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Resumptivity and Two Types of A'-dependencies in the Minimalist Program*

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Abstract

This paper examines the derivation of two types of A'-dependencies – relative clauses and Left-Dislocation structures – in the framework of Minimalist Program based on Mandarin data. Relatives and LD structures demonstrate many distinct syntactic and semantic properties when they contain a gap and a resumptive pronoun respectively. A thorough study of the relevant data reveals that when a gap strategy is adopted, island effects and crossover effects are always observed, irrespective of whether the relevant gap is embedded within a relative clause or within an LD structure; on the contrary, when the resumptive strategy is adopted, a sharp distinction is observed between these two structures. A resumptive relative clause gives rise to island effects and crossover effects systematically; in contrast, a resumptive LD structure never gives rise to these effects. In the Minimalist Program, island effects and crossover effects are not exclusively used as diagnostic tests for movement since the operation *Agree* is also subject to the locality constraints. I will argue that a relative clause containing either a gap and an RP and an LD structure with gap are derived by *Agree* and they are subject to the locality condition whereas a resumptive LD structure is derived by *Match* that is an island free operation and it is not subject to the locality constraint. Multiple *Transfer* and multiple Spell-Out are possible in an *Agree* chain, but not in a *Matching* chain. The choice of the derivational mechanism depends on the interpretability of the formal features attached to the Probe and to the Goal in the relevant A'-dependencies.

Key words: Resumptive pronoun, gap, relative clause, left-dislocation, Agree, Match, Chinese

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1. Introduction

Resumptive pronouns (henceforth RPs) are variable-like elements that are A'-bound by an operator (Ross 1967). Their variable-like character led many scholars to claim that the relationship between an operator and an RP and that between a *wh*-operator and its trace are the same, which motivated them to analyze RPs precisely as *wh*-traces (Borer 1984, Koopman 1983, Engdahl 1980, 1985, Zaenen *et al*. 1981). Specifically, Koopman (1983) claims that syntactically, in languages like Vata and Swedish, RPs are in free alternation with A'-traces and that RPs are in fact the Spell-Out of traces. However, more research on resumption reveals that the syntactic distribution of RPs and that of A'-traces can overlap, but need not always coincide perfectly. In other words, in a very limited number of positions, RPs are not always in free alternation with gaps (Aoun & Choueiri 2001 for Lebanese Arabic). An extremely particular case is observed by Rouveret (1994) for Welsh which shows that RPs are never in free alternation with A'-bound traces. A macro-typology on the resumption seems to be not on the right track in the sense that it is not correct to claim that one particular language has only one particular strategy to use RPs. On the contrary, it is the case that one particular language can have different uses of RPs: the grammatical/systematic use and the intrusive use. In this paper, I will show that Mandarin Chinese supports such a claim. The grammatical/systematic use of RPs and the specific intrusive use in the island environment both exist; nevertheless, gaps, RPs, and intrusive pronouns behave differently syntactically as well as semantically. Clearly, if RPs and gaps do not behave exactly in the same way, a unified analysis should not be maintained. Along this line, a very important question that centers the debate on the derivation of a resumptive chain is whether a resumptive dependency involves movement since in the GB period, an A'-dependency is generally derived by movement. In the literature, there are three different views on the formation of the resumptive chains. A resumptive chain can be derived by movement at S-S or at LF (Sells 1984, Tellier 1991, Demirdache 1991), by a special kind of movement (i.e. a sub-extraction (Rouveret 1994, Guilliot 2006)), or by *Agree* in the Minimalist Program (Adger & Ramchand 2005, Rouveret 2002, 2008). Based on the Mandarin data, this paper will make a derivational distinction between relative clauses and LD structures with regard to the distribution of the gaps and of the RPs. The main diagnostic tests that we will use are based on island effects and crossover effects. Our claim is that these two types of A'-dependencies are derived by different mechanisms. In the Minimalist Program, a relative clause containing either a gap or an RP and an LD structure containing a gap are derived by *Agree* and they are subject to the locality condition; by contrast, a resumptive LD structure is derived by *Match* that is an island free operation and it is not subject to the locality constraint. The choice of the derivational mechanism depends on the interpretability of the formal features attached to the Probe and to the Goal in the relevant A'-dependencies.

2. Data and diagnostics

In English, RPs can only exist in LD structures (cf. 1b), but not in simple relative clauses (cf. 1a). However, the presence of an RP can save the potential violation of the locality constraint in a relative clause, as shown in (1c). This type of RPs is referred to as the 'intrusive use' of the RPs or as 'intrusive pronouns' (Sells 1984).

(1) a. The girl$_j$ that I like (**her*$_j$) very much *Relative*
b. Mary$_j$, I like *her*$_j$ very much. *LD structure*
c. I just saw a girl$_j$ who Long John's claim that *she*$_j$ was a Venusian made all the headlines. Ross (1967)

French behaves like English in that RPs can be found in LD structures (cf. 2b), but not in relative clauses (cf. 2a).

(2) a. Le garçon$_j$ que tu (*l$_j$') as rencontré hier.
the boy that you 3MSg have met yesterday
'The boy$_j$ that you met (*him$_j$) yesterday.

b. Ton fils$_j$, je l$_j$' ai rencontré hier.
your son I 3MSg have met yesterday
'Your son$_j$, I met him$_j$ yesterday.'

When an island is involved, the insertion of an RP can only save the sentence from the potential violation of the locality constraint in LD structures (cf. 3b), but not in relative clauses (cf. 3a).

(3) a. ?? Le garçon$_j$ [que Jean connaît la fille [qui l$_j$' a embrassé]]
the boy that Jean knows the girl who 3MSg have kissed
(?? 'The boy$_j$ [that Jean knows the girl [who kissed him$_j$]])

b. Le garçon$_j$, Jean connaît la fille [qui l$_j$' a embrassé].
the boy Jean knows the girl who 3MSg have kissed
'(As for) the boy$_j$, Jean knows the girl [who kissed him$_j$].'

In contrast, an RP is tolerated in simple relative clauses in Hebrew. This type of use of the RPs is referred to as the grammatical/systematic use.

(4) raiti et ha-yeled še- rina ohevet (***oto***) [1]
saw-I Acc the-boy that Rina love him
'I saw the boy that Rina loves.' *Hebrew,* Borer (1984)

As for Mandarin Chinese, when there is no island, a gap and an RP can be in free alternation in relatives (cf. 5a) and in LD structures (cf. 5b)[2]. An RP must always agree with its antecedent concerning the Phi feature.

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[1] Abbreviations : Acc : Accusative case ; C : complimentizor ; Cl : classifier ; Exp : Experience aspect marker *guo* ; F : Feminine ; Gen: Genitive; M: Masculine; Neg.: Negation marker; PAST: Past tense; Perf: Perfective aspect marker; Pl.: Plural; Sg.: singular; Top: Topic marker.

[2] There are many additional syntactic and semantic constraints on the use of the RPs in Chinese. For example, in a relative clause, an RP is practically unacceptable in the subject position for an action verb (cf. ia), but such sentences improve for experiencer subjects (cf. ib). An RP can never replace an inanimate object in the post verbal object position (cf. ic).

(i) a. [(*Ta$_j$) da-le Lisi] de na-ge ren$_j$
3MSg beat-Perf Lisi C that-Cl person
'The person who beat Lisi'

b. [(Ta$_j$) qunian sheng-le yi-chang da bing] de na-ge xuesheng$_j$
3MSg last.year have-Perf one-Cl big ill C that-Cl student
'The student who was terribly ill last year'

c. [Wo da-sui-le (*ta$_j$)] de na-ge huaping$_j$
I break-Perf it C that-Cl vase
'The vase that I broke'

(5) a. [保安想趕他$_j$/____ 出學校]的那個小流氓$_j$不見了。
[Bao'an xiang gan **ta1**$_j$/___ chu xuexiao] de na-ge
guard want chase 3MSg out school C that-Cl
xiao liumang$_j$ bu-jian-le.
small hooligan disappear-Perf
'The hooligan$_j$ that the guard wanted to chase (*him*$_j$) out of the school has disappeared.'

b. [昕悅和一勤]$_j$，我昨天在辦公室見到過她們$_j$倆/_____。
Xinyue he Yiqin, wo zuotian zai bangongshi jiandao-guo
Xinyue and Yiqin, I yesterday at office meet-Exp
ta2-men-lia/ * ta2 / ___ .
3FPl-both 3FSg
'As for [Xinyue and Yiqin]$_j$, I met both of them$_j$ in the office yesterday.'

However, the situation on the subject position is more complicated due to the pro-drop characteristics of Mandarin.

(6) a. [___$_j$/ *他$_j$ 認識張三]的那個男孩$_j$剛剛離開了。
[___$_j$/ *Ta$_j$ renshi Zhangsan] de na-ge nanhai$_j$ ganggang likai-le.
3MSg know Zhangsan C that-Cl boy just.now leave-Perf
'The boy that knows Zhangsan left.'

b. 王五說[李四相信[___$_j$/ *他$_j$ 認識張三的那個男孩$_j$剛剛離開了]]。
Wangwu shuo [Lisi xiangxin [___$_j$ / *ta$_j$ renshi Zhangsan] de
Wangwu say Lisi believe 3MSg know Zhangsan C
na-ge nanhai$_j$ ganggang likai-le]].
that-Cl boy just.now leave-Perf
'The boy that knows Zhangsan left.'

In the above examples, an asymmetry is observed in the subject position in both root context (cf. 6a) and embedded context (cf. 6b). We must point out that in both examples, the blank in the subject position is in fact filled with a Pro. It is well documented in the literature that in Mandarin, Pro in the subject position can have a discourse antecedent. In the subject position, Pro is always licensed and the RP is always excluded[3]. This seems to suggest that in RP and gap are in free alternation; however, RP and Pro are always in the complementary distribution. In the rest of the paper, we will be only concentrating on RP and gaps.

2.1 Island effects

In island free contexts, even if the gap is embedded deeply in a relative clause, such a gap can be replaced by an RP. The sentences in (7) and in (8) show the cases in which the relevant gap/RP is in the direct object position and in the subject position, respectively. As we can see from these examples, the gaps/RPs are very deeply embedded; however, since there is no island, both sentences are grammatical.

(7) [一勤說[笑適相信[小倩會見到（他$_j$）/_____$_j$]]]的那個人$_j$是位醫生。
[Yiqin shuo [Xiaoshi xiangxin [Xiaoqian hui jiandao ta1$_j$/____$_j$]]] de
Yiqin say Xiaoshi believe Xiaoqian will meet 3MSg C

[3] Other constraints on the use of the resumptive pronoun in subject position can be found in Gu (2001).

na-ge ren$_j$ shi wei yisheng.
that-Cl person be Cl doctor
'The man$_j$ [that Yinqin said [that Xiaoshi believed [that Xiaoqian would meet ___$_j$]]] is a doctor.'

(8) [一勤說[李燕相信[(他 $_j$) /____一定會及格]]]的那位學生 $_j$ 結果沒來參加考試。
[Yiqin shuo [Liyan xiangxin [ta1$_j$/____$_j$ yiding hui jige]]] de
Yiqin say Liyan believe 3MSg certainly will pass C
na-wei xuesheng$_j$ jieguo mei lai canjia kaoshi.
that-Cl student finaly not come participate exam
'The student$_j$ [that Yiqin said [that Liyan believed [that (he$_j$)/___$_j$ would certainly pass his test]]] didn't come.

On the other hand, when the relative clause contains an island, the presence of an RP within the island cannot avoid the violation of the locality constraint. (9) and (10) show that when a direct object is relativized from the inside of an island, a complex NP in (9) and an adjunct clause in (10), the relevant sentence is always ungrammatical, irrespective of whether the relativized site is occupied by a gap or by an RP. In other words, the option of inserting an intrusive pronoun in order to save the sentence from the violation of the locality constraint is not available in the case of relativization in Mandarin.

(9) *我碰到了[小倩認識[擁抱過他 $_j$ /_____$_j$ 的]那位女同學的]法國影星 $_j$。
* Wo pengdao-le [Xiaoqian renshi [yongbao-guo **ta1**$_j$ /_____$_j$] de
I meet-Perf Xiaoqian know embrace-Exp 3MSg C
na-wei nütongxue de] Faguo yingxing$_j$.
that-Cl female.student C French star
('I met the French star$_j$ that Xiaoqian knows the girl [who embraced (*him* $_j$)].')

(10) * [[因為瑪麗親了 他 $_j$ / ___$_j$] 整個學校的男老師都很鬱悶]的那個醫生 $_j$
* [[Yinwei Mali qin-le **ta1**$_j$ /___$_j$] zheng-ge xuexiao] de
because Mary kiss-Perf 3MSg entire-Cl school DE
nanlaoshi dou hen yumen de na-ge yisheng$_j$
man.teacher all very unhappy C that-Cl doctor
('the doctor$_j$ that [all of the masculine teachers of the school are unhappy [because Mary kissed ___$_j$]]')

In this perspective, French behaves like Chinese (cf. 11).

(11) * J'ai rencontré le médecin$_j$ [que Marie connaît la fille [qui (**l$_j$**)' avait embrassé]].
I have met the doctor that Marie knows the girl who 3MSg had kissed
(*'I met the doctor$_j$ that [Marie knows the girl [who kissed (*him* $_j$)]].')

Contrary to relative clauses, in an LD structure, the presence of an intrusive pronoun avoids the potential violation of the locality constraint. When the direct object is topicalized from an island, a complex NP in (12) or an adjunct clause in (13), the gap strategy leads to the ungrammaticality of the sentence and the resumptive strategy will save the sentence from the violation of the locality constraint. The relevant RPs are used in an intrusive way. Therefore, a sharp contrast between a relative clause and an LD structure is that the use of an intrusive pronoun is permitted in the latter, but not in the former.

(12) 那位法國影星 $_j$, 我碰到了小倩認識[擁抱過他 $_j$ /*_____的]那位女同學。
Na-wei Faguo yingxing$_j$, wo pengdao-le [Xiaoqian renshi
that-Cl French star I meet-Perf XIaoqian know
[yongbao-guo **ta1** / *____$_j$]] de na-wei nütongxue.
embrace-Exp 3MSg C that-Cl female.student
'As for that French star$_j$, I met the girl that [Xiaoqian knows___ [who embraced (*him*$_j$)]].'

(13) 那個醫生 $_j$, [因為瑪麗親了 他 $_j$ / * ___$_j$] 整個學校的男老師都很鬱悶。
na-ge yisheng$_j$, [[Yinwei Mali qin-le **ta1**$_j$ / *___$_j$] zheng-ge xuexiao] de
that-Cl doctor because Mary kiss-Perf 3MSg entire-Cl school DE
nanlaoshi dou hen yumen.
man.teacher all very unhappy
'As for the doctor$_j$, all of the masculine teachers of the school are unhappy [because Mary kissed him$_j$ /*___$_j$].'

Again, French behaves like Chinese on this point.

(14) Quant à ma petite sœur$_j$, je viens de parler avec le mec qui l$_j$'/ *____ avait embrassée.
as.for my little sister I PAST speak with the guy who 3FSg had kissed
'As for my sister$_j$, I just talked to the guy [who kissed (*her*$_j$)].'

It seems that it is the syntax of the LD structure that permits the use of the intrusive pronouns in Chinese. Therefore, we assume that relative clauses and LD structures are different in their derivation.

2.2 Crossover effects

Another test that I will use is the crossover effects. Borer (1984) claims that no crossover effect is observed in a resumptive chain.

(15) an fear$_j$ so ar mhairbh a$_j$ bhean féin ***é***$_j$ (WCO)
the man this C killed his-own-wife [him]
'this man$_j$ that his$_j$ own wife killed (*him*$_j$)' *Irish*

However, McCloskey (1990) claims that it is always possible to establish a binding relationship between *the man* and the higher pronoun *his* in (15) without crossing anything, and this is how the crossover effects are obviated. When there is an alternative way to establish the referential dependency as shown in (16b), the crossover effect can be obviated.

(16) a. *This man*$_j$ *his*$_j$ *him*$_j$ (crossed)

b. *This man*$_j$ *his*$_j$ *him*$_j$ (no crossing)

In (16a), the pronoun *him* is a resumptive that is dependent directly on the NP *this man*. The pronoun *his* is an ordinary pronoun that is related anaphorically to *this man*. In this scenario,

it is *his* that is crossed by the dependency between *this man* and *him*. However, in (16b), it is the pronoun *his* that is the resumptive and it is dependent on the NP *this man*. The ordinary pronoun *him* is anaphorically related to the resumptive pronoun *his*. The A'-dependency between *this man* and *his* will not cross the pronoun that shares the same index with them, say *him*. Therefore, in this scenario, there is nothing that is crossed. (16a) and (16b) represent two possible strategies to establish the resumptive dependency, where one gives rise to crossover effects and the other does not. In a general fashion, when there is an alternative way to establish an A'-dependency without showing crossover effects, the crossover effects can be obviated.

McCloskey also shows that crossover effects are observed if the crossed element is an epithet (cf. 17). In (17), the NP *the bastard* is an epithet and it plays the role of resumptive. A direct referential dependency cannot be established between *the man*$_j$ and *the bastard*$_j$ and therefore, the only possible dependency is built between *the man*$_j$ and the pronoun *he*$_j$. Such a dependency will cross the resumptive epithet that shares the same index *j*, which gives rise to the crossover effects.

(17) * Sin an fear$_j$ ar dhuirt an bastard$_j$ go marodh sé$_j$ muid (SCO)
that the man C said the bastard C would-kill he us
'That is the man$_j$ that the bastard$_j$ said he$_j$ would kill us.' *Irish*

2.2.1 Weak Crossover effects

Let us turn to Chinese. In a relative clause with a gap, the weak crossover effects are observed.

(18) * [他$_j$媽媽不喜歡_____]的那個小孩$_j$
* [Ta$_j$-de mama bu xihuan ____] de na-ge xiaohai$_j$
his mother Neg. like C that-Cl kid
('the kid$_j$ that his$_j$ mother doesn't like t$_j$')

In a relative clause with an RP, weak crossover effects are not observed with a pronoun (cf. 19), but are with an epithet (cf. 20), which confirms McCloskey's claim for Irish.

(19) [他$_j$自己的老婆把他$_j$給殺死了]的那個律師$_j$
[Ta$_j$-ziji de laopo ba **ta**$_j$ gei sha-si-le] de na-ge lüshi$_j$
his.own DE wife BA 3MSg GEI kill-dead-Perf C that-Cl lawyer
'the lawyer$_j$ that his$_j$ own wife killed (him$_j$)'

(20) * [那個混蛋$_j$自己的老婆把他$_j$給殺死了]的那个個人$_j$
* [Na-ge hundan$_j$-ziji de laopo ba **ta1**$_j$ gei sha-si-le]
that-Cl bastard-self DE wife BA 3MSg GEI kill-dead-Perf
de na-ge ren$_j$
C that-Cl person
(Lit.) 'the guy$_j$ that the bastard$_j$'s own wife killed (*him*$_j$)'

In an LD structure with a gap, the weak crossover effects are observed.

(21) * 那個小孩，他的媽媽打了_____。
* Na-ge xiaohai$_j$, [**ta1**$_j$-de mama da-le ____].
that-Cl kid his mother beat-Perf
('As for that kid$_j$, his$_j$ mother beat (him$_j$).')

Contrary to the resumptive relative clause, in an LD structure with an RP, weak crossover effects are not observed at all even with an epithet (cf. 22).

(22) a. 張三$_j$啊, 那混蛋$_j$自己的老婆把他$_j$給殺死了。
Zhangsan$_j$ a, nei hundan$_j$-ziji de laopo ba **ta1**$_j$ gei sha-si-le.
Zhangsan Top that bastard-self DE wife BA 3MSg GEI kill-dead-Perf
'As for Zhangsan$_j$, the bastard$_j$'s own wife killed *him*$_j$.'

b. 小寶$_j$啊， 那孩子$_j$自己的媽媽都不喜欢他$_j$。
Xiaobao$_j$ a, nei haizi$_j$-ziji de mama dou bu xihuan **ta1**$_j$.
Xiaobao Top that kid-self DE mum all Neg. like 3MSg
'As for Xiaobao$_j$, even the kid$_j$'s own mum doesn't like him$_j$.'

2.2.2 Strong Crossover effects

Now let us examine the strong crossover effects. Relative clauses containing either a gap or an RP always show strong crossover effects when the crossed element is an epithet.

(23) * [那混蛋$_j$揚言[我們一定要絕對服從他$_j$/____]的]那個人$_j$。
* [Na hundan$_j$ yangyan [women yiding yao juedui
that bastard claim we certainly must absolutely
fucong **ta1**$_j$ / ____] de] na-ge ren$_j$
obey 3MSg C that-Cl person
(Lit.) ('The guy$_j$ that [the bastard$_j$ claims that we must obey (*him$_j$*) absolutely]')

However, in LD structures, only the gap strategy shows the strong crossover effect, whereas the resumption with an epithet does not (cf. 24).

(24) 張三$_j$啊， 那個混蛋$_j$揚言[我們一定要絕對服從他$_j$/*_____].
Zhangsan$_j$ a, na-ge hundan$_j$ yangyan [women yiding
Zhangsan Top that-Cl bastard claim we certainly
yao juedui fucong **ta1**$_j$ / *____].
must absolutely obey 3MSg
('As for Zhangsan$_j$, the bastard$_j$ claims that we must obey *him*$_j$ absolutely.')

The same contrast is also observed in French. The relative clause (cf. 25a) but not the LD structure (cf. 25b) gives rise to crossover effects.

(25) a. * Le méchant voleur$_j$ qui ce salaud$_j$ dit que nous devons **lui**$_j$ obéir absolument
the bad thief who this bastard says that we must 3MSg obey absolutely
(* 'the thief$_j$ that this bastard$_j$ says that we must absolutely obey him$_j$')

b. Quant à Jean$_j$, ce salaud$_j$ dit que nous devons **lui**$_j$ obéir absolument.
as.for Jean this bastard says that we must 3MSg obey absolutely
'As for Jean$_j$, the bastard$_j$ says that we must absolutely obey him$_j$.'

2.3 Summary

The result of the relevant tests of this section is given below:

Types of A′-dependencies / Syntactic properties	Relatives			Left-Dislocation		
	Gap	***RP***	***Intrusive***	***Gap***	***RP***	***Intrusive***
	(a)	(b)	(c)	(d)	(e)	(f)
i) *with island*	yes	--------	island effect	yes	-------	no island effect
ii) *weak crossover*	yes	yes	---------	yes	no	--------
iii) *strong crossover*	yes	yes	---------	yes	no	--------
Mechanism	***Agree* without *Move***			***Match* without *Agree***		

Table 1

By observing and comparing every column, we can formulate the following generalizations concerning the distribution of the gap and of the RPs:

(i) The gap strategy gives systematically rise to island and crossover effects (cf. a, d);
(ii) Relativization (with gap or with RP) gives systematically rise to island and crossover effects (cf. a, b, d);
(iii) LD structures with a gap give rise to island and crossover effects (cf. d), but LD structures with a RP do not (cf. e, f).
(iv) A resumptive relative clause gives rise to island and crossover effects (cf. b, c), but a resumptive LD structure does not (cf. e, f).
(v) Intrusive pronouns are permitted in LD structures (cf. f), but not in relatives (cf. c).

According to the distribution of the results of the different syntactic tests, the table is divided into two parts: (I) Columns (a) to (d) and (II) Columns (e) and (f). If we compare (e) with (f), we notice that a resumptive LD structure does not give rise to island effects nor to crossover effects, which makes the intrusive use of an RP possible in those structures. The position that I will take in this paper is to argue that it is not the insertion of the intrusive pronoun that saves the sentence from the potential violation of the island effects; instead, it is quite the other way around: the derivation of a resumptive LD structure itself is not subject to the locality constraints at the first place. The relevant intrusive pronoun enters into the numeration from the very beginning of the derivation, which makes it possible for the minimalist operation *Match* to work in this particular case. As will be detailed in the next section, *Match* is not subject to the locality constraint. Therefore, neither island effects nor crossover effects are observed in any of the structures in (II) because these structures are only derived by *Match* without *Agree* or *Move*.

Now, let us turn to the structures in (I). The comparison between (a), (b) and (c) shows that a relative clause always gives rise to island effects as well as crossover effects, irrespective of whether the relativized site is occupied by a gap or by an RP. In other words, the so-called 'intrusive use' of the RPs is not available in relative clauses. The comparison between (a) and (d) reveals that an A'-dependency with a gap gives systematically rise to island and crossover effects, irrespective of whether the relevant A'-dependency is a relative clause or an LD structure. We will propose that all of these structures in (I) are derived by the minimalist operation that is called *Agree*. *Agree* is essentially a feature checking operation. An *Agree* chain is realized cycle by cycle and phase by phase; it gives rise to island and crossover effects. That is why both island effects and crossover effects are observed in a relative clause and why the intrusive use of an RP is excluded from (a) to (d).

Based on this reasoning, the real distinction that we should make is not between the relatives, on the one hand, and the LD structures on the other hand, but between the structures derived by *Agree* (i.e. the relatives with gap and with RP and the LD structures with gap) and those derived by *Match* (i.e. the resumptive LD structures) in a general way.

Let us go back to the five generalizations (i-v) on the above. The main proposal is the following:

(i) A gap is always derived by *Agree* and gives systematically rise to island and crossover effects (cf. a, d).

(ii) Relativization (with gap or with RP) is always derived by *Agree* and gives systematically rise to island and crossover effects (cf. a, b, d).

(iii) LD structures with gap are derived by *Agree* and give rise to island and crossover effects (cf. d); however, LD structures with RP are derived by *Match* and do not give rise to these effects (cf. e, f). Different LD structures are not derived uniformly by a single operation.

(iv) A resumptive relative clause is derived by *Agree* and gives rise to island and crossover effects (cf. b, c); however, a resumptive LD structure is derived by *Match* and it does not give rise to these effects (cf. e, f).

(v) Intrusive pronouns are permitted in the structures derived by *Match* (cf. f), but not in the structures derived by *Agree* (cf. c).

3. A minimalist account

3.1 Minimalist operations: *Match*, *Agree* and *Move*

In the Minimalist Program, a functional head *Probe* that has a set of unvalued/uninterpretable features seeks for a *Goal* that has the same set of valued and interpretable features. This seeking process is referred to as *feature matching*. Probe c-commands Goal. *Matching* is defined as an establishment of an identity relationship between the formal features attached to the Probe and those attached to the Goal. A feature can be regarded as an Attribute-Value pair with certain interpretability. For instance, φ-features of *him* are represented as [PERSON : 3rd; NUMBER: sg. ; GENDER: masc.]. A *Matching* chain can be established between a Probe and a Goal if the attributes, for example, person, number and gender, of those features are the same, which is to say, the value of the relevant features can be different. The identity relationship is also understood as a non-distinction relation between the attributes of the features attached to the Probe and to the Goal respectively.

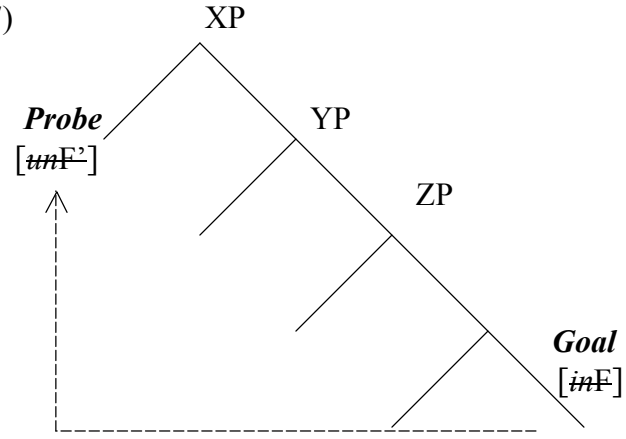
(26) **C-*Probe* … … … … … … … *Goal***

[F] [F']

Feature matching

Once the Probe finds the potentially suitable Goal, which is to say, the *matching chain* has already been established, the process of *feature valuation* begins. If the set of the features attached to the Probe and that attached to the Goal have the same attributes and the same value, but with different interpretabilities, the operation *Agree* will establish a dependency between them. Interpretable features are specified with a value; uninterpretable features are under-specified and unvalued. The set of the interpretable features attached to the Goal will value the set of the uninterpretable features attached to the Probe through the configuration in which the Probe c-commands the Goal. After the feature valuation, an *Agree* chain will be established between these two and then, the relevant features will be checked and erased.

(27)



Agree : - *Feature Matching*
- *Feature Valuation*
- *Feature Checking*

(***un*F-** : un-interpretable feature ; ***in*F-** : interpretable feature)

In the Minimalist Program, island effects are not exclusively regarded as the diagnostic test for movement. *Agree* is an operation that is also subject to the locality constraints as we will explain in great detail later. In this sense, *Agree* can derive the majority of the structures derived by movement in the GB framework. The operation *Move* in the MP framework is defined differently from 'movement'. *Move* is only triggered by EPP feature.

3.2 Feature system

Adger & Ramchand (2001, 2005) and Rouveret (2002, 2008, 2011, *to appear*) show that certain types of A'-dependencies, such as resumptive relatives, can be established by *Agree* without involving any movement operation during the derivation. Each type of A'-dependency has a set of features. In the system of A&R, a resumptive chain has two features: [λ] and [φ]. [λ] ensures that the C head is going to be interpreted as a predicate at LF that binds the RP as a variable and [φ] also needs to be interpreted at LF. In the system of Rouveret, an RP in a relative clause can have a [var] feature that justifies its variable status. This variable feature must be interpretable at LF; however, the [φ] feature does not need to be interpreted at LF. In both analyses, the relationship between the C-Rel(ative) and the RP is exactly defined as an operator-variable relation that will be properly interpreted at LF. The C-Rel can bear the same feature, but this feature is uninterpretable. The RP functions as a Goal and the C-Rel functions as a Probe. The dependency between these two can be established by *Agree* and the uninterpretable feature of the C-Rel will be valued by the interpretable feature of the RP.

(i) Relatives (with gap and with RP)

Generally, we can adopt either of these two systems to analyze relative clauses in Mandarin. Recall that in relatives, RPs and gaps are in free alternation.

(28) **C-Rel … … … … … …** **RP/ ____**
un-[var] ***in***-[var]

RPs in Chinese always have a set of φ features and it does not matter if such features are interpretable or not. Technically, the *Agree* relationship has already been established between C-Rel and the RP thanks to the [var] feature. Even if the φ features on the RP are

uninterpretable, the dependency will still be established.[4] Therefore, a resumptive relative clause can be schematized as follows,

(29) **C-Rel** **… … … … …** **RP/ _____**
un-[var] ***in***-[var]
un-[φ] *un*-[φ]

(ii) LD structures with gap

A standard LD structure with a gap is also referred to as topicalization. In the GB framework, the topic undergoes movement from its base position to the TopP and the trace that is left is interpreted as a bound variable. In our framework, we assume that the gap bears an interpretable [var] feature that values the uninterpretable [var] feature of the Top head; thus, an *Agree* chain can be established between them.

(30) **C-Top** **… … … … …** **_____**
un-[var] ***in***-[var]
un-[φ] *un*-[φ]

(iii) LD structures with RP

Recall the generalization that we get from the last section, LD structures with gap give rise to island and crossover effects; however, LD structures with RP do not give rise to any of these effects. This is so because they are derivationally distinct from one another. We will argue that in a resumptive LD structure, it is *Match* that functions alone to establish the dependency.

First, in an LD structure, the resumptive element is quite different from the gap in that they do not demonstrate exactly the same property. A gap is always interpreted as a variable; however, a resumptive is not, and especially, when the resumptive is an epithet. Different from a resumptive relative chain, the C-Top and the RP in an LD structure do not necessarily construct an operator-variable pair. For example, (31) shows an appositive nominal structure in Chinese. *Zhangsan* and *this student* in (31a) as well as *crew member* and *this profession* in (31b) construct appositive structures.

(31) a. [張三這個學生]非常用功。
[Zhangsan zhe-ge xuesheng] feichang yonggong.
Zhangsan this-Cl student very diligent
'This student Zhangsan is very diligent.'

[4] The common intuition in Adger & Ramchand (2001, 2005) and in Rouveret (2008) is that technically, the C is interpreted as an operator and the RP is interpreted as a variable and that the relationship Op-Var is ensured under a feature system. What I height in this paper is that, on the one hand, this system is parametricalized in terms of the (un)interpretability of such features and on the other hand, the (un)interpretability of the relevant features is structurally dependent. In a relative clause, Gap is parallel to RP in that both of them must be interpreted as variables bound by the C-Rel head. However, this is not the case in a topicalization case. In a topicalization structure, only the Gap is interpreted as a bound variable but not the RP. Since an A'-chain can be well established even if there is only one kind of feature is checked among other different features. Phi-features need not to be interpreted at LF in an A'-chain because an RP need not bear any referential features since it is only interpreted as a variable at LF. This is precisely the difference between a referential personal pronoun and a resumptive pronoun.

b. 我非常喜歡[空乘這個行業]。
Wo feichang xihuan [kongcheng zhe-ge hangye].
I very like air.steward this-Cl job
'I very much like the job as steward.'

Following McCloskey (1979, 1990), we can similarly treat one of the appositive as the resumptive of the other. In (32a), we generate *Zhangsan* in the topic position and leave *this student* inside the TP; in (32b), we generate *crew member* in the topic position and leave *this profession* inside the TP. Therefore, *this student* can be regarded as the resumptive of *Zhangsan* because they have the same referent in this case and *this student* occupies the relativized site.

(32) a. 張三$_j$啊, 我非常欣賞這個學生$_j$。
Zhangsan$_j$ a, wo feichang xinshang zhe-ge xuesheng$_j$.
Zhangsan Top I very appreciate this-Cl student
'As for Zhangsan$_j$, I like this student$_j$ very much.'

b. 空乘$_j$阿，我非常喜歡這個行業$_j$。
Kongcheng$_j$ a, wo feichang xihuan zhe-ge hangye$_j$.
steward Top I very like this-Cl job
'As for (working as) crew member in the plane$_j$, I like this profession$_j$ very much.'

The left appositive NP in each case serves as a resumptive epithet of the topic. However, it seems that the resumptive epithet in this case does not behave as a bound variable with respect to the topic because the former does not depend on the latter in its interpretation. For instance, the relationship between *the profession* and *(working as) crew member* is not an operator-variable relation because the semantic interpretation of *the profession* does not depend on *crew members*. Even though the relation between the topic and its resumptive can be co-referential, just like *Zhangsan* and *this student* in (32a), they do not necessarily construct an operator-variable pair.

Second, in the same appositive structures, it is impossible to relativize one of the two NPs by leaving the other one in-situ as resumptive.

(33) * [空乘$_j$很危險]的這個行業$_j$
* [Kongcheng$_j$ hen weixian] de zhe-ge hangye$_j$
steward very dangerous C this-Cl job
(* 'the job that (working as crew member in the plane) is dangerous')

We specified that the relationship between *the job* and *(working as) crew member* is not an operator-variable relation. Since the C-Rel and the RP in a relative clause form an operator-variable pair, the two NPs, *the job* and *crew member* are not licensed in a relativization structure. On the other hand, the fact that both NPs can exist in an LD structure suggests that contrary to relatives, LD structures do not require necessarily an operator-variable relationship. Therefore, the C-Top and the RP do not need to form an operator-variable pair.

Along this line, we suggest that C-Rel and C-Top bear the same features, but with different interpretability. We can assume that the RP in a resumptive LD structure bears a [var] feature, but an uninterpretable one, since it is not going to be interpreted as a variable at LF. This is in the same line of Yang (2014)'s analysis on the topicalisation. In his system, the Top bears an uninterpretable *u*[Top], which means that topics need not to be interpreted as

operators at LF. In our system, when the resumptive pronoun is not interpreted as variable, the topic is not interpreted as operator either. At the same time, the C-Top bears the same [var] feature as the resumptive pronoun and it is also an uninterpretable feature since it is not interpreted as an operator at LF. In this case, both the C-Top and the RP bear uninterpretable features. Thus, they cannot construct a Probe - Goal pair. Therefore, the dependency between the C-Top and the RP cannot be established by *Agree*. On the contrary, *Match* works here because both features have the same attributes. In the case of a resumptive LD structure, it is *Match* that functions alone to establish the dependency without *Agree* or *Move*. Recall that the difference between *Agree* and *Match* is that *Match* only requires an identity relationship between the attributes of the features. Let us compare the feature system of a resumptive LD structure (cf. 34) with that of an LD structure with a gap (cf. 35).

(34) Resumptive LD structures

$[_{TopP}\ NP_j\ [_{Top°}\ \mathbf{Top^0}]\ ,\ [_{TP}\ \mathbf{\ldots\ \ldots\ \ldots\ \ldots\ \ldots\ RP_j}\ \ldots\ldots\ ]]$

un[var] ***un***[var]

un-[φ] *un*-[φ]

√ *Match*

* *Agree*

(35) LD structures with gap

$[_{TopP}\ NP_j\ [_{Top°}\ \mathbf{Top^0}]\ ,\ [_{TP}\ \mathbf{\ldots\ \ldots\ \ldots\ \ldots}\ \underline{\quad}_{\mathbf{j}}\ \ldots\ldots\ ]]$

un[var] ***in***[var]

un-[φ] *un*-[φ]

√ *Match*

√ *Agree*

We also give the feature system of the relatives below.

(36) Relatives (with gap or with RP)

$[_{NP}\ NP_j\ [_{CP}\ [_{C°}\ \mathbf{C\text{-}Rel}]\ [_{TP}\ \mathbf{\ldots\ \ldots\ \ldots}\ \underline{\quad}\ \mathbf{/\ RP_j}\ \ldots\ldots\ ]]$

un[var] ***in***[var]

un[φ] *un*[φ]

√ *Match*

√ *Agree*

3.3 Locality

In the previous sections, we noticed that the real distinction that should be made is not simply between the relatives and the LD structures, but between (I) relatives (with gap or with RP) and the LD structures with gap, on the one hand, and (II) the resumptive LD structures, on the other. This is so because the LD structures with gap behave like relatives (with gap or with RP) in that both of them give rise to island effects. By contrast, resumptive LD structures behave differently in that they do not give rise to any island effect. The distinction between these two categories of structures (I vs. II) is in fact determined by the difference between the two minimalist mechanisms that derive them. Structures in (I) are derived by *Agree* and those in (II) by *Match*. *Agree* is subject to the locality condition, but *Match* is not. In the Minimalist Program, there are two types of locality: the shortest link condition and the condition on phases. The shortest link condition captures phenomena like island effects and intervention effects discussed in great detail in the GB framework. The condition on phases specifies that

the derivation should be done phase by phase and in a cyclical fashion. For instance, the following schema demonstrates a sentence containing three phases.

(37) [Phase 3 …… [Phase 2 …… [Phase 1 … …]]]

After the computation builds the next phasal head (Phase 2), the domain[5] of the lowest phase is sent to the interfaces through the operation *Transfer* for interpretation and the sent-off domain becomes inaccessible. Only the edge of Phase 1 is accessible for further computation. The derivation continues and constructs a higher phase (e.g. Phase 2). The condition on phases is referred to as Phase Impenetrability Condition (PIC).

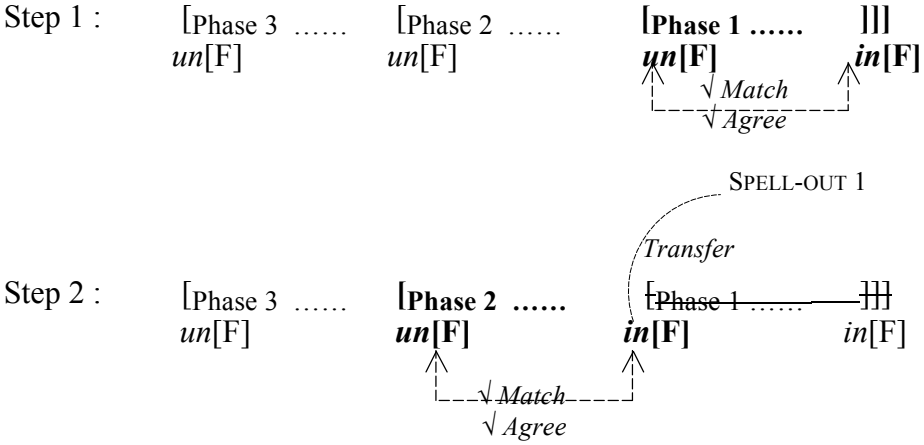
(38) Phase Impenetrability Condition (PIC)
In a phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

As a matter of fact, the condition on phases is strong enough to filter all the cases that violate the shortest link condition. In order to avoid the redundancy, the condition on phases is the only necessary condition on locality. We will examine how this works in the derivation by *Agree* and by *Match* respectively.

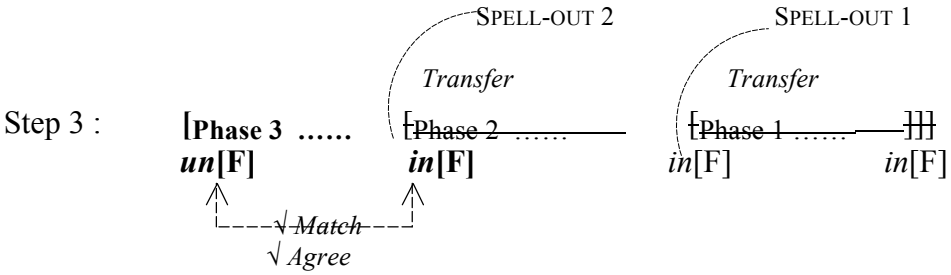
a) Derivation by *Agree*

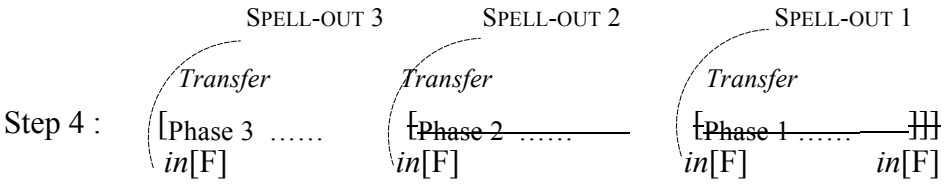
First, at the lowest phase level, *Match* works before *Agree*. Both the Probe and the Goal bear the same set of features. *Match* only takes the attributes of the relevant features into consideration. If the attributes of these features are the same, the dependency can be established by *Match*. Both features do not have the same interpretability: the Goal bears an interpretable feature and the Probe bears an uninterpretable feature. Therefore, the dependency between both features can be established by *Agree*. The interpretable feature on the Goal values the uninterpretable feature on the Probe and once the relevant features are checked, the derivation of this lowest phase ends. In a similar fashion, phases 2 and 3 will be constructed. In the course of the whole derivation, multiple *Transfer* and multiple Spell-Out apply.

(39) Derivation by *Agree*



[5] Based on Chomsky (2000, 2001, 2004), *v*P and CP are phases. The domain of a phase is the complement of the phase head, and the edge of a phase is the specifier and the adjuncts of the phase head.



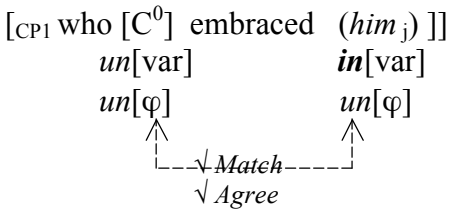


In this scenario, we can imagine that if Phase 1 contains an island, *Agree* will not be able to function between Phase 1 and the higher phases (Phase 2 or Phase 3). This is the way in which the condition on phases filters the islands. Let us take a case of a strong island for example.

(40) *我碰到了[李燕認識[擁抱過他 j /_____的]那位女同學的]法國影星 j。
*Wo pengdao-le [Liyan renshi [yongbao-guo **ta1**$_j$ /_____ de]
I meet-Perf Liyan know embrace-Exp 3MSg C
na-wei nütongxue de] Faguo yingxing$_j$.
that-Cl female.student C French movie.star
('I met the French movie star$_j$ that Liyan knows the girl [who embraced (*him* $_j$)].')

In order to simplify the presentation, we use the English structure in the following diagrams. Step 1 represents the construction of the lowest phase, say the inner relative clause, *the girl who…,* that builds the island. The C^0 and the RP *him* form a potential Probe-Goal configuration in that they bear both the variable feature and the phi-feature. Since the relevant A'-dependency is a relative clause, the C-Rel and the RP in the relativized site construct an operator-variable pair. In relatives, the RP will be interpreted as a bound variable at LF and it thus bears an interpretable [var] feature. It will value the uninterpretable [var] feature attached to the C-Rel. Therefore, an *Agree* chain will be established between these two and the relevant features will be valued and checked.

Step 1:



After the construction of the Phase 1, Step 2 starts constructing a higher phase that contains the outer relative clause, *the French movie star that…* Once the phasal head of the second phase, [C^0 *that*], is merged, Phase 1 ~~[CP1 who embraced (*him* j)]~~ will be sent to the interfaces for interpretation by the operation *Transfer* and it will become inaccessible. The head of the second phase, [C^0 *that*], is a potential Probe that bears an uninterpretable [var] feature and an uninterpretable phi-feature. However, there is no available candidate for the potential Goal. Therefore, the derivation crashes.

Step 2: [$_{CP2}$ [C^0 that] Liyan knows the girl ~~[$_{CP1}$ who embraced (*him*$_i$)]~~]

un[var]

un[φ]

~~* *Match*~~ .....

* *Agree*

This procedure also applies to the case of LD structures with gap insofar as the gap is also interpreted as a bound variable in this case.

b) Derivation by *Match*

The difficulty in this part is to explain why *Match* is not subject to the locality condition. One of the possibilities is to suggest that *Match* somehow works on the whole structure when the derivation of the entire structure is finished. In other words, what we need is that each phase will not be sent immediately to the interfaces. In each phase, *Match* already establishes a 'partial' dependency. Once the entire structure is derived, *Match* establishes the dependency on the entire structure between the lowest Goal and the highest Probe. Only after this process, all of the phases will be sent to the interfaces at the same time. And this is how such a dependency can avoid island effects.

For example, in the lowest cycle, Phase 1, both features are uninterpretable, but they have the same attributes. Therefore, only *Match* works, but not *Agree*. At this stage, a partial dependency at the phasal level will be established by *Match*. Since *Agree* does not work, the relevant features cannot be checked and such a phase will not be sent immediately to the interfaces. Then, the construction of Phase 2 begins and so on and so forth. Once all of the phases are constructed and the derivation of the entire structure is finished, *Match* works on the entire sentence. After the establishment of the dependency by *Match* at the sentential level, the entire sentence will be sent to the interfaces at the same time by *Transfer*.

(41) Derivation by *Match*

Step 1 : [Phase 3 …… [Phase 2 …… **[Phase 1 ……]]]**

un[F] *un*[F] ***un*[F]** ***un*[F]**

√ *Match*

* *Agree*

Step 2 : [Phase 3 …… **[Phase 2 ……** [Phase 1 ……]]]

un[F] ***un*[F]** ***un*[F]** *un*[F]

√ *Match*

* *Agree*

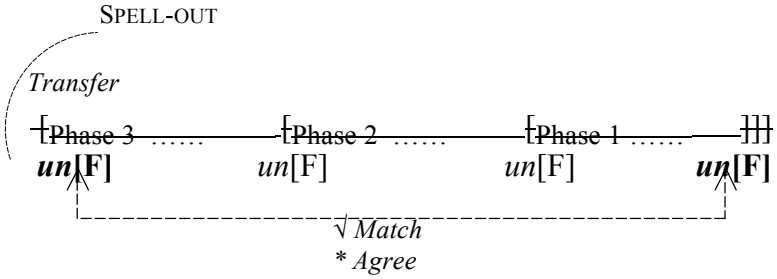
Step 3 : **[Phase 3 ……** [Phase 2 …… [Phase 1 ……]]]

***un*[F]** ***un*[F]** *un*[F] *un*[F]

√ *Match*

* *Agree*

Step 4 :



→ (all of the phases are sent to the interfaces at the same time)

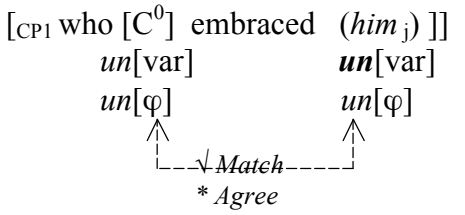
We can assume that *Match* is a pre-condition on *Agree*; an *Agree* chain can be established only when the relevant features match. However, an only Attributes matching chain (whose values are different) cannot be established by Agree and cannot be sent immediately to the interfaces, which is regarded as a necessary condition on Multiple Transfer system. In (41), each phase was only established by Match but not by Agree, the relevant features are not checked and the phase will not be sent to be interpreted at LF. When the whole structure is numerated, a matching chain is established (because the Attributes are identical). Notice that features like [var] are still not erased. This is precisely the difference between relativization and topicalization. Since an RP will not be interpreted as a bound variable in a Top-chain, whether the [var] feature is valued or not is irrelevant because the co-indexation between the Top and the RP is not assigned via Op-Var relationship. Therefore, a matching chain will be sent to the interfaces at the final stage even if it still contains unvalued features, only when those features are irrelevant to interpretation.

Let us give a concrete example to illustrate the point.

(42) 那位法國影星$_j$, 我碰到了一勤認識[擁抱過他$_j$/*_____的]那位女同學。
Na-wei Faguo yingxing$_j$, wo pengdao-le [Yiqin renshi
that-Cl French star I meet-Perf Yiqin know
[yongbao-guo **ta1**$_j$ / *____$_j$]] de na-wei nütongxue.
embrace-Exp 3MSg C that-Cl female.student
'As for that French star$_j$, I met the girl [that Yiqin knows___ [who embraced (*him*$_j$)]].'

In Step 1, the lowest phase contains the relative clause, *the girl who…,* that forms the island. The C^0 and the RP *him* (or the gap) are in a potential Probe-Goal configuration in that they bear both the variable feature and the phi-feature. However, the whole structure is an LD structure, the Top head and the RP situated in the topicalized site do not necessarily form an operator-variable pair. Recall that we argued that in the resumptive LD structures, the RP is not going to be necessarily interpreted as a bound variable at LF and it thus bears an **un**interpretable variable feature. Since the C head bears also an uninterpretable variable feature, the dependency between these two cannot be established by *Agree*. The uninterpretable feature attached to the RP cannot value/check the uninterpretable feature of the C. Nevertheless, a *Matching* chain can be established between these two since the relevant features share the same attributes. Since the relevant features have not been checked yet, the relevant phase cannot be sent to the interfaces for interpretation. The derivation continues.

Step 1:



In Step 2, the higher C_2 head is a potential probe that bears uninterpretable features and the lower C_1 head can be a potential Goal. However, an *Agree* chain cannot be established either at this stage since both the Probe and the Goal bear uninterpretable features that cannot be checked. However, a *Matching* chain can be established between these two. With unvalued and unchecked features, Phase 2 cannot be sent to the interfaces either and the derivation continues.

Step 2: $[_{CP2}\,[C^0$ that] Yiqin knows $[_{CP1}$who $[C^0]$ embraced (*him* $_j$)]]

un[var] *un*[var] ***un***[var]
un[φ] *un*[φ] *un*[φ]

√ *Match*
* *Agree*

In Step 3, for the similar reasons, the *Agree* chain cannot be established between the Top head and the C_2 head, but a *Matching* chain can.

Step 3:
$[_{TopP}$ French star $[Top^0]$, …, $[_{CP2}\,[C^0$ that] Yiqin knows $[_{CP1}$who $[C^0]$ embraced (*him* $_j$)]]]

un[var] *un*[var] *un*[var] ***un***[var]
un[φ] *un*[φ] *un*[φ] *un*[φ]

√ *Match*
* *Agree*

Till now, the derivation of the whole structure/sentence is finished. The highest Probe, Top head and the lowest Goal, the RP, form a dependency. However, both of them bear only the uninterpretable features and the *Agree* chain still cannot be established between them. Only a *Matching* chain can be constructed. Once the maximal *Matching* chain is established, the whole sentence will be sent to the interfaces for interpretation. Even though Phase 1 contains a strong island, the derivation still converges in that *Match* works on the entire sentence. And this is how a *Matching* chain can escape from the locality constraint.

Step 4:
SPELL-OUT
Transfer
~~$[_{TopP}$ French star$_j$ $[Top^0]$, …, $[_{CP2}\,[C^0$ that] Yiqin knows $[_{CP1}$who $[C^0]$ embraced (*him*$_j$)]]~~

un[var] *un*[var] *un*[var] ***un***[var]
un[φ] *un*[φ] *un*[φ] *un*[φ]

√ *Match*
* *Agree*

Please notice that the difference between *Agree* and *Match* is not like that between movement and binding in the GB framework in the sense that the locality constraints are not sufficient to draw a boundary between movement and binding. The only type of binding that is not subject to the locality constraint is the unselective binding. Binding does not work on features and the essential technique is coindexation; however, *Agree* and *Match* depend strongly on the valuation of relevant features.

3.4 Crossover effects

Island effects and crossover effects are used as diagnostics for A'-movement in the GB framework. In the Minimalist Program, the operation *Agree* alone (without *Move*) can give rise to island effects, as we showed in the previous section. The remaining question is whether

Agree also gives rise to crossover effects. The following example shows that a relative clause (with gap or with RP) gives rise to weak crossover effect:

(43) * [那個混蛋 $_j$ 自己的老婆把他 $_j$ 給殺死了]的那个個人 $_j$
* [Na-ge hundan$_j$-ziji de laopo ba **ta1**$_j$ gei sha-si-le]
that-Cl bastard-self DE wife BA 3MSg GEI kill-dead-Perf
de na-ge ren$_j$
C that-Cl person
(Lit.) 'The guy$_j$ that the bastard$_j$'s own wife killed (*him*$_j$)'

One possible way to look at the crossover effects in (43) is that the configuration involved is ruled out by the constraint on the variable binding construal (Reinhart 1983) that prohibits the pronoun *him* to be bound in two different ways at the same time. *Him* is A'-bound by the relative head C-Rel and it is also A-bound by the DP *the bastard* situated in an argument position, which creates an undesirable situation in which the same pronoun is involved in two different types of dependencies.

The A-dependency is essentially an anaphoric dependency established between the pronoun *him* and the resumptive epithet *the bastard*, and the latter c-commands the former. Thus, *him* is anaphorically dependent on *the bastard*.

(44) A-dependency
* [$_{DP}$ the guy$_j$ [$_{CP}$ C^0 that [$_{TP}$ **the bastard$_j$** …… **him$_j$**]]]
co-reference

The second dependency is an A'-dependency that is built between the pronoun *him* and the C-Rel. Such a dependency can be established by *Agree* without movement.

(45) A'-dependency
* [$_{DP}$ the guy$_j$ [$_{CP}$ **C^0** that [$_{TP}$ the bastard$_j$ …… **him$_j$**]]]
un-[var] **in**-[var]
un-[φ] un-[φ]
Agree

Along this line, the configuration of crossover specified above can be derived by *Agree* alone because without movement, the A'-dependency is still established and such a dependency 'crosses' the epithet that shares the same index. Again, the configuration on the above is ruled out by the constraint on the variable binding construal. Our analysis differs from the original version of Reinhart (1983) in that we assume that the illicit binding configuration can also be created by *Agree* without any movement.

One strong line of evidence showing that movement is involved in a resumptive dependency can be found in the work of Demirdache & Percus (2011). In Jordanian Arabic, when a dislocated element is a quantifier phrase, if the clitic pronoun precedes the resumptive epithet, the sentence is grammatical.

(46) OK : **Q/WH [$_{CP}$…cl... epithet...]**
kull walad ʔumm-oh fakkart **ha-l-ħmar** bi-l-bajat ?
every boy his mother thought **this-the-donkey** at-the-house
'Every boy, his$_j$ mother thinks that this donkey$_j$ is at home.'

However, in the same binding environment, if the epithet precedes the clitic, the sentence will be ungrammatical.

(47) *** Q/Wh […epithet…cl…]**

a. * kull walad [ʔum **ħa-l-ħmar**] fakkart ʔinnu raħ
every boy mother **this-the-donkey** thought that they.will
yzittu-***u*** bi-lħabs
put-him in-prison
'Every boy, this donkey's$_j$ mother thought that they will put him$_j$ in prison.'

b. * miin xabbartu **ha-l-ħmar** ʔinnu raħ yzittu-**u** bi-lħabs ?
who you.told this-the-donkey that they.will put-him in-prison
(* 'Who did you tell the donkey$_i$ that they will put him$_i$ in prison?')

D&P's analysis is based on the crossover effect. The clitic pronoun moves at LF to the scope position to create an operator that binds the trace that it leaves. In the case of Q/WH [$_{CP}$…cl... epithet...], the movement path of the clitic will not cross the epithet and therefore, no crossing effects is detected. However, in the case of Q/Wh […epithet…pronoun…], the raising of the clitic will cross the epithet that shares the same index and such a movement will trigger the crossover effect that leads to the ungrammaticality of the relevant sentence. However, no such contrast is observed in Mandarin relatives where both orders are illicit and the relevant sentences are always ungrammatical.

(48) a. *** Q[… epithet... pronoun...]**

* [那個混蛋 $_j$ 自己的老婆把他 $_j$ 殺死了]的每个個人 $_j$

* [na-ge hundan$_j$-ziji de laopo ba ***ta1***$_j$ gei sha-si-le]
that-Cl bastard-self DE wife BA 3MSg GEI kill-dead-Perf
de mei-ge ren$_j$
C every-Cl person
('every person$_j$ that the bastard's$_j$ own wife killed him$_j$')

b. *** Q[... pronoun... epithet]**

* [他 $_j$ 自己的老婆把那个混蛋 $_j$ 殺死了]的每个個人 $_j$

* [***ta1***$_j$ -ziji de laopo ba na-ge hundan$_j$ gei sha-si-le]
3MSg-self DE wife BA that-Cl bastard GEI kill-Perf
de mei-ge ren$_j$
C every-Cl person
('every person$_j$ that his$_j$ own wife killed this bastard$_j$')

From this example, we can see that Mandarin is not really sensitive to the order between the pronoun and the epithet. Both orders give rise to the crossover effects, which can be regarded as evidence supporting the claim that movement is not necessarily the only available option in the derivation of the relatives in Mandarin. As we demonstrated above, both orders can be actually derived by *Agree* alone without *Move* and the whole derivation can violate the constraint on the bound variable construal and thus give rise to the crossover effects.

Now we will see how an A'-dependency derived by *Match* does not give rise to the crossover effect. The following example demonstrates that a resumptive LD structure does not show any crossover effect even if the crossed element is an epithet.

(49) 我兒子$_j$啊，[那小子$_j$說[他$_j$再也不敢酒後駕駛]]。
Wo erzi$_j$ a, [nei xiaozi$_j$ shuo [ta1$_j$ zai ye bu
1Sg-(Gen) son Top that-Cl kid say 3MSg again too not
gan jiu-hou jiashi]].
dare alcohol-after conduct
(Lit.) 'My son$_j$, that kid$_j$ said that he$_j$ would not drive after drinking any more.'

As we demonstrated, the essential of a crossover configuration relies on the violation of the constraint that prohibits a variable from being bound at the same time in two different types of dependencies, A and A'. In this example, the dependency between the pronoun *he*$_j$ and *the kid*$_j$ is established through co-reference. This anaphoric linking is in fact a co-referential dependency, thus an A-dependency.

(50) A-Dependency
[$_{TopP}$ My son$_j$ Top^0, [$_{TP}$ **the kid$_j$** dit [$_{CP}$ C^0 that [$_{TP2}$ **he$_j$** ……]]]]
co-reference

The A'-dependency between *he*$_j$ and my son$_j$ is established by *Match*. The work of *Match* is only to check if there is a non-distinction relation between the set of features attached to the Probe and that attached to the Goal and it does not care whether the relevant features are valued or checked yet. In (51), the three elements, Top^0, C^0 and the RP have the same set of features with the same attributes. Once the attributes identification work is over, the operation *Match* is finished. In other words, the relation based on *Agree* is not realized between the C-Top and the pronoun *he* since all of those uninterpretable features are not checked yet. The A'-dependency is not really established in the strict sense.

(51) A'-Dependency
[$_{TopP}$ My son$_j$ **Top^0**, [$_{TP1}$ the kid$_j$ said [$_{CP}$ C^0 that [$_{TP2}$ **he$_j$** ……]]]]
[var] [var] [var]
[φ] [φ] [φ]
Match 2 *Match* 1

As we said in the section concerning island effects, since the topic element is considered as a hanging topic, it is always merged directly in the TopP position and *Match* works somehow on the whole structure at the final step of the derivation, which makes it possible to escape the locality constraints. We also explained that in an LD structure, the C-Top does not really bind the RP as a variable since the operator-variable binding relationship is not constructed in this case, the linking between the Hanging Topic and the RP could be something else than A'-dependency. Along this line, we can assume that the co-indexation between the topic, *my son*$_j$ and the pronoun *he*$_j$ is realized either after or before the syntactic derivation. In the former assumption, after the derivation of the syntactic structure, it is the discourse that assigns the same index to the hanging topic and eventually, the relationship between the C-Top and the RP is something similar to a referential dependency since such a dependency does not imply necessarily an operator-variable relation. In the second assumption, it is possible that before the numeration, the hanging topic already bears the same index in the lexical array. The Inclusiveness Condition (Chomsky 1995) suggests that the output of a system should not contain anything beyond its input. An index is thus considered as a new element introduced during the derivation process, which is not desirable. Based on this consideration, it is possible to postulate the idea that the co-indexation between the C-Top and the RP is not a result of the establishment of the A'-dependency by *Match*, but is determined before the

numeration. Therefore, the two dependencies involved in (49) are actually referential dependencies. The dependency between *he*$_j$ and *the kid*$_j$ is a co-referential dependency and that between *my son*$_j$ and *he*$_j$ is also a co-referential dependency. Again, the pronoun *he* is neither a bound variable nor involved into two different types of dependencies. Therefore, the relevant sentence does not give rise to crossover effects.

3.5 Comparison

Another important observation made in this study is that the same type of A'-dependency does not need to be derived by the exactly the same mechanism in different languages. Resumptive relatives in French behave somehow like Chinese in that a direct object RP embedded within a strong island cannot save the sentence from the violation of the locality constraint, as shown in (52). It seems to suggest that like Chinese, relatives (with gap or with RP) in French are derived by *Agree*, which gives rise to island effects and crossover effects.

(52) * J'ai rencontré le médecin que [Marie connaît la fille [qui (**l$_j$**)' avait embrassé]].
I have met the doctor that Marie knows the girl who him had kissed
(*'I met the doctor that [Marie knows the girl [who kissed(*him* $_j$)]].')

However, with respective to the resumptive relatives, Welsh and Irish behave differently from Chinese in that the intrusive use of the RPs is permitted in the former, but not in the latter. In the following examples, when the relativized site is occupied by a full/strong pronoun, even if such a pronoun is embedded within a strong island, the sentence is still grammatical. The presence of the intrusive pronouns in these languages avoids the potential violation of the locality constraint.

(53) Dyma'r dyn y cusanaist ti'r ddynes a siaradodd amdan***o ef***
here the man that kissed you the woman Rel talked about-him
'Here is the man$_j$ [that you kissed the woman [who talked about him$_j$]].'
Welsh, Tallerman (1983)

(54) an fear$_j$ a bpóg mé an bhean a phós é$_j$
the man *a*N kissed I the woman *a*L married him
'the man that I kissed the mowan that married him'
Irish, Sells (1984)

From these comparisons, it seems that it is hard to maintain the same analysis on the same type of structure in different languages. It is possible that different languages use different ways to form the same kind of A'-dependency.

4. Other types of A'-dependencies

In Mandarin, RPs can also exist in other types of A'-constructions, for example, the *lian/ye…dou* 'even…' type focus (cf. 55) and D-linked *wh*-fronting cases (cf. 56) extensively discussed in (Pan 2011a, b, Pan 2014). Both examples show that the gap strategy and the resumptive strategy are possible in these A'-dependencies. In this sense, *even*-type focus and D-linked *wh*-fronting cases (i.e. *wh*-topicalization) behave in a similar way to the LD structures examined in the previous sections.

(55) [$_{CP}$ 連那個最調皮的學生$_j$，[$_{TP}$ 大家這次都沒有罵他$_j$/____]]。
[$_{CP}$ Lian na-ge zui tiaopi de xuesheng$_j$, [$_{TP}$ dajia zhe-ci
even that-Cl most naughty DE student everyone this-time
dou meiyou ma ta$_j$ /____]].
all not scold 3MSg
'Even the naughtiest boy$_j$, no one scolded him$_j$ this time.'

(56) [$_{CP}$ 哪位文學老師$_j$，[$_{TP}$ 學生們都很喜歡他$_j$ / ____]]?
[$_{CP}$ Na-ge wenxue laoshi$_j$, [$_{TP}$ xuesheng-men dou hen xihuan ta$_j$ / ____]]?
which-Cl literature teacher student-Pl. all very like 3MSg
'Which literature teacher$_j$, many students like him$_j$ very much?'

Another argument comes from the island effects. Exactly like LD structures, if the gap strategy is adopted in the above two constructions, island effects show up; however, if the resumptive strategy is adopted, no island effect is observed.[6]

(57) [$_{CP}$ 連那個最聽話的學生$_j$，[$_{TP}$ [$_{CP}$ 如果他$_j$/ ?*_____ 都不想幫忙的話], 你們也沒辦法]]。
[$_{CP}$ Lian na-ge zui tinghua de xuesheng$_j$, [$_{TP}$ [$_{CP}$ ruguo ta$_j$ / ?*____ dou bu
even that-Cl most obedient DE student if he all not
xiang bangmang dehua] nimen ye mei banfa]].
want help DE-HUA you.Pl also not way
'Even the most obedient student$_j$, if he$_j$ doesn't want to help, you will be hopeless.'

(58) [$_{CP}$ 哪位文學老師$_j$，[$_{TP}$ [$_{CP}$ 最近採訪他$_j$ / *____的] 那個記者出名了]]?
[$_{CP}$ Na-ge wenxue laoshi$_j$, [$_{TP}$ [$_{CP}$ zuijin caifang ta$_j$ / *____ de] na-ge
which-Cl literature teacher recently interview him DE that-Cl
jizhe chu-ming-le]] ?
journalist become-famous-Perf

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[6] One of the reviewers points out the "directionality" issue which is a very puzzling difference between languages like English and Chinese. Since RP is a kind of pronominal or referential element, it seems that it is much easier to be interpreted in the way of the "forward anaphora" when islands intervene. In Mandarin, the head of relative clause is on the right side, which means that it may be a kind of "backward anaphora" in direction. On the contrary, when it comes to the LD Topic, the focus of the *lian…Dou* 'even' structure in (57), and even the D-linked *wh*-topicalization in (58), the co-referential targets of the RP in these structures are all on the left side in Mandarin Chinese. In that sense, the Probe-Goal relation may also depend on "directionality" in terms of Match. It could be the case that Match operates on the chain that is subject to the directionality condition. It seems that the issue is also complicated by the cases where no island is involved; especially, in a Chinese relative clause, an RP can appear either in a subject position (cf. i) or in an object position (cf. ii), however its presence is still restricted by independent factors.

(ii) ta mama hen piaoliang de na-ge nühair
her mother very pretty DE that-Cl girl
'The girl whose mother is pretty'

(iii) wo deng-le ta san nian de na-ge nühair
I wait-Peft her thee year DE that-Cl girl
'The girl that I waited for for three years'

As the reviewer points out, it could be the case that the presence of an island plays a role here.

'Which literature teacher$_j$, the journalist who interviewed him$_j$ recently becomes famous?'

These two structures do not give rise to crossover effects when it is the resumptive strategy that is adopted.

(59) 連小寶$_j$，那个小捣蛋$_j$自己都說他$_j$這次做錯了。
Lian Xiaobao$_j$, na-ge xiao daodan-ziji$_j$ dou shuo ta$_j$ zhe-ci zuo-cuo le
even Xiaobao that-Cl little troublemaker-self all say he this-time do-wrong SFP
'Even Xiaobao$_j$, the little troublemaker$_j$ himself says that he$_j$ made a mistake this time.'

(60) 誰家的孩子$_j$，那小捣蛋$_j$說一個不認識的人打了他$_j$?
Shei jia de haizi$_j$, na xiaodaodan$_j$ shuo yi-ge burenshi
who family DE kid that little-troublemaker say one-Cl unknown
de ren da-le ta$_j$?
DE person hit-Perf him
'The kid$_j$ of which family, the little troublemaker$_j$ says that a stranger hit him$_j$?'

The result of the tests is given below:

	LD structure			***Lian* 'even'-focus**			***Wh*-topicalization**		
	Gap	***RP***	***Intrusive***	***Gap***	***RP***	***Intrusive***	***Gap***	***RP***	***Intrusive***
Island effects	yes	-----	no	yes	-----	no	yes	-----	no
Crossover effects	yes	no	-----	yes	no	-----	yes	no	-----
Mechanisms	*Agree*	*Match*		*Agree*	*Match*		*Agree*	*Match*	

Table 2

As we can notice, *even*-type focus structure and *wh*-fronting cases behave exactly like the standard LD-structures with regard to the distribution of the gaps, the RPs and the intrusive pronouns, thus we can treat three of them uniformly concerning their derivation. When the gap strategy is adopted, these structures are derived by *Agree* and give rise to island effects and crossover effects; however, when the resumptive strategy is adopted, they are derived by *Match* and do not give rise to island effects nor to crossover effects.

5. Conclusion

This paper examines the distribution of gaps, RPs and intrusive pronouns in Mandarin Chinese in two types of A'-dependencies. This study also helps us to have a clearer picture of resumption in general. First, the macro-typological point of view on the resumption should not be maintained, given that one and the same language can actually have different uses of RPs: the general use and the intrusive use. Therefore, it is not correct to say that one language disposes only one specific use of RPs. Second, different types of A'-dependencies can be derived by different minimalist mechanisms. Based on the distribution of the gaps, the RPs and the intrusive pronouns in the relatives and in the LD structures, we showed that these two kinds of A'-dependencies differ from one another in their derivation. More specifically, the real distinction is not between the relatives, on the one hand, and the LD structures on the other, but between the structures derived by *Agree* (i.e. the relatives with gap and with RP and the LD structures with gap) and those derived by *Match* (i.e. the resumptive LD structures). The difference between *Agree* and *Match* is that the former but not the latter is subject to the locality constraints and gives rise to island effects and crossover effects. *Agree* constructs a domain where multiple *Transfer* and multiple Spell-out apply, but *Match* does not. Third, the

same type of A'-dependency can be derived by different mechanisms in different languages. For instance, relatives behave differently in Welsh and in Chinese in that the intrusive pronouns are permitted in the former, but not in the latter. This fact suggests that resumptive relative chains in Welsh and in Chinese must be derived by different mechanisms. One of the reviewer suggests that the differences illustrated between the A'-dependencies derived by Agree and those derived by Match predict that the latter structures are much easier to acquire than the former in terms of learnability. This is because in a Matching chain, the hanging topic is always merged in the TopP, which is an operation for free in the Minimalist Program. Form this point of view, Agree is less economical than Match. It seems that generally, topicalization structures are much easier to acquire than relative clauses in different languages. We still need more experimental results to confirm this contrast.

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