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A Post-Syntactic Approach to the A-not-A Questions

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This paper proposes a post-syntactic analysis for the A-not-A questions in Mandarin Chinese. The operation that forms the A-not-A questions consists of two M-merger stages. First, Lowering attaches the A-not-A operator to the target. Second, Local Dislocation triggers reduplication. Lowering of the A-not-A OP targets is the Morphosyntactic Word that is closest to it. Adjoined modifiers do not block the lowering. On the other hand, Local Dislocation only picks up the adjacent Morphosyntactic Word for reduplication. Different reduplication domains derive the different subtypes of A-not-A questions, such as A-not-AB and AB-not-A. In this way, the A-not-A constructions are analyzed in a unified fashion.

1. Introduction

This paper proposes a unified analysis for the various subtypes of the A-not-A construction in Mandarin Chinese. In this paper, the A-not-A construction is analyzed in the post-syntactic approach (Embick & Noyer, 2001). It is proposed that the various subtypes of the A-not-A construction are phonologically triggered and built through post-syntactic movements in PF. Since the formation of the A-not-A question is sensitive to the hierarchical structure and locality conditions, we propose that the A-not-A construction is derived in two stages. First, the A-not-A operator attaches to its target by Lowering, and then, Local Dislocation triggers reduplication to produce the surface form of the A-not-A question.

This paper is organized as follows. In section 2 we introduce the post-syntactic approach that we employ. In section 3 we demonstrate how Lowering works. In section 4, we show the processes that derive the different reduplication patterns of the A-not-A construction. Section 5 is the conclusion.

2. Post-syntactic movement

Embick and Noyer (2001) argue for two operations for Morphological Merger (M-merger hereafter), Lowering and Local Dislocation. Lowering is downward movement in PF. Local Dislocation changes the adjacency of two elements after the linearization of the structure.

Lowering is sensitive to syntactic headedness, and is non-local. An intervening adjoined element does not block Lowering. Take the definite marker in Bulgarian as an example (Embick & Noyer 2001: 568-9):

(1)
a.	kniga-ta			
	book-DEF			
b.	xubava-ta			kniga
	nice-DEF			book
c.	dosta	glupava-ta		zabeležka
	quite	stupid-DEF		remark
d.	*mnog-ət		star	teatər
	very-DEF		old	theater

The definite marker *-ta* in Bulgarin is suffixed to either a nominal or an adjective. When a nominal is modified by adjectives, the definite marker *-ta* is suffixed to the first adjective in the sequence. The marker *–ta* picks up the head of its complement as the target and M-merges with it by Lowering. For example, *kniga* 'book' in (1a) is a nominal and *xubava* 'nice' in (1b) is the first adjective in the sequence; therefore, *–ta* lowers to *kniga* 'book' in (1a) and *xubava* 'nice' in (1b) respectively. Because of the non-local characteristics of Lowering, intervening elements like the adjunct modifier *dosta* 'quite' in (1c) do not prevent DEF *–ta* from combining with the head of AP *glupava* 'stupid'. However, adverbs are adjuncts and cannot be targeted by the definite marker, as in (1d). All this shows that Lowering is sensitive to the syntactic structure.

Local Dislocation applies after linearization; therefore, it is sensitive to linear relations, such as adjacency and precedence. Two elements can change the adjacency and precedence relations by Local Dislocation. Local Dislocation is local. When it applies, intervening adjuncts cannot be bypassed. Take the superlatives in English as an example (Embick & Noyer, 2001: 564-5):

(2)
a.	John is the smart-est student.
b.	John is the –est smart student.
c.	John is the most amazingly smart student.
d.	*John is the t amazingly smart-est student.

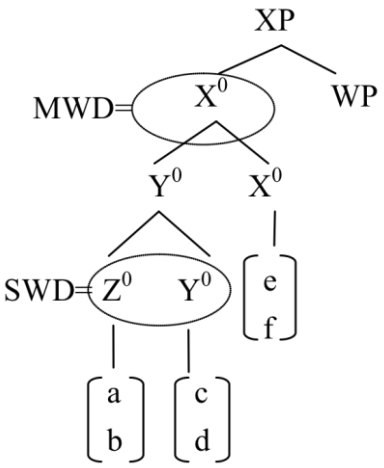
The underlying structure of (2a) is (2b). The superlative morpheme precedes the adjective *smart*. In (2a), there is no modifier between the adjective *smart* and superlative morpheme *–est*; as a result, the superlative morpheme can M-merge with the adjective *smart* by Local Dislocation. The linear order of the superlative morpheme is changed. The adjective becomes precedent to the superlative morpheme *–est*. In (2c), the superlative marker *–est* cannot M-merge with *smart* because it is not adjacent to *smart*. The adverb *amazingly* intervenes between the superlative marker *–est* and the adjective

student. Thus *most* is inserted to express superlativeness. If the superlative marker *–est* goes across the adjunct *amazingly* and M-merges with the adjective *smart*, the sentence is ungrammatical, as in (2d).

The elements that undergo post-syntactic movement are Morphosyntactic words (MWd) and Subwords (SWd). The definitions and structure of MWd and SWd are as follows (Embick and Noyer 2001:574):

(3) a. A node X^0 is an MWd iff X^0 is the highest segment and X^0 is not contained in another X^0.
b. A node X^0 is an SWd if X^0 is a terminal node and not an MWd.

(4)



In (4), X^0 is the highest segment and is not contained in another terminal node. X^0 is dominated by itself. Therefore, X^0 is an MWd. Y^0 is dominated by X^0 and Z^0 is contained in Y^0. Therefore, neither Y^0 nor Z^0 is an MWd. Both Y^0 and Z^0 are SWds.

3. Forming the A-not-A questions

3.1 Some properties of the A-not-A construction

According to Huang (1991), the A-not-A operator (the A-not-A OP hereafter) is generated in INFL. We follow this proposal and assume that the A-not-A OP is generated under the head T. In previous studies, the subtypes of A-not-A questions are assumed to be produced either through reduplication in PF (Huang 1991) or ellipsis of VP in narrow syntax (Huang 1991 and Huang 2008). However, we propose that the A-not-A questions can be generated just through lowering of the A-not-A OP and reduplication in PF.

Guo (1992) mentions that the A-not-A OP applies to [+V] elements like verbs and adjectives, as in (5a) and (5b). But actually it can apply to preposition-like elements, as (5c), or even nominals, as (5d).

(5) a. Zhangsan chi-bu-chi hanbao?
ZS eat-not-eat hamburger
'Does Zhangsan eat hamburger or not?'

b. Zhangsan gao-bu-gao?
ZS high-not-high
'Is Zhangsan high or not?'

c. Zhangsan zai-bu-zai tushuguan?
ZS in-not-in library
'Is Zhangsan in the library or not?'

d. Lü-bu-lü ka bu zhongiao
green card-not-green card not important
'It's not important whether one has the Permanent Resident Card of the U.S.'

Thus, any syntactic category that is the closest MWd to the A-not-A OP can be its target.

3.2 Lowering of the A-not-A Operator

The formation of the A-not-A question consists of two M-merging operations, Lowering and Local Dislocation. In this section we look at Lowering. Lowering M-merges the A-not-A OP to the target, the MWd that is the closest to it. Intervening modifiers do not block the lowering.

Along the following procedure, the A-not-A OP targets a head and lowers to it.

(6) a. The A-not-A OP targets the closest MWd.

b. Closeness of the MWd is defined as follows:
X is the closest to Y iff X is the MWd c-commanded by Y with the fewest intervening maximal projections.

c. The target of the A-not-A OP must have overt phonological realization.

Following this procedure, the examples in (7) can be accounted for:

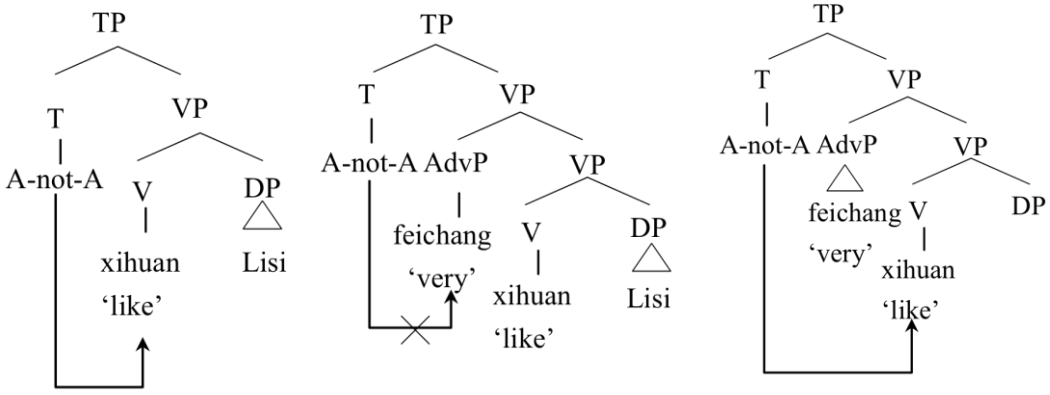
(7) a. Zhangsan xihuan-bu-xihuan Lisi?
ZS like-not-like Ls
'Does Zhangsan like Lisi or not?'

b. *Zhangsan feichang-bu-feichang xihuan Lisi?
ZS very-not-very like LS

c. *Zhangsan feichang xihuan-bu-xihuan Lisi?
ZS very like-not-like LS

In (7a), *xihuan* ‘like’ is the closest MWd to the A-not-A OP. As a result, the A-not-A OP M-merges with *xihuan* ‘like’ and turns it into the A-not-A form. On the other hand, the adverb *feichang* ‘very’ in (7b) cannot be the target of the A-not-A OP. It is an MWd, but not the closest one to the A-not-A OP, because it is contained in an adverbial phrase and is separated from A-not-A OP by two maximal projections. Lowering of the A-not-A OP to *feichang* ‘very’, therefore, is ungrammatical. In (7c), since the adverb *feichang* ‘very’ is adjoined to VP, the A-not-A OP presumably can cross it and lowers to the verb *xihuan* ‘like’, as Lowering is non-local. However, (7c) is unacceptable. This is because the presence of a positive-degree modifier such as *feichang* ‘very’ in the A-not-A questions causes semantic conflict. That is, if X likes Y very much, then necessarily X likes Y; as a result, the questioning of *xihuan* ‘like’ by the A-not-A OP contradicts the entailed truth of the proposition *Zhangsan xihuan Lisi* ‘Zhangsan likes Lisi’. Thus (7c) is actually syntactically grammatical, though it is semantically unacceptable. The derivations of (7a-c) are as (8a-c).

(8) a. b. c.



There is evidence that an intervening modifier indeed doesn't block the lowering of the A-not-A OP to its target. In (9a), the PP *dui Lisi* ‘to Lisi’ doesn't block the lowering of the A-not-A OP with the verb *danxin* 'worry'. That the PP *dui Lisi* is indeed an adjoined modifier can be seen in (9b), which is ungrammatical due to the lowering of the A-not-A OP to *dui* ‘to’.

(9)	a.	Zhangsan	dui	Lisi	dan-bu-danxin?
		ZS	to	LS	worry-not-worry
		'Is Zhangsan worried about Lisi or not?'			
	b.	*Zhangsan	dui-bu-dui	Lisi	danxin?
		ZS	to-not-to	LS	worry

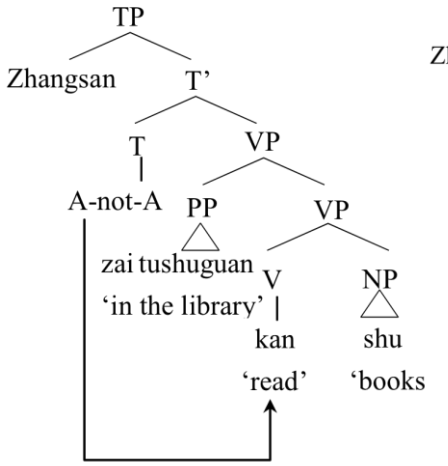
The above discussions show that an adjoined modifier cannot be the target of the A-not-A OP, and that a positive-degree modifier causes semantic conflict. However, (10a-b) seems to be counterexamples to this generalization. In (10a-b), the A-not-A OP can M-merge with either the verb *kan* 'read' or the preposition *zai* 'at'.

(10) a. Zhangsan zai tushuguan kan-bu-kan shu?
ZS in library read-not-read book
'In the library, does Zhangsan study or not?'

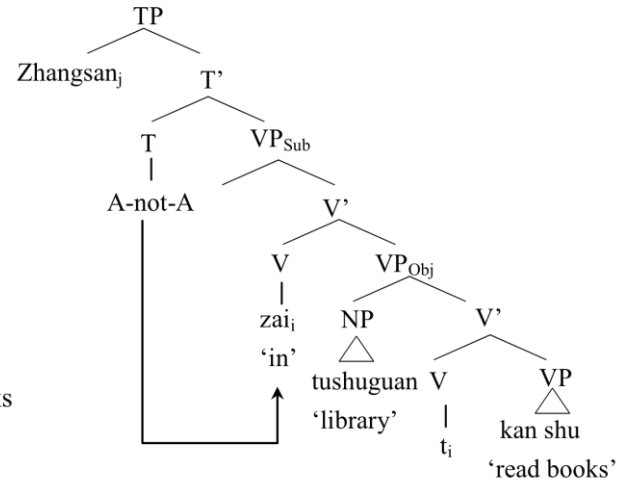
b. Zhangsan zai-bu-zai tushuguan kan shu?
ZS in-not-in library read book
'Does Zhangsan study in the library or not?'

Under the lowering analysis of the A-not-A OP, there is in fact a plausible solution for (10a-b): they must have distinct syntactic structures. In (10a), *kan* 'read' is the closest MWd to the A-not-A OP; in (10b), *zai* 'at' is. The structure of (10a) and (10b) are as (11a) and (11b).

(11) a.



b.



In (11a), *zai tushuguan* 'in the library' is a PP; the A-not-A OP can skip it and lower to the closest MWd *kan* 'read', as in (10a). On the other hand, in (11b), *zai tushuguan* 'in the library' is not a modifier but the main predicate. Li & Thompson (1981) point out that prepositions in Mandarin Chinese retain verbal characteristics, called coverbs. *Zai* 'in' in (11b) is a coverb taking the NP *tushuguan* 'library' as specifier and the VP *kan shu* 'read the book' as complement. Then it moves to the higher light verb (V_{Sub} in (11b)). The A-not-A OP then lowers to it, deriving the A-not-A question in (10b).

3.3 A-not-A Operator and adverbial-like elements

The above discussions show that adverbials cannot be the target of the A-not-A OP. However, (12a-b) seem to be counterexamples.

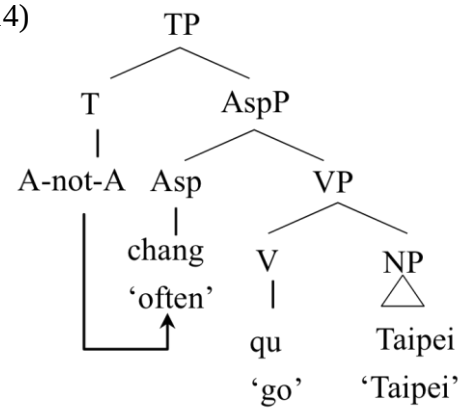
(12)	a.	Zhangsan	chang-bu-chang	qu Taipei?
		ZS	often-not-often	go Taipei
		'Does Zhangsan often go to Taipei or not?'		
	b.	Zhangsan	ceng-bu-ceng qu Taipei?	
		ZS	ever-not-ever go Taipei	
		'Has Zhangsan ever been to Taipei or not?'		

But there is evidence that (12a-b) are not real counterexamples. If we compare *chang* 'often' and *ceng* 'ever' in (12) with the real adverbs *changchang* 'often' and *cengjin* 'ever' in (13a-b), we find that the elements *chang* 'often' and *ceng* 'ever' in (12) and the adverbs in (13) may have distinct categorial status. In (13a-b), the A-not-A forms of the adverbs *changchang* and *cengjing* are ungrammatical. If *chang* and *ceng* in (12a-b) are also adverbs, the contrast between (12a-b) and (13a-b) is hard to explain.

(13)	a.	*Zhangsan	changchang-bu-changchang	qu Taipei
		ZS	often-not-often	go Taipei
	b.	*Zhangsan	cengjing-bu-cengjing	qu Taipei
		ZS	ever-not-ever	go Taipei

Changchang 'usually' and *cengjin* 'ever' are adverbs, so the ungrammaticality of (13a-b) is expected. If so, then *chang* 'often' and *ceng* 'ever' in (12a-b) cannot be adverbs. We propose that they are aspectual elements generated in Asp^0. Thus *chang* 'often' and *ceng* 'ever' are the closest MWd to the A-not-A OP, and the lowering of the A-not-A OP to *chang* 'often' and *ceng* 'ever' is grammatical. See (14) for illustration.

(14)



3.4 A-not-A Operator and nominals

In certain cases, the A-not-A OP can even M-merge with a nominal, as in (15a). (This is a sentence excerpted from a real conversation.) However, the application of the A-not-A OP to a nominal is not always acceptable, as the ungrammaticality of (15b) shows. Notice that in Mandarin Chinese, a bare nominal can appear in the predicate of the sentence without an overt verb, as (15c).

(15) a. Lü-bu-lüka bu zhongiao.
green card-not-green card not important
'It's not important whether one has the green card.'

b. *Zhangsan niuroumian-bu-niuroumian.
ZS beef noodle-not-beef noodle

c. Zhangsan niuroumian.
ZS beef noodle
'Zhangsan [wants] beef noodle.'

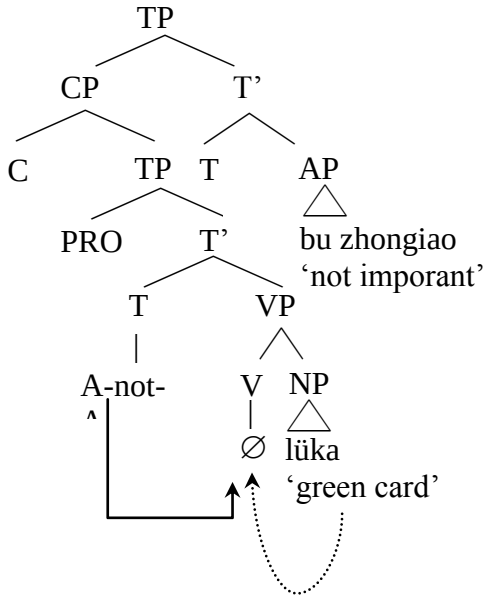
According to Tang (2003), a sentence like (15c) has a phonetically empty verb, which takes the nominal as object. Thus the nominal *lüka* 'green card' in (15a) can be regarded as the object of an empty verb in a sentential subject. Comparing (16a) and (16b), it is very likely that *lüka* 'green card' in (15a) may not be just a nominal but a reduced clause.

(16) a. lü-bu-lüka bu zhongiao
green card-not-green card not important
'It's not important whether you have the green card or not'

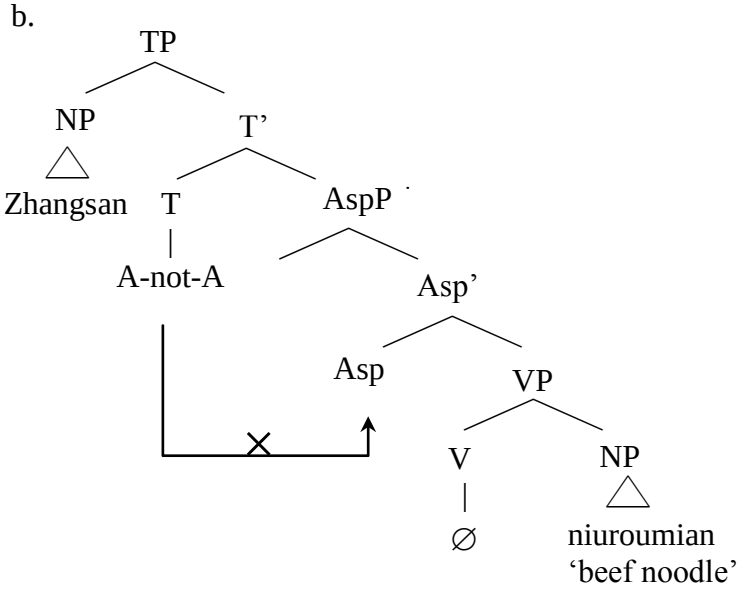
b. You-mei-you lüka bu zhongiao
have-not-have green card not important
'It's not important whether one has the green card or not.'

We propose that in (15a), *lüka* 'green card' incorporates to an empty verb. See (17a) and (17b).

(17) a.


TP
CP
T'
C
TP
T
AP
PRO
T'
bu zhongiao
'not imporant'
T
VP
A-not-
^
V
NP
∅
lüka
'green card'

b.


TP
NP
T'
Zhangsan
T
AspP
A-not-A
Asp'
Asp
VP
V
NP
∅
niuroumian
'beef noodle'

The sentential subject in (17a) lacks AspP but the structure in (17b) has it. The NP *lüka* in (17a) 'green card' incorporates to the empty verb and becomes the closest MWd to the A-not-A OP. This is why (17a) is grammatical. In (17b), *niuroumian* 'beef noodle' is not the closest MWd to the A-not-A OP, even if it incorporates to the empty verb. The closest MWd to the A-not-A OP is the aspectual head Asp. This is why (15b) is ungrammatical. But the A-not-A OP cannot target Asp either, because the target must have overt phonetic content. Thus (17b) is ungrammatical too.

4. Local Dislocation and reduplication

After Lowering, Local Dislocation triggers reduplication. The A-not-A OP determines the reduplication domain, makes reduplication, and Local Dislocates the reduplicated material to the left or right of the base. The reduplication domain can be the first syllable of the target, the target itself, or the maximal projection of the target. The process strictly follows the linear order.

4.1 The A-not-AB questions

The subtype A-not-AB construction is derived by the following procedure:

(18) a. The A-not-A OP targets its adjacent element in the left-to-right manner and determines the reduplication domain, which can be:
   (i) The first syllable of the adjacent MWd (= (19a));
   (ii) The adjacent MWd (= (19b));
   (iii) The maximal projection of the adjacent MWd (= (19c)).
   b. The A-not-A OP copies the material.
   c. The reduplicated material is Local Dislocated to the LEFT of the base.
   d. The negation *bu* or *mei* is inserted between the reduplicated material and the base.

(19) a. Zhangsan **<u>tao</u>**-bu-**<u>tao</u>**yan Lisi ?
   ZS hate-not-hate LS
   'Does Zhangsan hate Lisi or not?'
   b. Zhangsan **<u>taoyan</u>**-bu-**<u>taoyan</u>** Lisi ?
   ZS hate-not-hate LS
   'Does Zhangsan hate Lisi or not?'
   c. Zhangsan taoyan Lisi bu taoian Lisi ?
   ZS hate LS not hate LS
   'Does Zhangsan hate Lisi or not?'

We assume that the A-not-A OP is like a scan-and-copy machine. In (19a), the A-not-A OP scans rightward over the first syllable of the MWd *taoyan* 'hate', and copies it. Then

the reduplicated material *tao* is located at the left of the base *taoyan* 'hate'. After this the negation *bu* is inserted, deriving the surface form. Similarly, in (19b) and (19c), the A-not-A OP scans and copies the MWd *taoyan* 'hate' and the maximal projection of the MWd *taoyan Lisi* 'hate Lisi', respectively. The reduplicated material is located at the left of the base and the negation *bu* is inserted. See (20a-c) for the derivations ('⊕' = the precedence relation):

(20) a. A-not-A OP scans and copies the first syllable of the adjacent MWd
1. [A-not-A]⊕ [[$_{V}$ *taoyan* 'hate']⊕[$_{NP}$ *Lisi*]]
2. [A-not-A]⊕ [[$_{V}$ ***tao****yan* 'hate']⊕[$_{NP}$ *Lisi*]]
(Scan and copy the first syllable)
3. [$_{\textbf{copy}}$ ***tao***]⊕[A-not-A] ⊕ [[$_{V}$ ***tao****yan* 'hate']⊕[$_{NP}$ *Lisi*]]
(Locate the copy at the left of the base)
4. [$_{\textbf{copy}}$ ***tao***] + [**bu**] + [[$_{V}$ ***tao****yan* 'hate']+[$_{NP}$ *Lisi*]]
(Insert the negation)

b. A-not-A OP scans and copies the adjacent MWd
1. [A-not-A]⊕ [[$_{V}$ *taoyan* 'hate']⊕[$_{NP}$ *Lisi*]]
2. [A-not-A]⊕ [[$_{V}$ ***taoyan*** 'hate']⊕[$_{NP}$ *Lisi*]]
(Scan and copy the MWd)
3. [$_{\textbf{copy}}$ ***taoyan***]⊕[A-not-A] ⊕ [[$_{V}$ ***taoyan*** 'hate']⊕[$_{NP}$ *Lisi*]]
(Locate the copy at the left of the base)
4. [$_{\textbf{copy}}$ ***taoyan***] + [**bu**] + [[$_{V}$ ***taoyan*** 'hate']+[$_{NP}$ *Lisi*]]
(Insert the negation)

c. A-not-A OP scans and copies the maximal projection of the adjacent MWd
1. [A-not-A]⊕ [[$_{V}$ *taoyan* 'hate']⊕[$_{NP}$ *Lisi*]]
2. [A-not-A]⊕ [[$_{V}$ ***taoyan*** 'hate']⊕[$_{NP}$ ***Lisi***]]
(Scan and copy the maximal projection of the MWd)
3. [$_{\textbf{copy}}$ ***taoyan Lisi***]⊕[A-not-A] ⊕ [[$_{V}$ ***taoyan*** 'hate']⊕[$_{NP}$ ***Lisi***]]
(Locate the copy at the left of the base)
4. [$_{\textbf{copy}}$ ***taoyan*** *'hate'* ***Lisi***] + [**bu**] + [[$_{V}$ ***taoyan*** 'hate']+[$_{NP}$ ***Lisi***]]
(Insert the negation)

4.2 The AB-not-A questions

The other subtype, the AB-not-A construction is derived by the following procedure:

(21) a. The A-not-A OP targets its adjacent element in the left-to-right manner and determines the reduplication domain, which can be:
(i) The maximal projection of the adjacent MWd (= (22a));
(ii) The adjacent MWd (= (22b)).

b. The A-not-A OP copies the material.

c. The reduplicated material is Local Dislocated at the RIGHT of the maximal projection that contains the targeted MWd.

d. Negation *bu* or *mei* is inserted between the reduplicated material and the base.

(22) a. Zhangsan **taoyan** Lisi bu **taoyan**
ZS hate LS not hate
'Does Zhangsan quite hate Lisi or not?'

b. Zhangsan taoyan Lisi bu taoyan Lisi
ZS hate LS not hate LS
'Does Zhangsan hate Lisi or not?'

In (22a) and (22b), the A-not-A OP scans rightward and copies the adjacent MWd *taoyan* 'hate' and the maximal projection of the MWd *taoyan Lisi* 'hate Lisi', respectively. The reduplicated material is located at the right of the predicate and the negation *bu* is inserted. The derivations are as (23a-b).

(23) a. A-not-A OP scans and copies the adjacent MWd

1. [A-not-A]⊕ [[$_{v}$ *taoyan* 'hate']⊕[$_{NP}$ *Lisi*]]
2. [A-not-A]⊕[[$_{v}$ ***taoyan*** 'hate']⊕[$_{NP}$ *Lisi*]]
(Scan and copy the MWd)
3. [[$_{v}$ ***taoyan*** 'hate']⊕[$_{NP}$ ***Lisi***]] ⊕[A-not-A]⊕[$_{\mathbf{copy}}$ ***taoyan***]
(Locate the copy on the right of the base)
4. [[$_{v}$ ***taoyan*** 'hate']+[$_{NP}$ ***Lisi***]] + [**bu**] + [$_{\mathbf{copy}}$ ***taoyan*** *'hate'*]
(Insert the negation)

b. A-not-A OP scans and copies the maximal projection of the adjacent MWd

1. [A-not-A]⊕ [[$_{v}$ *taoyan* 'hate']⊕[$_{NP}$ *Lisi*]]
2. [A-not-A]⊕ [[$_{v}$ ***taoyan*** 'hate']⊕[$_{NP}$ ***Lisi***]]
(Scan and copy the maximal projection of the MWd)
3. [[$_{v}$ ***taoyan*** 'hate']⊕[$_{NP}$ ***Lisi***]] ⊕ [A-not-A]⊕[$_{\mathbf{copy}}$ ***taoyan Lisi***]
(Locate the copy on the right of the base)
4. [[$_{v}$ ***taoyan*** 'hate']+[$_{NP}$ ***Lisi***]] + [**bu**] + [$_{\mathbf{copy}}$ ***taoyan*** *'hate'* ***Lisi***]
(Insert the negation)

5. Conclusion

In this study, we propose a post-syntactic approach to the A-not-A questions. First, the A-not-A OP targets the closest MWd and moves to it by Lowering. Second, the A-not-A OP performs Local Dislocation through reduplication. Different subtypes are derived on different reduplication domains and the left/right Local Dislocation. In this way, the A-not-A questions are analyzed in a unified manner.

There are still questions that need to be investigated. For example, if the reduplicated material is located to the right of the base, then the reduplication domain cannot be a syllable; compare (18a) and (21a). At the present it is not clear why this is the case. Also, we do not discuss questions about the interaction between the A-not-A OP and different aspect markers (the perfective marker *-le*, the experiential marker *-guo*, etc). We leave these questions to future study.

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