifka 1989, 1990, Parsons 1990:18, Chierchia 1995, Bayer 1997:81 among the others.) Semantic representations are given in (27).

- (27) a. $E_{\langle st, \tau \rangle} = \lambda f_{st}. \exists e. \dots f(e)$
 b. $Gen_{\langle st, \tau \rangle} = \lambda f_{st}. Gen\ s\ [Restriction\ c(s)]\ [Scope\ f(s)]$

Given the lack of tense morpheme in Mandarin, I am inclined to believe that event variable binders in Mandarin are introduced in the projections of aspect.

Landman (1996) postulates the Scope Domain Principle, saying only “non-quantificational NPs can be entered into scope domains” (creating scopeless readings). Accordingly, the existential closure E , as argued by Champollion (2011), cannot scope over any quantificational noun phrases. For instance, (28) should be interpreted as (29a) rather than (29b).

- (28) John kissed every girl
 (29) a. $= \forall x[\text{girl}(x) \rightarrow \exists e[\text{kiss}(e) \wedge \text{ag}(e, j) \wedge \text{th}(e, x)]]]$
 * b. $= \exists e[\text{kiss}(e) \wedge \text{ag}(e, j) \wedge \forall x[\text{girl}(x) \rightarrow \text{th}(e, x)]]]$

By the same token, Champollion (2011) assumes that sentential operators like negation cannot stay in the scope domain of the existential closure, either.

- (30) John didn't laugh.
 (31) a. $= \neg \exists e[\text{laugh}(e) \wedge \text{ag}(e) = j]$ “There is no event in which John laughs.”
 * b. $= \exists e \neg [\text{laugh}(e) \wedge \text{ag}(e) = j]$ “There is an event in which John does not laugh.”

The Scope Domain Principle explains how a scope pattern affects *bu* on its selection of quantificational force. To co-occur with the existential closure E introduced by aspect, *bu* has to take scope over E according to the Scope Domain Principle. However, this possibility is ruled out since it is conflicted with the c-command relation: “aspect > *bu*”. In contrast, *mei* is free from this constraint since it takes scope over aspect. To be brief, only *mei* can co-occur with the existential closure E . Here follows are optional contexts licensing *bu* and the typical structure with *mei*, irrelevant details are omitted.

- (32) a. *Bu* is licensed under contexts with a generic/universal force:
 i. *Bu* with individual-level predicates: $[_{Asp} \emptyset [bu\ [_{VP} Gen\ V]]]$
 ii. *Bu* with covert modals: $[_{Asp} \emptyset [bu\ [_{ModP} Mod\ VP]]]$
 iii. *Bu* in generics and habituals: $[_{Asp} Gen\ [bu\ VP]]$
 b. *Mei* is licensed under contexts with an existential force: $[mei\ [_{AspP} E\ VP]]$

3.3 *E* and Its Presupposition-cancelling Effect

The existential closure E has more semantic and pragmatic consequences besides binding event variables and disallowing non-quantificational items to be entered into its scope domain. In section 2, I have discussed Gajewski's (2007) idea about the presupposition-cancelling usage of the floating *A*. Given the canonical structure in (32b) that *mei* c-commands E , the minimal pair in (33) shows that the existential closure E is in consensus with the *A*-operator with respect to the presupposition-cancelling effect. (“I like Mary” presupposes that “I know Mary”.)

³For simplicity, I unify the analyses of states and events in this article. This simplification doesn't diminish the persuasiveness of my arguments, although in an empirical sense, *mei* tends to be used to convey an event and *bu* is more commonly found in states. As mentioned in my response to Lin (2003), what really matters is the distinction between individual-level and stage-level predicates, namely, the contrast between existential force and universal force.

- (33) *Wo mei/#bu xihuan Mali*, and I even do not know Mary.
 1SG NEG/NEG like Mary
 ‘I do not like Mary, and I even do not know Mary.’
 # ‘I dislike Mary, and I even do not know Mary.’

Similar to the *A*-operator which double confirms the truth of a proposition (*Ap* means “it is true that *p*”), the existential closure *E* emphasizes the existence of an event, (*E* [*P_w* (*e*)] can be read as “there exists a *P* event in *w*”). If the *P* event is undefined due to a presupposition failure, a statement with a form of ‘existing a *P* event in *w*’ will be false. Trees in (34) illustrate the process of how a presupposition failure in a negative statement is salvaged when negation takes scope over the *E* operator. (Capitals in the bracket denote the truth-value of the proposition at each level.)

- (34) a. $\neg Ep$ (T)
 \neg \neg Ep (F)
 E p (N)
- b. $\neg p$ (N)
 \neg p (N)

If I am on the right track, analogous to the mechanism in Gajewski (2007), it is plausible to say *mei* is normally interpreted as non-neg-raising because the co-occurring existential closure *E* cancels EM presuppositions and eliminates neg-raising inferences. On the contrary, structures disallowing the presence of *E* will be forced to get the neg-raising reading. This idea systematically explains why *mei* and *bu* display an asymmetry with respect to the presence of neg-raising inferences and why cross-linguistically a non-neg-raising inference arises if negation takes scope over aspect in the overt syntax.

4 Extensions

Discussions in previous sections focus on the case of bare *bu*, and in this section, I will extend my analysis to cases where *bu* is attached to a functional category. I have concluded that it is the scope pattern relative to aspect that determines a negative’s selection on the quantificational force, and that the quantificational force decides its interactional pattern with neg-raising inferences. According to this conclusion, if a variant of *bu* gets a wide scope by attaching to a functional item such as the focus operator *shi* ‘be’ which c-commands the projection of aspect, this variant should be able to co-occur with the existential closure *E* and allows non-neg-raising interpretations. This conjecture is demonstrated in (35).

- (35) *Wo bu shi xiang likai zheli*, I don’t feel bad if you ask me to leave.
 1SG NEG FOC want leave here
 ‘It isn’t the case that I want to leave here, and I don’t feel bad if you ask me to leave.’

In addition to variants of *bu*, floating negatives like *bing-fei*, which selects a whole CP or TP as its complement, are not necessarily interpreted as neg-raising, either. *Bing-fei* is termed as a floating operator as the subject either precedes or falls within its c-commanding domain.

- (36) a. *Wo bing-fei xiang likai zheli*, I don’t feel bad if you ask me to leave.
 1SG NEG want leave here
 ‘It isn’t the case that I want to leave here, and I don’t feel bad if you ask me to leave.’
 b. *Bing-fei wo xiang likai zheli*, I don’t care about where to stay at all.
 NEG 1SG want leave here
 ‘It isn’t the case that I want to leave here, and I don’t care about where to stay at all.’

5 Conclusions

In this paper I explored an approach to address the asymmetry between *mei* and *bu* with respect to the presence of neg-raising inferences. I adopt the presupposition-based mechanism in Gajewski (2005, 2007) that the truth condition together with an excluded middle presupposition entails the corresponding neg-raising reading; however, what he assumes about the presupposition-cancelling effect from the floating operator *A* doesn't apply to my concern about Mandarin negatives. Therefore, based on the popular assumption that *mei* is a compound of a negative morpheme and a perfective morpheme while *bu* is a pure negation, I decided to look into their interactions with aspect in both syntax and semantics.

On the one hand, distributions between negatives and aspectual markers indicate a c-command relation like “*mei* > Aspects > *bu*” in both overt syntax and logical form (see Generalization 1). This relation, on the other hand, determines the way of interacting with different event variable binders (including the existential closure *E* and the generic operator *Gen*), both of which I assume are introduced in the projection of aspect. In particular, due to the Scope Domain Principle that the existential closure disallows a non-quantificational operator to stay inside its scope, negatives taking scope below aspect can only be licensed in contexts with a generic or universal force, and cannot co-occur with the existential closure *E* (see Generalization 2).

The distribution constraint from the Scope Domain Principle on *bu* is evidenced by the following three facts. First, *bu* can freely operate on an individual-level predicate which is argued to be locally licensed by a covert generic operator *Gen*. Second, sentences containing both *bu* and stage-level predicates either display a generic/habitual reading or contain a covert volitional/future modal. Third, even when co-occurring with an individual-level predicate, *bu* is not licensed as long as the aspect displays an existential force. Contrary to *bu*, *mei* is free from this distribution constraint and can freely co-occur with any stage-level predicate no matter whether the predicate is eventive or stative.

Finally, by showing that the existential closure *E* has the ability of wiping out presuppositions, I ended up with conclusions that *mei* allows non-neg-raising inferences since its co-occurring *E* cancels excluded middle presuppositions, and that *bu* is forced to read as neg-raising since it never co-occurs with *E*.

Additionally, I briefly showed that this approach can be extended to variants of *bu* (e.g., *bu-shi*) and other wide-scope negatives (e.g., *bing-fei*).

References

- Bartsch, Renate. 1973. “Negative Transportation” gibt es nicht. *Linguistische Berichte* 27:1–7.
- Bayer, Samuel Louis. 1997. *Confessions of a Lapsed Neo-Davidsonian*. New York: Garland Publishing Inc.
- Beaver, David, and Emiel Kraemer. 2001. Presupposition and partiality: Back to the future. *Journal of Logic, Language and Information* 10:147–182.
- Champollion, Lucas. 2011. Quantification and negation in event semantics. In *Formal Semantics and Pragmatics: Discourse, Context, and Models. The Baltic International Yearbook of Cognition, Logic and Communication, Vol. 6*. ed. B. H. Partee, M. Glanzberg and J. Skilters, 1–23. Manhattan, KS: New Prairie Press.
- Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In *The Generic Book*, ed. G.N. Carlson and F.J. Pelletier. 125–175. Chicago: University of Chicago Press
- Gajewski, Jon Robert. 2005. *Neg-raising: Polarity and Presupposition*. Doctoral dissertation, Massachusetts Institute of Technology.
- Gajewski, Jon Robert. 2007. Neg-raising and polarity. *Linguistics and Philosophy* 30:289–328.
- Horn, Laurence. R. 1978. Remarks on neg-raising. In *Syntax and semantics 9: Pragmatics*, ed. P. Cole, 129–220. New York: Academic Press.
- Huang, C.-T. James. 1988. *Wo pao de kuai* and Chinese phrase structure. *Language* 64: 274–311.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In *Semantics and Contextual Expression*, ed. R. Bartsch, J. van Benthem and P. van Emde Boasa, 75–115. Dordrecht, Netherlands: Foris.
- Krifka, Manfred. 1990. Four thousand ships passed through the lock: Object-induced measure functions in event. *Linguistics and Philosophy* 13: 487–520.

- Landman, Fred. 1996. Plurality. In *Handbook of Contemporary Semantics*, ed. S. Lappin, 425–457. Oxford, UK: Blackwell Publishing.
- Lin, Jo-Wang. 2003. Aspectual selection and negation in Mandarin Chinese. *Linguistics* 41:425–459.
- Parsons, Terence. 1990. *Events in the Semantics of English*. Cambridge: MIT Press.
- Wang, William S.-Y. 1965. Two aspect markers in Mandarin. *Language* 41:457–470.

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