WH in situ and the intervention effect[*]

ERIC MATHIEU

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Abstract

In this paper, I discuss data which suggest that covert movement must satisfy constraints than overt movement does not, posing a challenge for the uniform characterization of Move as Move F (Chomsky 1995). I propose an alternative analysis: the WH operator that French WH phrases in situ contain moves to Spec-CP and leaves a trace which is non-referential. Since antecedent government is local, the intervention effects are thus expected. French WH phrases in situ in single WH questions always appear to denote functions ranging over higher order entities, even when the WH phrase is in object position.

1 Introduction

As is well-known, French has the possibility of fronting a WH phrase or of leaving it in situ in matrix clauses. Single WH in situ questions in French are not only used as echo, but also as standard questions asking for new information. No difference in interpretation between (1a) and (1b) comes to mind:

(1) a. Tu vois qui   ce   soir?
         you see who   this   evening
     b. Qui$_i$ tu   vois t$_i$ ce   soir ?
         who   you   see   this   evening
         'Who are you seeing tonight?'

These data have led some researchers (Aoun, Hornstein & Sportiche 1981; Lasnik & Saito 1992 to name just a few) to believe that French has a 'mixed' system with regard to the formation of WH interrogatives. On this view, French is like English in that a WH expression can be moved overtly to Spec-CP, and like Chinese in that the WH

expression can remain in situ. However, the assumption of a 'mixed' system raises three serious problems, one conceptual, the other two empirical.

The conceptual problem is that theories in which economy is a central concept, such as the Minimalist Program (MP, Chomsky 1995), have problems allowing for (apparently) optional processes, such as the possibility of 'overt' movement alongside non-movement (or 'covert' movement). By the principle Procrastinate, delaying movement until LF is preferred. On this view, two derivations based on the same numeration are not expected to allow both ('overt') movement and no movement ('covert' movement).

The first empirical problem is that the distribution of WH in situ in French single WH questions, unlike the distribution of WH in situ in languages like Chinese, is highly restricted: the relevant alternative strategies in French (WH movement vs. WH in situ) do not behave identically with respect to other scopal elements in the sentence, a problem we will consider in detail in section 2. As noticed by Boskovic (1998a, b) Neg and C appear to be interveners for the licensing of WH in situ in French:

(2) a. *Jean   ne   mange   pas   quoi?
        Jean   Neg   eat   not   what
     b. Qu$_i$'est-ce que   Jean   ne   mange pas t$_i$?
        what   that   Jean   NEG   eat   not
        'What doesn't John eat?'

(Boskovic 1998a:15)

(3) a. *Jean   et   Pierre croient que   Marie a   vu   qui?
        Jean   and   Pierre believe that   Marie has   seen who
     b. Qui$_i$ Jean   et   Pierre croient-ils   que   Marie   a vu t$_i$?
        who   Jean   and   Pierre believe-they that   Marie   has seen
        'Who(m) do Jean and Pierre believe that Marie saw?'

(Boskovic 1998a:13)[1]

This makes it impossible to attribute the alternatives solely to the absence or presence of a strong feature in C (see Aoun et al. 1981 for an account along those lines), since such a proposal fails to explain the asymmetry between (2a) and (2b) on the one hand and (3a) and (3b) on the other.

The second empirical problem is that WH in situ in French single WH interrogatives is only possible in direct questions. Contrary to most other optional WH movement

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[1] Some researchers argue that WH in situ can occur in tensed clauses (see for example Aoun et al. 1981, Tellier 1991). However, my informants confirm that (3a) only receives an echo interpretation.

languages (e.g. Iraqi Arabic, Igbo, Bahasa Indonesian) and so-called 'pure' WH in situ languages (e.g. Chinese, Japanese), WH in situ in French is banned from embedded indirect questions:

(4)   a.   *Je   me   demande   [$_{CP}$ Jean   a   vu   qui].
           I   myself   ask   Jean   has   seen   who
       b.   Je   me   demande [$_{CP}$ qui$_i$ Jean   a   vu   t$_i$].
           I   myself   ask   who   Jean   has   seen
           'I wonder who John saw.'

I believe that the two empirical problems must be dealt with properly before the conceptual problem can be addressed successfully. A solution to the two empirical problems may, in turn, shed light on the conceptual problem. Here, I concentrate on resolving the first empirical problem, leaving the second for further work.

I begin by arguing against Boskovic's (1998a, b) analysis, which claims that the intervention effect in French is due to the locality of FF (head)-movement. His analysis is based on two assumptions: (a) 'covert' movement is FF movement, which is head movement and thus sensitive to intervening relativized heads, whereas 'overt movement is XP movement; (b) WH phrases in situ sometimes move (namely for convergence) and sometimes not (namely if convergence does not require it).

The French facts lead Boskovic (1998a, b) to reject Chomsky's (1995) uniform characterization of Move as Move F. The restrictions on French WH in situ indeed at first suggest that 'covert' movement must satisfy constraints that 'overt' movement does not. However, this is problematical for a derivational view of the grammar in which pre- and post-Spell-Out operations satisfy uniformity (cf. Chomsky 1995). In such a framework, Move F is the uniform characterisation of Move; the derivation from the numeration to LF is uniform. There should thus be no difference between pre- and post-Spell-Out operations, since both 'overt' and 'covert' movement involve movement of formal feature(s) (FF movement).

Boskovic & Lasnik (1998) bring the French facts in line with the uniform characterization of Move as Move F by appealing to acyclic merge (made possible by the elimination of the Extension Condition). Derivations in which a WH phrase has raised to Spec-CP, (2b) and (3b), are well-formed, because the intermediate heads Neg and C are merged acyclically.

I show that there are three problems with Boskovic's (1998a, b) analysis and its extension found in Boskovic & Lasnik's (1998): (a) not only do heads block WH in situ, but so do XPs and more generally elements in A'-specifier positions (focus markers, universal quantifiers, some adverbs); (b) C (a head) does not always block the licensing

444 *Mathieu*

of French WH in situ; (c) acyclic merger has the undesirable consequence of rejecting the empirically well-motivated successive cyclicity of movement.

The alternative analysis that I propose is as follows: French WH phrases consist of a question (WH) operator and a variable. In the case of single WH questions, the question operator needs to move to Spec-CP, and has thus at least three functions: (a) to indicate the scope of a WH phrase; (b) to provide a binder (an antecedent) for the WH phrase; (c) to check the strong feature of C. The difference between mine and Boskovic's (1998) account is that I take the movement of the WH operator to be 'overt' (although phonologically null) rather than 'covert'. The restrictions on French WH in situ are therefore not on 'covert' movement.

I argue that the trace left after movement of the French question operator is non-referential. Since the variable is non-referential, it needs a local antecedent. Antecedent-government is local, island effects are thus expected. French WH phrases in situ in single WH questions whether they are in adjunct *or* object position always appear to denote functions ranging over higher order entities. All the examples we consider involve A'-specifiers which we independently know block antecedent government. The data are thus similar to so-called weak islands and can thus be accounted for by Relativized Minimality (Rizzi 1990). I argue that minimalist accounts other than Boskovic (1998), e.g. the Minimal Link Condition (MLC), Reinhart (1998), cannot account for the French data.

The difference between French and Chinese single WH in situ questions lies in the morphology of their WH phrases and in the nature of the variable. Chinese WH phrases consist of a free variable, but no operator. The (WH) operator can be base-generated separately from its variable. Contrary to French, Chinese WH phrases in situ in object positions are referential variables, they can be bound directly by the null operator in Spec-CP, so antecedent-government is not required, hence the lack of intervention effects in Chinese.

Finally, I show that partially moved WH phrases in some dialects of German are like French WH phrases in situ in being sensitive to the intervention effect. I argue that the WH expletive found in partial WH movement constructions leaves a non-referential trace behind after movement to matrix CP, a trace which needs to be antecedent-governed. The parallel between French WH in situ and partial WH movement is that the WH operator ranges over a non-referential variable.

The paper is organised as follows: section 2 introduces the intervention effect, in particular the restrictions on French WH in situ and partial WH movement in (some dialects of) German. Section 3 reviews Boskovic's (1998a, b) account of the restrictions on French WH in situ in addition to Boskovic & Lasnik (1998) and argues against both

analyses. Section 4 introduces our alternative analysis. Finally, we summarise our main conclusions in section 5.

2 What is the intervention effect?

2 1 General characterization

Before I introduce the relevant data, consider my working definition of the intervention effect in (5a) also represented schematically in (5b):

(5) a. A WH phrase in situ (i.e. a variable) in single WH questions cannot remain in the scope of other scopal elements/operators.
     b. *[Op ... [Op ... [variable]]].

As far as I know, the term 'intervention effect' was originally used to describe so-called pseudo-opacity effects in French (Rizzi 1990, Swart 1992, Rullman 1995), but has recently been used more widely to describe the restrictions on WH in situ in object position or WH in intermediate position as in partial WH movement constructions in the same environment. Besides Boskovic (1998a, b) the intervention effect in the latter sense has been addressed in Ouhalla (1996) and Pesetsky (1998) for WH in situ, and Beck (1996) for partial WH movement, but it has otherwise not been widely discussed.

   In the next section, I introduce data which indicate that heads are interveners. In section 2.3, I introduce data which show that XPs, and more generally elements in A'-specifiers positions, are also interverners and that intervention with heads can be reanalyzed as falling in this latter category.

2.2 Data involving heads

Boskovic (1998a) notices that WH in situ in French is blocked in matrix negative single WH in situ questions and in embedded tensed clauses, whereas 'overt' movement is not restricted in similar environments. (2) and (3) are repeated here for convenience (unless indicated otherwise all examples are mine):

(6) a. *Jean   ne   mange   pas   quoi?
         Jean   Neg   eat   not   what

b. Qu$_i$'est-ce que   Jean   ne   mange   pas t$_i$?
    what   that   Jean   Neg   eat   not
    'What doesn't John eat?'

<div align="right">(Boskovic 1998a:15)</div>

(7) a. *Jean   et   Pierre croient que   Marie a   vu   qui?
         Jean   and   Pierre believe that Marie has   seen who
     b. Qui$_i$ Jean   et   Pierre croient-ils que   Marie   a   vu t$_i$?
         who   Jean   and   Pierre believe-they that   Marie   has seen
         'Who(m) do Jean and Pierre believe that Marie saw?'

<div align="right">(Boskovic 1998a:13)</div>

Boskovic (1998a, b) claims that it is Neg and C, i.e. heads, that block the licensing of WH in situ in French. The phenomenon appears to be general: a WH phrase may remain in situ in an infinitival clause provided that the verb does not select an (infinitival) C. The verb *décider* ('to decide') selects the (infinitival) complementizer *de*, so the in situ alternative is not possible:

(8) a. *Jean   a   décidé   [$_{CP}$ de   faire   quoi]?
         Jean   has   decided   C   to   do   what
     b. Qu$_i$'est-ce que   Jean   a   décidé   [$_{CP}$ de   [$_{IP}$ faire t$_i$]]?
         what   that   Jean   has   decided   C   to   do
         'What did Jean decide to do?'

When a verb selects no infinitival complementizer, e.g. *penser* ('to think'), the licensing of WH in situ is then possible:[2]

(9) a. Jean   a   pensé   [$_{IP}$ faire quoi]?
         Jean   has   thought   to   do   what'
     b. Qu$_i$'est-ce que   Jean   a   pensé   [$_{IP}$ faire   t$_i$]?
         what   that   Jean   has   thought   to   do
         'What did Jean think of doing?'

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[2] Contrary to English, French allows propositional infinitivals. I assume no CP is projected in (9) (cf. Boskovic 1997).

2.3 Data involving XPs

Not only heads block the licensing of WH in situ in French, but so do XPs. Universal quantifiers (XPs) either in subject or object position block the licensing of WH in situ. Whereas in (10b) and (11b) either the WH phrase or the universal quantifier can take wide scope, the WH phrase cannot take wide scope in (10a) and (11a), suggesting the universal quantifier is an intervener:[3]

(10)　a.　Tout　　le　　　monde　　　aime　quoi?
　　　　　　all　　　the　　people　　　likes　what
　　　　　　* 'for which thing (x), everybody likes that thing (x).'
　　　　　　? 'for which pair <x, y>, everybody (x) likes (y).'
　　　b.　Qu$_i$'est-ce que　tout　le　　　monde　　　aime　t$_i$?
　　　　　　what　　　　that　all　　the　　people　　　like
　　　　　　'for which thing (x), everybody likes that thing (x).'
　　　　　　'for which pair <x, y>, everybody (x) likes (y).'
　　　　　　'What does everybody like?'

(11)　a.　Jean　　　donne　tous　les　　restes　　　à　　　　qui?
　　　　　　Jean　　　gives　all　　the　　leftovers　to　　　whom
　　　　　　* 'for which person (x), Jean gave all the leftovers to that person (x).'
　　　　　　? 'for which pair <x, y>, Jean gave (x) to (y).'
　　　b.　A　　qui$_I$　Jean　donne　tous　les　　restes　　　　t$_i$?
　　　　　　to　whom　Jean　gives　all　　the　　leftovers
　　　　　　'for which person (x), Jean gave all the leftovers to that person (x).'
　　　　　　'for which pair <x, y>, Jean gave (x) to (y).'
　　　　　　'To whom does Jean give all the leftovers?'

More generally it appears that it is elements appearing in A'-specifiers which block the licensing of WH in situ in French. Focus markers such as *seulement* ('only') and *même* ('even'), which I take to be operators sitting in A'-specifiers, create intervention effects:

(12)　a.　*Seulement　　　　JEAN　arrive　à　　　faire　quoi?
　　　　　　only　　　　　　　Jean　arrives　to　　do　　what

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[3] (10a) is not so good either on the pair list reading, which is an independent problem.

b. Qu$_i$'est-ce que   seulement   JEAN   arrive à   faire t$_i$?
   what   that   only   Jean   arrives to   do
   'What does only JEAN manage to do?'

(13) a. *Même JEAN   arrive   à   faire quoi?
   even   Jean   arrives   to   do   what
   b. Qu$_i$'est-ce que   même JEAN arrive   à   faire t$_i$?
   what   that   even Jean arrives   to   do
   'What does even JEAN manage to do?'

Operators like *seulement* et *même* should be able to be associated with *Jean* in (12a) and (13a), since the only condition for their ability to focus is that they must be associated with a lexical (not a trace) constituent in their c-command domain, Principle of Lexical Association (PLA) -Tancredi 1990 -, a principle to which we return in detail in section 4.1.

In addition, adverbs such as *souvent* ('often') and *toujours* ('always'), standardly claimed to sit in A'-positions, block the licensing of WH in situ in French:

(14) a. *Il fait toujours   quoi   le   dimanche?
   he   does always   what   the   Sunday
   b. Qu$_i$'est-ce qu'   il   fait   toujours t$_i$ le   dimanche?
   what   that   he   does   always   the   Sunday
   'What does he always do on Sundays?'

(15) a. *Il fait souvent   quoi   le   dimanche?
   he   does often   what   the   Sunday
   b. Qu$_i$'est-ce qu'   il   fait   souvent   t$_i$ le   dimanche?
   what   that   he   does   often   the Sunday
   'What does he often do on Sundays?

We can bring sentential negation, example (6), in line with the above examples by suggesting that it is negative XPs, or their non-overt equivalent as in French, rather than negative heads that block the licensing of French WH in situ.

The constraints on French WH in situ are similar to the constraints on partial WH movement constructions in some dialects of German (cf. Beck 1996). In these dialects there is a choice between raising a standard WH phrase to Spec-CP or merging the non-

contentive WH word *was* ('what', glossed below as WH) in Spec-CP and leaving the contentive WH phrase in an intermediate A'-position: [4]

(16) a. Was   glaubt   Uta   wen   Karl   gesehen   hat?
         WH   believes   Uta   whom   Karl   seen   has
     b. Wen$_i$ glaubt   Uta   dass Karl t_I gesehen   hat?
         Whom   believes   Uta   that Karl   seen   has
         'Who does Uta believe that Karl saw?' WH = non-contentive WH phrase

Negation blocks the licensing of the partially moved contentive WH phrase[5]:
(17) a. *Was   glaubst du   nicht   mit   wem Hans   gesprochen hat?
         WH   believe you   not   with   whom Hans   spoken   has
     b. Mit   wem$_i$ glaubst   du   nicht dass   Hans t_I
         With   whom   believe   you   not   that   Hans
         gesprochen   hat?
         spoken   has
         'Who don't you believe that Hans has spoken to?'
                                                    (Rizzi 1991, in Beck 1996:3)

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[4] According to Beck (1996), the intervention effect is an island condition on traces formed by covert movement of the semantic restriction to its quantifier. In Beck's (1996) formulation 'Quantified-Induced Barriers' (QUIBS) cannot be crossed by traces that are created at LF:

(i) Quantification-Induced Barrier (QUIB)
    The first node that dominates a quantifier, its restriction, and its nuclear scope is a Quantifier-Induced Barrier.

(ii) Minimal Quantified Structure Constraint
     If an LF trace β is dominated by a QUIB α, then the binder of β must also be dominated by α.
                                                    (Beck 1996:39)

The problem with Beck's account is that the intervention effect is claimed to be a condition on LF movement. This is problematic in the MP (uniformity). Also, she assumes that the semantic restriction of WH phrases moves up to its quantifier in partial WH movement constructions when there is evidence that the WH phrase is already licensed in the intermediate A'-position. See 4.3 for more details.

[5] Misi Brody (p.c.) informs me that negation and other scope-bearing elements (in post-verbal positions) also block the licensing of the contentive WH phrase in partial WH movement constructions in Hungarian.

The contentive WH phrase cannot remain in an embedded tensed clause; it must raise to a particular Spec-CP, not the specifier of just any lower CP. Insertion of another non-contentive WH element in intermediate positions renders the sentence grammatical. It is the relation between a contentive WH phrase and a non-contentive WH element that exhibits the intervention effect:

(18) a. *Was   glaubst du   [CP   dass Hans meint [CP   mit   wem_i
          WH   believe you   that Hans thinks   with whom
          Jakob t_I   gesprochen hat]]?
          Jakob   spoken   has
     b. Was   glaubst du   [CP   mit   wem_i Hans meint [CP   dass
          WH   believe you   with whom Hans thinks   that
          Jakob t_i   gesprochen hat]]?
          Jakob   spoken   has
     c. Was   glaubst du   [CP   was dass Hans meint   [CP mit
          WH   believe you   WH   that Hans thinks   with
          wem_I Jakob t_i   gesprochen hat]]?
          whom   Jakob   spoken   has
          'With whom do you believe that Hans thinks that Jakob spoke?'
                                                        (Simpson 1995:106)

The following example confirms that it is negative XPs rather than negative heads which are interveners. *Niemand* ('nobody') is an XP:

(19) a. *Was   glaubt   niemand wen   Karl   gesehen   hat?
          what   believes   nobody whom   Karl   seen   has
     b. Wen   glaubt   niemand dass   Karl   gesehen   hat?
          Who   believes   nobody that   Karl   seen   has
          'Who does nobody believe that Karl saw?'
                                      (Beck 1996:3 and 5 respectively)

In (20), where the universal quantifier is an intervener, the contentive WH phrase in the intermediate A'-position cannot take wide scope. The pair-list reading is however possible (contrary to French, see footnote 3):

(20) a. Was   glaubt   jeder   wen   Karl   gesehen   hat?
          WH   believes   everyone whom   Karl   seen   hat

b. Wen   glaubt   jeder   dass   Karl   gesehen   hat?
    Who   believes   everyone that   Karl   seen   has
    'Who does everyone believe that Karl saw?'

<div align="right">(Beck 1996:19)</div>

In the next section, I introduce and argue against Boskovic's (1998a, b) analysis on the grounds that it is not heads that block the licensing of WH in situ in French and partially moved WH in German, but A'-specifiers. In addition, I will show that a C head does not always block the licensing of French WH in situ. Finally, against Boskovic & Lasnik (1998), I will claim acyclic merge is problematic.

3 FF analysis + acyclic merge: Boskovic (1998a, b) and Boskovic & Lasnik (1998)

3.1 Presentation

Boskovic (1998a, b) accounts for the optionality of WH movement in French by allowing strong features to be inserted after Spell-Out. In this system, Procrastinate, which disfavours 'overt' movement, has been eliminated. In the case of the optionality of movement in French WH interrogatives strength is kept constant. Strong features can be inserted after Spell-Out as long as it is at the root and that the element inserted is phonologically null. When an overt WH complementizer is inserted pre-Spell-Out, 'overt' movement occurs, and when a phonologically null WH complementizer is inserted post-Spell-Out 'covert' movement takes place. There is no need to assume that the +WH feature of French C is sometimes weak, sometimes strong.[6]

Boskovic assumes Chomsky's (1995) framework in which Move F is the basic uniform characterization of Move. 'Overt' movement is movement of formal features (FF) + pied-piping of the whole category (generalized pied-piping), and 'covert' movement is movement of FF alone.

On Boskovic's view the intervention effect observed in French is on FF movement. From this perspective, the licensing of WH in situ in French is different from the licensing of WH in situ in languages like Chinese and Japanese. He argues that those languages have an alternative system, i.e. movement of a phonologically null operator (cf. Watanabe 1993, Aoun & Li 1993) on the grounds that WH in situ is not subject to the intervention effect (the movement of the null operator is XP movement).

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[6] There are many problems with Boskovic's (1998a, b) analysis with regard to the optionality of WH movement in French., but for reasons of space I cannot discuss these here.

In minimalist terms, the Neg head in (6a) blocks raising of the formal features of the WH phrase (FF$_{wh}$) whereas generalized pied-piping results in a well-formed derivation (6b). Similarly, the C head '*que*' ('that') blocks raising of FF$_{wh}$ in (7a), whereas generalized pied-piping results in a well-formed derivation (7b). Boskovic (1998a, b) argues that it is the C head *que* ('that'), which is an intervener, in view of the fact that a WH phrase in situ can be licensed properly across Tense:

(21) a. Jean   a   dit   quoi?
         Jean   has   said   what
    b. Qu$_i$'est-ce que   Jean   a   dit   t$_i$?
        what   that   Jean   has   said
        'What did Jean say?'

(22) is taken as evidence that LF movement is responsible for the ungrammaticality observed in (6) and (7):

(22) a. Qui$_1$ ne   mange   pas   quoi?
        who   NEG   eat   not   what
        'Who doesn't eat what?'
    b. Qui$_1$ croit   que   Marie   a   vu   qui$_2$?
        who   believes   that Marie   has   seen who
        'Who believes that Marie has seen who?'

<div align="right">(Boskovic 1998b:4)</div>

According to Boskovic, (22a and b) are acceptable as standard questions with a pair-list reading, the reading in which an item *x* is paired-up with an entity *y* (a possible answer to 22a is 'Jean doesn't eat chocolate, Mary doesn't eat meat, Kathy doesn't eat bread...'). He argues that no FF$_{wh}$ movement from the interrogative in situ is necessary in (22a and b), as opposed to (6b) and (7b), since in (22a and b) the +WH feature of C has been checked by the +WH feature of the first/highest interrogative *qui$_1$*. For *quoi* and *qui$_2$*, unselective binding suffices. On this view, unselective binding is not an option for the WH phrase in situ in matrix single WH questions, because it would leave the +WH feature of C unchecked. In sum, WH phrases sometimes move (namely if necessary for convergence) and sometimes do not (namely if convergence does not require it).

The fact that Neg and C are interveners for FF movement is taken as support for Chomsky's (1995) intuition that covert movement is an instance of head movement. The technical details are as follows: relativizing the notion of heads (following Roberts 1993), FF$_{wh}$, an 'A'-head-like object', is not able to cross another A'-head, namely Neg

or C. Verbs because they are A-heads do not interfere with FF_{wh}. This would follow from an appropriate version of the Head Movement Constraint (HMC). Finally, because overt movement is XP movement, the category chain is necessary in addition to the feature checking chain, Neg and C, two heads, will not interfere.

In short, the French facts lead Boskovic (1998a, b) to reject Chomsky's (1995) uniform characterization of Move as Move F, which reduces all checking configurations to the FF-head relation. The observation that covert movement is more restricted than overt movement, if correct, is indeed, problematic for the MP, since there should be no difference between 'overt' and 'covert' movement: minimalist assumptions demand that uniformity hold. Whenever we have 'overt' movement, the raising of FF is also taking place.

Boskovic & Lasnik (1998) put forward an approach to the cycle which eliminates the challenge posed by the French data to the uniform characterization of Move as Move F. Their proposal involves the elimination of the extension condition, which requires that both Merge and Move take place at the root only. Thus this condition rules out acyclic movement (Chomsky 1995: 248, 254). Boskovic & Lasnik argue that the extension condition can be dispensed with on the grounds that many of its effects fall out from the notion of feature strength.

In particular, the introduction in a phrase marker of a strong feature triggers an operation which leads to its immediate elimination:

(23) Suppose that the derivation D has formed Σ containing α with a strong feature F. Then D is cancelled if α is in a category not headed by α.

(Chomsky 1995:324).

Consequently, strong features take care of some cyclicity effects. One of the overlaps between strength and the extension condition can be seen in super-raising and WH islands. Both the extension condition and (23) are violated if the intervening specifier (*whether* and *it*) are inserted acyclically as in (24):

(24) a. ??Who_i do you wonder whether John likes t_i?
     b. *$John_i$ seems it was told t_i that Peter likes Mary.

(Boskovic & Lasnik 1998:1)

Boskovic & Lasnik (1998) propose to eliminate the extension condition because its redundant aspects are conceptually problematic. This leaves the cycle solely defined in terms of the definition of feature strength. One consequence of this analysis is that acyclic merger of elements with weak features becomes a possibility:

(25) *Acyclic Merge*
Acyclic merger of an element E is in principle possible if E contains no strong features.

The challenge to the uniform characterization of Move as Move F can now be eliminated by appealing to acyclic merger. Because the heads Neg and C are phonologically realized, they must enter the structure before LF. However, they do not necessarily have to be present when 'overt' movement takes place. Thus (6b) can be saved from ungrammaticality by allowing Neg - assumed to have a weak feature - to be merged acyclically; that is after the WH phrase has raised to Spec-CP to check the strong feature of C.

Similarly, the intermediate CP in (7b) - with a weak feature - is inserted acyclically after the WH phrase has checked the +WH feature of root C . In the next section, I discuss several problems raised by Boskovic's (1998a, b) and Boskovic & Lasnik's (1998) analyses.

3.2 Problems with Boskovic's (1998a, b) and Boskovic & Lasnik's (1998) analyses

Boskovic's (1998a, b) and Boskovic & Lasnik (1998) analyses have several problems: the first and main problem is that not only heads block the licensing of WH in French, but so do XPs, and more generally A'-specifiers, as we have seen in section 2.3. The data therefore suggest that the restrictions on French WH in situ are not constraints on head (FF) movement. It appears that scopal elements *in general* block the licensing of WH in situ, and that it is A'-specifiers which are at stake. This indicates that the challenge to the uniform characterization of Move as Move F does not arise in the first place and that the appeal to acyclic merger is therefore not needed.

Note that appealing to acyclic merge in the case of the C head means that WH movement occurs in one step, without movement to intermediate Spec-CPs. This is problematic, since it has the undesirable consequence of rejecting the empirically well-motivated successive cyclicity of WH movement (Rizzi 1990 for French McCloskey 1979 for Irish; du Plessis 1977 for Afrikaans). (26) is a French example:

(26) Qui$_i$ Jean a   dit   qui   t$_i$ était   arrivé?
who   Jean has   said   that-AGR   was   arrived
'Who did Jean say arrived?'
(the complementizer *que* undergoes agreement in C)

The third problem is that there appear to be cases where a C head does not block the licensing of WH in situ in French:

(27) a. Pierre   ne   veut pas   que   Marie fasse   quoi?
        Pierre   Neg   want not   that Marie does-Subj   what
     b. Qu$_i$'est-ce que Pierre ne   veut pas   que   Marie   fasse t$_i$?
        what   that Pierre Neg   want not   that   Marie   does-Subj
        'What doesn't Pierre want Marie to do?'

The subjunctive is usually considered a tense dependent on that of the higher clause (cf. Simpson 1995:273) and the grammaticality of (27a) may stem from this fact. Assuming that the subjunctive is indeed dependent on the tense of the matrix clause, the embedded clause is thus transparent for the remote licensing of the WH phrase in situ. If this is correct, then what appears relevant for the licensing of French WH in situ in embedded clauses is tense (contrary to what Boskovic 1998a, b claims), more precisely whether the tense is dependent or independent on the tense of the higher clause.

   A similar analysis can be applied to the contrast between (8) and (9). Verbs of perception, e.g. *voir* ('see'), propositional verbs, e.g. *penser* ('think') when used without a finite complementizer, causatives, e.g. *faire faire* ('make someone do something'), and permissives, e.g. *laisser* ('let'), have their complement verbs dependent on the matrix clause (no intermediate CP is projected). The tense of a simplex sentence anchors the aspectual reference of the event to the time of the utterance (cf. Stowell 1982). Hence the lack of intervention effects when those particular verbs are involved. We return to tense in detail in section 4.1.

   Let me now summarise and conclude the present section: Boskovic's (1998a, b) account has a serious problem: not only heads block the licensing of WH in situ, but so do XPs and more generally elements appearing in A'-specifiers. In addition, I have shown that C does not always block the licensing of French WH in situ. These facts led me to conclude that the restrictions on WH in situ do not stem from a putative restriction on head (FF) movement. The appeal to acyclic merger (problematic in the first place) to bring the French facts in line with the uniform characterization of Move as Move F is not required. In the next section, I propose an alternative analysis.

4 Alternative analysis

4.1 WH in situ in single versus multiple WH questions

One of Boskovic's (1998a,b) assumption appears to be correct. WH phrases in situ move in single WH questions, but not in multiple WH questions. In his words, WH phrases in situ sometimes move at LF (when required by convergence), sometimes do not (when convergence does not require it).[7]

Evidence that WH phrases in situ in single WH questions involves some kind of movement comes from the fact that WH in situ questions, like their 'overt' movement counterparts, are subject to weak crossover effects. Since the variable in (28a) is coindexed with a pronoun on its left, the derivations are ruled out (cf. the Leftness Condition). The variable left by movement of the WH phrase at LF is also subject to the Leftness Condition:

(28) a. *Qui_i sa_i mère   a   vu t_i?
          who   his   mother   has   seen
      b. *Sa_i mère   a   vu qui_i?
          his   mother   has   seen   who
          '*Who_i did his_i mother see t_i?'

Secondly, the data we considered in section 2 indicate that there must be some kind of movement involved with French WH phrases in situ in single WH interrogatives. The violation in examples (6) and (7) for instance is stronger than a subjacency violation, indicating that we are faced with an ECP violation.

On the other hand, WH phrases in situ in multiple questions do not appear to move. A moved WH phrase in single WH questions is subject to subjacency (movement is necessary in this case in order to check the strong +WH feature of C), whereas WH in situ in multiple WH questions is not:

(29) a. ?Qu_i'est-ce   que   tu   te   demandes   qui   a vu t_i?
          what   that   you   yourself   ask   who   has seen
          ?'What do you wonder who saw?'

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[7] Ackema & Neeleman (1998) make exactly the same claim.

b. Qui$_1$ se   demande   qui$_2$ a   vu   quoi?
   who   himself asks   who has   seen   what
   'Who wonders who saw what?'

Since subjacency must be assumed to hold at LF in the MP (pre- and post-Spell-Out operations satisfy uniformity), the fact that WH phrases in situ do not show subjacency effects in multiple WH questions indicates that those phrases do not move at LF.[8]

   Further evidence for the no movement hypothesis comes from the behaviour of the focus marker *only/seulement.* [9] What follows relies on Aoun & Li's (1993) well-known analysis. An operator such as *seulement* must be associated with a lexical element in its c-command domain. The sentence in (30) is ambiguous and receives two interpretations. On one reading the quantificational force of *seulement* is associated with *le livre* ('the book') ('it is only the book that he liked, he didn't like the film version of the book'); on the other reading, *seulement* restricts the verb *aimer* ('like') ('he did not love the book, he only liked it'):

(30) Il a seulement aimé le livre.
     he has only liked the book
     'He only liked the book.'
     (i) Il a seulement AIMÉ le livre.
         interpretation: he didn't love it.
     (ii) Il a seulement aimé LE LIVRE.
          interpretation: he didn't like the film.

The postverbal nominal expression modified by *seulement* cannot be topicalised or undergo WH movement without cancelling one of the two readings otherwise available, as (31) and (32) show. The first reading is not available:

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[8] There is indeed empirical evidence that subjacency does hold at LF: comparatives and other elliptic constructions yield subjacency effects, the associate - the nominal expression - moving up to the conjunction (cf. Reinhart 1998:34).

[9] A similar analysis could be constructed with *même* ('even').

(31) Le livre$_i$,   il   l'   a   seulement   aimé t$_i$.
     the book   he   it   has   only   liked
     'The book, he only liked.'
     (i) Le livre$_i$, il   l'   a   seulement   AIMÉ t$_i$.
         interpretation: he didn't love it.
     (ii) *LE   LIVRE$_i$, il   l'   a seulement aimé   t$_i$.
         intended: he didn't like the film (interpretation not available).

(32) Qu$_i$'est-ce   qu'   il   a   seulement   aimé t$_i$?
     what   that   he   has   only   liked
     'What did only liked?'
     (i) Qu$_i$'est-ce qu'   il   a   seulement   AIMÉ t$_i$?
         interpretation: he didn't love the book, he only liked it.
     (ii) *QU$_i$'EST-CE   QU'   il   a seulement aimé t$_i$?
         intended: he didn't like the film (interpretation not available).

The conclusion is that an operator like *seulement* must be associated with a *lexical* (not a trace) constituent in its c-command domain (Principle of Lexical Association, Tancredi 1990). If we now consider WH in situ, we note that sentences in which a WH phrase is associated with *seulement* are acceptable, suggesting that the WH phrase has remained in situ (satisfying the PLA) or that the PLA simply does not apply at LF:

(33) a.   Qui a seulement AIMÉ quoi?
     b.   Who only LIKED what?

(34) a.   Qui a seulement aimé QUOI?
     b.   Who only liked WHAT?

There is empirical evidence that the PLA does apply at LF (which under minimalism is a requirement anyway). (35) is ambiguous, either *quelqu'un* ('someone') can take *tous les garçons* ('every boy') in its scope or *tous les garçons* can take *quelqu'un* in its scope:

(35) Quelqu'un   a   aimé tous   les   garçons.
     someone   has   liked all   the   boys
     'Someone liked every boy.'

    a.   [$_{IP}$ quelqu'un$_i$ [$_{IP}$ tous les garçons$_j$ [$_{IP}$ t$_i$ I a [$_{VP}$ V aimé t$_j$]]]].
       'there is an (x) such that every boy likes that (x).'
    b.   [$_{IP}$ tous les garçons$_j$ [$_{IP}$ quelqu'un$_i$ [$_{IP}$ t$_i$ I a [$_{VP}$ V aimé t$_j$]]]].
       'there is a pair <x,y> such that (x) likes (y).'

In (36), *seulement* can be associated with *tous les garçons,* suggesting the universal quantifier has remained in the c-command domain of *seulement*. Indeed we find that (36) is not ambiguous, it can only receives the reading in which *quelqu'un* takes wide scope, the presence of the focus operator blocking raising of the quantifier:

(36) Quelqu'un   a   seulement   aimé TOUS LES GARÇONS.
     someone   has   only   liked all the boys
     'Someone only liked EVERY BOY, i.e. not the girls.'

    a.   [$_{IP}$ quelqu'un$_i$ [$_{IP}$ tous les garçons$_j$ [$_{IP}$ t$_i$ I a [$_{VP}$ V aimé t$_j$]]]].
       'there is an (x) such that every boy likes that (x).'
    b.   *[$_{IP}$ tous les garçons$_j$ [$_{IP}$ quelqu'un$_i$ [$_{IP}$ t$_i$ I a [$_{VP}$ V aimé t$_j$]]]].
       *'there is a pair <x,y> such that (x) likes (y).'

WH phrases in situ can, on the other hand, have wide scope regardless of whether *seulement* is present or not, as (34) shows, suggesting that WH phrases in situ in multiple WH questions do not move at LF. If they did they would violate the PLA, and the reading in which *quoi/what* takes wide scope would not be available.

  The Chinese example (37) is grammatical suggesting that Chinese WH phrases in situ may not in some cases move even in single WH questions. The French equivalent is ill-formed suggesting that WH phrases in situ in single WH questions do indeed move (see also examples 12 and 13):

(37) a.   Ta zhi XIHUAN   shei?
        he   only like   who

                                                   (Aoun & Li 1993:207)

    b.   *Il a   seulement   AIMÉ qui?
        he   has only   liked   who
        'Which person (x) he only liked that (x)? i.e. he didn't love (x)'

To sum-up: first, argument WH phrases in situ in single WH questions involve movement in French, but not in Chinese. The question is why? This is the topic of the next section. Secondly, WH phrases in situ in multiple WH questions do not appear to involve movement. How are these WH phrases licensed? Again I discuss this further in the next section.

4.2 French versus Chinese WH phrases in situ

First, a distinction between WH phrases in Chinese and French needs to be made in terms of morphology. As is well-known, WH phrases in Chinese consist of a variable, but no operator. In Chinese WH phrases in situ are like polarity items in that they need an antecedent to be licensed. Chinese WH phrases are words assigned different interpretations by other operators. In French, WH phrases cannot receive interpretations other than WH, indicating that WH phrases are not pure variables in that language. WH phrases in French consist of variable *and* a question (WH) operator.

Following Aoun & Li (1993), I assume that Chinese argument WH phrases in situ in single WH questions do not move but are instead coindexed and interpreted with respect to a phonologically null question operator, which is base-generated in Spec-CP. The question operator has a least three functions:

(38) (a) to indicate the scope of a WH phrase;
        (b) to provide a binder (an antecedent) for the WH phrase;
        (c) to check the strong feature of C. WH phrases remain in situ and are variables rather than operators.

If we assume the question operator may be moved in the syntax (it may not always be base-generated in Spec-CP), the distribution of the operator is expected to be sensitive to the various constraints that regulate 'overt' extraction processes, e.g. the ECP and subjacency. In Chinese, argument WH phrases are licensed by the null operator which is in this case base-generated in Spec-CP, whereas adjunct WH phrases are licensed by the same operator which is this time base-generated in the minimal domain in which the WH phrase occurs.

To illustrate: the ungrammaticality of Chinese (40b) suggests that in the case of the adjunct WH phrase the null operator is base-generated in the minimal clause in which the WH phrase occurs and that movement of the operator leaves a non-referential variable behind. It is subject to the same condition as overtly moved adjunct WH phrases

(40b), i.e. the ECP, which accounts for the well-known asymmetry between arguments and adjuncts with regard to extraction from islands:[10]

(39) a. ?What do you wonder how to fix t_i?
       b. *How do you wonder how to fix the car t_i?

(40) a. [$_{CP1}$ Ta   xiang-zhidao [$_{CP2}$ shei   maile   shenme]]
            he   wonder   who   bought   what
         '?What does he wonder who bought.'
         'Who does he wonder bought what?'
         'He wonders who bought what.'
     b. [$_{CP1}$ Ta   xiang-zhidao [$_{CP2}$ shei   weishenme   likaile]]
            he   wonder   who   why   left
         'Who does he wonder left why?'
         *'Why does he wonder who left?'
         *'He wonders who bought what.'

<div align="right">(Aoun & Li 1993:218)</div>

In French, the WH operator cannot be separated from its variable. If a WH phrase is in situ, the operator needs to move to Spec-CP for the reasons indicated in (38). The movement is not 'covert', but 'overt' (although phonologically null), like in the case of the Chinese null operator movement in (40b)[11]. Movement of this WH operator occurs with WH phrases in adjunct *and* object position. Since I take the movement of the WH operator to be 'overt', my analysis therefore brings French in line with other WH in situ languages like Chinese, Japanese and Korean (Cheng 1991, Watanabe 1993, Aoun & Li 1993, Tsai 1994), languages which have been analysed as having a null operator in single WH interrogatives. In French, like in Chinese in some cases (see below for more details), there is 'overt' movement of a phonologically null question (WH) operator. No separate mechanism is required pace Boskovic (1998a, b), see section 3.1.

I follow Rizzi's (1990) version of the ECP and his Relativized Minimality, a theory in which the distinction between arguments and adjuncts is not simply a matter of position in a phrase marker, but of variable types. The French data we have considered adds support to the claim that the variable type, i.e. interpretation of the trace, needs to be

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[10] The third reading 'he wonders who bought what/*why' does not concern us here.

[11] In minimalist terms, it is pre-Spell-Out FF movement, which, I think, is basically made possible by minimalist theories.

taken into account. For example, although *quoi* ('what') in (6) is in object position (governed position), it requires antecedent government. This in turn suggests that the interpretation of the variable is crucial.

According to Rizzi (1990), there are two kinds of variables: referential and non referential. Variables which are referential can be connected to their operators by binding, a relation unaffected by island barriers:

(41)   *Binding*
       X binds Y iff:
       (i) X c-commands Y;
       (ii) X and Y are coindexed.

(Rizzi 1990:87)

Variables which are non-referential cannot be connected to their operators by binding, instead they are connected to their operators by antecedent-government, a local relation:

(42)   X antecedent-governs Y iff:
       (i) X and Y are non-distinct;
       (ii) X c-commands Y;
       (iii)no barrier intervenes;
       (iv)Relativized Minimality is respected.

(Rizzi 1990:92)

What counts as an intervener for antecedent-government with regard to WH movement is as follows:

(43)   A filled A'-position specifier α blocks antecedent-government between an A'-position β that c-commands α and an adjunct trace that α c-commands.

Expressions may or may not be referential. Referential expressions refer to participants in the event described by the verb (John, apples, books, etc.), whereas non-referential expressions do not refer to participants: instead they qualify the event, or involve compositionality (measure, manner, etc.) or idiom chunks (Rizzi 1990). All arguments receive a theta-role but differs as to whether the theta-role is referential or not[12]. *Who*

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[12] Originally, expressions were said to either have a referential index or not. I have avoided this terminology since indices in the grammar are not tolerated (minimalism). The original proposal can easily be translated into one in which the distinction between referential and non-referential theta roles is

and *what* are usually operators whose variable is referential. *How* and *when* are operators whose variable is non-referential. *Where* and *when* are like argument WH phrases in being referential, they can appear in situ. To sum-up, a distinction is made between arguments and referential adjuncts on the one hand and non-referential adjuncts on the other hand.

To recapitulate, my basic argument is as follows: French WH phrases consist of a variable and an operator, which needs to move to Spec-CP. The trace left by the operator is a non-referential variable. Island effects are thus always expected, since this variable needs a local antecedent. I will assume that in French the null operator is base-generated in Spec-DP of the WH phrase in situ.

As already mentioned, French WH phrases are very different from Chinese WH phrases. These contain a free referential variable, but no operator. WH phrases in situ like *shenme* ('what') are referential. Contrary to what we find in French, they can therefore be bound by the null operator which is in this case base-generated in Spec-CP (naturally for adjunct WH phrases the null operator is base-generated in the minimal clause in which the WH phrase in situ appears). Contrary to French, Chinese WH in situ is therefore not blocked by negation and other scopal elements (37 is repeated here as 46):

(44) a. Yanhan bu   xiquan   shenme?[13]   (Chinese)
         John   Neg   like   what
     b. *Jean   n'   aime pas   quoi?   (French)
         Jean   Neg   like   not   what
         'What doesn't John like?'

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accessible at the LF-interface from the syntax-semantics mapping. Note that the encoding of semantic/pragmatic properties by syntactic features has been criticized, since it has been claimed that those syntactic features do not appear to be independently motivated. Szabolcsi & Zwart (1992-1993) thus account for island contexts in pure semantic terms. On their view, there are two types of operators: (a) one that binds a variable ranging over individuals, and (b) one that binds a variable ranging over non-individuals. On this view, it is monotone-decreasing quantifiers which are interveners. The problem with such an approach is that the data in (10) and (11) show that not only monotone-decreasing block the licensing of WH in situ, but so do monotone-increasing (examples 10 and 11, and as noticed by Swart 1992 extraction from combien 'how', example 52 in main text).

[13] Thanks to Anson Yuet Wai Wong for these data.

(45) a. Meigeren   dou   kandaole   shenme   dongxi?   (Chinese)
        everyone   all   saw   what   thing

                                          (Aoun & Li 1993:227)

     b. *Tout   le   monde   a   vu   quoi?   (French)
        all   the   world   has   seen   what
        'What did everyone see?'

(46) a. Ta   zhi   XIHUAN   shei?   (Chinese)
        he   only   like   who

                                          (Aoun & Li 1993:207)

     b. *Il   a   seulement   AIMÉ   qui?   (French)
        he   has   only   liked   who
        'Which person (x) he only liked that (x)? i.e. he didn't love (x)'

(47) a. Ta   renwei   ni   maile   shenme?   (Chinese)
        he   think   you   bought   what

                                          (Ouhalla 1996: 687)

     b. *Il   pense   que   tu   as   acheté   quoi?   (French)
        he   thinks that you   have   bought   what
        'What does he think you bought?'

Let us go through each example in detail. (44b) appears to be a case of so-called inner island. The non-overt operator is base-generated in Spec-CP in Chinese (48a), it binds the variable in situ, no island effects are expected. In French, the trace of the operator in [DP t_i quoi$_i$] is non-referential, therefore it needs a local antecedent, and island effects are expected:

(48) a. [$_{CP}$ Op$_i$ [$_{IP}$ Yanhan   [$_{NegP}$ Neg   bu   [$_{VP}$ V   xiquan
                    Yanhan   Neg   like
        shenme$_i$]]]]?
        what

     b. [$_{CP}$ Op$_i$ [$_{IP}$ Jean   n$_k$'   aime$_j$ [$_{NegP}$ pas   Neg t$_k$ [$_{VP}$ V t$_j$
                    Jean   Neg   like   not
        [$_{DP}$ t$_i$ quoi$_i$]]]]]?
                    what
        'What doesn't Jean like?'

(45b) can receive an analysis along the lines of so-called pseudo-opacity (cf. Rizzi 1990). French allows certain quantifiers to quantify 'at a distance', *beaucoup* ('many') may be base-generated next to the direct object or may be adjoined to VP (cf. Obenauer 1976, 1984, Rizzi 1990):

(49) a. Jean   a   [$_{VP}$ V lu   beaucoup   de   livres].
          Jean   has   read   many   of   books
      b. Jean   a   [$_{VP}$ beaucoup [$_{VP}$ V   lu   de livres].
          Jean   has   many   read   of books
          'Jean has read many books.'

Similarly, the WH phrase *combien* ('how many') may either remain next to the direct object or be moved on its own:

(50) a. [$_{CP}$ Combien   de   livres$_i$ a-t-il   lus   t$_i$]?
              how many   of   books has he   read
      b. [$_{CP}$ Combien$_i$ a-t-il   lu   de   livres   t$_i$]?
              how many   has he   read of   books
          'How many books has he read?'

Combien de livres ('how many books') binds a referential variable, whereas *combien* on its own leaves a non-referential trace behind which needs a local antecedent. If we assume the quantifier *beaucoup* to occupy an A'-position (the quantifier has adjoined to VP or IP), we expect that the quantifier *beaucoup* to block extraction in (51b):

(51) a. [$_{CP}$ Combien   de   livres$_i$ a-t-il [$_{VP}$ beaucoup V lus t$_i$]]?
              how many   of   books has he   a lot   read
      b. *[$_{CP}$Combien   a-t-il [$_{VP}$ beaucoup V lu   de   livres t$_i$]]?
              how many   has he   a lot   read of   books
          'How many books did he read a lot?'

In addition, (52b), unlike (52a) is not ambiguous; it only yields the reading in which the universal quantifier takes wide scope, the sentence asking for everyone, how many books they have read. The universal quantifier acts as an intervener like in the French WH in situ examples we considered above:

(52) a. [$_{CP}$ Combien   de   livres$_i$ ont-ils   [$_{VP}$ tous V   lus t$_i$]]?
              how many   of   books have they   all   read

b. [$_{CP}$ Combien$_i$ ont-ils   [$_{VP}$ tous   lu   de   livres t$_i$]]?
     how many   have they   all   read   of   books
     'How many books did they read?'

                                                (Swart 1998:112)

In (53b), assuming the quantifier *tout le monde* ('everybody') has moved and adjoined to IP as is traditionally thought to be the case for quantifiers, the quantifier will occupy an A'-position which will block the licensing of the WH phrase in situ. Compare the respective structure for Chinese and French:

(53) a. [$_{CP}$ Op$_i$ [$_{IP}$ meigeren$_j$ [$_{IP}$ t$_j$ dou [$_{VP}$ V   kandaole
                     everyone   all   saw
     [shenme dongxi$_i$]]]]]?
     what   thing
   b. *[$_{CP}$ Op$_i$ [$_{IP}$ tout   le   monde$_k$ [$_{IP}$ t$_k$ I   a   [$_{VP}$ V   vu
                  all   the   world   has   seen
     [$_{DP}$ t$_i$ quoi$_i$]]]]]?
          what
     'What has everyone seen?'

If we assume *seulement* ('only') in (46b) to be adjoined to IP thus occupying an A'-position, island effects are expected:

(54) a. [$_{CP}$ Op$_i$ [$_{IP}$ ta I   [$_{VP}$ zhi   [$_{VP}$ XIHUAN   shei$_i$]]]]?
                he   only   like   who
   b. *[$_{CP}$ Op$_i$ [$_{IP}$ il I   a   [$_{VP}$ seulement   [$_{VP}$ AIMÉ [$_{DP}$ t$_i$
             he   has   only   liked
     qui$_i$]]]]]?
     who
     'Whom does/did he only LIKE?'

Similarly, adverbs such as *souvent* ('often') and *toujours* ('always') are traditionally taken to be adjoined to VP, hence they are in an A'-position, giving rise to the same effect:

(55) *[$_{CP}$ Op$_i$ [$_{IP}$ Il I   fait$_j$ [$_{VP}$ souvent/toujours [$_{VP}$ V t$_j$
                 he   does   often/always
     [$_{DP}$ t$_i$ D quoi$_i$ le   dimanche]]]]?
              what   the   Sunday
     'What does he often/always do on Sundays?'

Finally with regard to tense, I suggest that, if we assume it to be an operator, occupying an A'-specifier, then we expect it to create an intervention effect in French. Recall that there is a difference between tenses in embedded clauses which are dependent on that of the matrix clause and those that are not. WH in situ in French is allowed in the former, but not in the latter. I suggest that tense which is dependent on that of the higher clause is not an operator. Instead, it may be considered akin to a variable dependent on the tense of the higher clause. In other words, the tense which is dependent on that of the higher clause is absorbed and forms a unary operator with that of the higher clause.[14] I assume the tense operator is located in TP:

(56) a.   [$_{CP1}$ Op$_i$ C [$_{IP1}$ ta   renwei [$_{CP2}$C [$_{IP2}$ ni I   [$_{VP}$ maile
                                he   think   you   bought

           shenme$_i$]]]]]?
           what

      b. *[$_{CP1}$ Op$_i$ C [$_{IP1}$ il   pense [$_{CP2}$ C que   [$_{IP2}$ Op tu
                                he   thinks   that   you

           I   as   acheté   [$_{DP}$ t$_i$ quoi$_i$]]]]]?
                       have bought   what
      'What did he think you bought?'

(57) a.   [$_{CP}$ Op$_i$ C [$_{IP1}$ Jean   pense$_k$ [$_{IP2}$ I faire$_k$ [$_{DP}$ t$_i$ quoi]]]]?
                                  Jean   thinks   to do   what
           'What is Jean thinking of doing?'

      b.   [$_{CP1}$ Op$_i$ C [$_{IP1}$ Pierre ne   veut pas [$_{CP2}$ que [$_{IP2}$ Marie
                                  Pierre Neg   wants not   that   Marie
           fasse   [$_{DP}$ t$_i$ quoi]]]]]?
           does-SUBJ   what
           'What doesn't Pierre want Marie to do?'

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[14] The rule of absorption turns a string of unary operators into a single n-ary operator: [Qx, Qy, ...] → [Q <x, y, ...>]. Each unary operator ranges over individuals, but an n-ary operator ranges over ordered pairs (cf. Higginbotham & May 1981).

As for WH in situ in multiple WH questions, recall that the highest/first WH phrase binds the WH phrase in situ, which is in this case a pure variable. No movement of an operator is therefore necessary when WH phrases in situ in object position are involved. The variable may thus well be referential.

   Note at this point that all the cases we have considered are similar to so-called weak-islands effects. Weak islands show an asymmetry between arguments and adjuncts: arguments and non-referential adjuncts, but adjuncts can be extracted from weak islands:

(58) a.   ?What$_i$ do you wonder how to fix t$_i$?   WH island
      b.   *How$_i$ do you wonder what to fix t$_i$?

(59) a.   ?What$_i$ don't you know how to fix t$_i$?   Inner island
      b.   *How$_i$ don't you know what to fix t$_i$?
(60) a.   ?What$_i$ does only JEAN manage to repair t$_i$?   Focus Island
      b.   *How$_i$ does only JEAN manage to repair the fridge t$_i$?

(61) a.   ?What do you wonder how to fix t$_i$?   Tense island
      b.   ?*What do you wonder how he should fix t$_i$?

We also know independently that so-called pair-list interpreted variables, like adjunct traces, cannot occur within islands (cf. Szabolcsi & Zwarts 1992-1993):

(62) a.   Which woman$_i$ does no man love t$_i$?   Inner island
           (i)   Mary.
           (ii) His mother.
           (iii) *John loves Mary, Bill loves Mary...   WH island
                                                              (Swart 1998:111)
      b.   What$_i$ do you wonder whether everyone brought t$_i$?

                                                              (Hornstein 1995:116)

Two answers are possible to the question in (62a), the so-called individual answer, in which no man loves the same woman (i), and the so-called functional answer, in which no man loves his (own) mother (ii). A third logical reading, the pair-list reading (iii), in

which negation takes scope over the WH phrase is not available, because the variable ranges over a non-individual.[15] Negation blocks antecedent-government.

In (62b), the intermediate WH phrase blocks antecedent-government. Although the individual-reading is available (everyone brought the same thing), the pair-list reading is not (everybody brought a different thing).

To sum-up: WH phrases like *quoi* ('quoi') and *qui* ('who') when in situ in French single WH questions are non-referential variables. Like adjunct WH phrases such as *how* and *why* and pair-list interpreted variables they denote functions ranging over higher order entities. I speculate that single WH in situ questions in French may refer to previously mentioned facts in discourse or asks for the identification of a subset of a set; in other words, a relation not an individual. A more detailed semantic account is obviously needed.

It remains to be seen whether or not a minimalist analysis other than Boskovic's (1998a, b) can account for the French data we have considered. The MLC[16], as it stands, cannot handle weak islands other than WH islands, so it is doubtful that it will help us with regard to the French data we have analysed in this paper. The challenge for a minimalist theory of weak islands and the MLC is to find a feature that attractees of Q, Neg, Focus, Tense share (cf. Manzini 1998). Relativized Minimality accounts for all the weak islands by appealing to the A'-position that Q, Neg, Focus, etc. have in common.

The French data we have considered in this paper provide evidence against a recent minimalist proposal. Reinhart (1998) - see also Tsai 1994 - claims that the alleged argument-adjunct distinction is in fact an argument-adverb distinction. In (63) both *how* and *what way* are adjunct, but only *what way* is nominal. Because it is nominal this particular WH phrase can be unselectively bound:

(63) a. *Who fainted when you behaved how?
     b. Who fainted when you behaved [$_{NP}$ what way]?

(Reinhart 1995:193)

Their analysis is mainly semantic, but is derived syntactically by suggesting that N is generated with an index-argument that must be bound by C. WH-NPs (nominal WH phrases) have an open position and can therefore introduce variables in situ. WH-

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[15] Another explanation for the lack of pair-list reading is that the quantifier *no man* fails to generate a domain (cf. Chierchia 1991, Hornstein 1995). Thus, *Which woman does everybody love* t? is fine. Note anyway that in this case the pair-list interpreted trace is not in an island.

[16] 'K *attracts* F if F is the closest feature that can enter into a checking relation with a sublabel of K.' (Chomsky 1995:297).

adverbs (non-nominal WH phrases) do not have an open position and therefore cannot introduce variables in situ (they denote functions ranging over higher order entities). For Reinhart (1998), semantically, they, unlike WH-NPs cannot introduce a choice function.[17] They therefore have to move unlike WH-NPs.

The fact that French WH phrases, such as *quoi* ('what'), although nominal on Reinhart's and Tsai's standard (it has a null N), cannot be licensed via binding creates a problem for the claim that the relevant distinction we need to draw is between nominals and adverbials rather than between arguments and adjuncts (or more precisely referential vs. non-referential expressions). Reinhart's (1998) account predicts examples like (6), (7), (10), (11),etc. should be grammatical, since, syntactically at least, nothing stops C binding the choice function introduced by the WH phrase in situ, since this WH phrase is nominal. Her semantic account in terms of choice function may well be correct, but the syntactic analysis is problematic as we have seen.[18]

In the next section I turn to partial WH movement, which is still in need of an analysis.

4.3 Partial WH movement

So far we have identified on type of null question operators, one which is found in single WH questions (Chinese and French). The two languages differ in what kind of variable type with which the null operator is associated. A second type of question operator is the German WH expletive. One major difference between the German and the French/Chinese question operator is that the former involves embedded clauses, whereas the latter involves matrix clauses.

It has been claimed that partial WH movement dependencies are constructed syntactically indirectly, that is, the expletive WH scope marker is not linked directly with the contentive WH phrase (cf. Marácz 1987, McDaniel 1989), but it is linked to the whole embedded clause, the CP (cf. Horvath 1997, Brody 1997). On this view, the WH

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[17] A choice function is an ordered pair whose first member is a specific member of that set.

[18] Additional empirical evidence that the nominal status of a WH phrase in situ is not sufficient for unselective binding comes from the particular use and behaviour of *what* in languages like Japanese, Chinese, Russian, Modern Greek, Bulgarian, Hebrew, Serbo-Croatian, two of which WH in situ languages. In all those languages, the WH phrase *what* may be used with an interpretation meaning *why* (this type of WH question is appropriate in a context in which the speaker is emotionally affected). This type of WH phrase shares some properties with true adjuncts WH phrases in that it cannot occur in islands, suggesting that in this case the WH phrase denotes a function over higher-order entities (Ochi & Hsin 1999).

expletive is an A-position expletive rather than an A'-expletive; it originates in non-theta marked A-positions, presumably Spec-AgrsP and Spec-AgroP, for nominative and accusative case respectively. The Agr projection takes the CP as a complement. Evidence for this claim comes from the fact that in Hungarian, WH-expletives scope markers bear non-inherited Case:

(64) a. [CP1 **Mit**   mondtál,   [CP2   hogy   **kinek**
          WH-ACC   said-2sg-indef.DO   that   who-DAT
          vett   János   színházjegyet]]?
          bought   John-NOM   theatre-ticket-ACC
          Lit. 'What did you say for whom John bought a theatre ticket?'

    b. [CP1 **Mire**   számítasz,   [CP2   hogy   **melyik fiúval**
          WH-AL   count 2sg   that   which boy-with
          fog   Mari   beszélni]]?
          will   Mary-NOM   speak-inf
          Lit. '**On what** do you count with which boy Mary will speak?'
          '**What** do you expect with which boy Mary will speak?'

(Horvath 1997:527)

Horvath (1997) argues that the WH expletive could not have inherited its Case by transmission from the lower WH phrase with which it allegedly forms a chain, since the Cases they manifest are (a) distinct (b) incompatible. The analysis can be carried over to partial WH movement constructions in other languages that allow it, the difference being that case on the WH expletive must be assumed to be
abstract (i.e. German).

   According to Brody (1997), the WH phrase in the intermediate A'-position is licensed in accordance with Transparency (the contentive category in the chain must be in the highest position licensed by morphology - Brody 1995:104). There is no need for the WH phrase or the whole CP (as Horvath 1997 assumes) to move at LF. This is in line with our analysis which argues against movement of WH phrases in situ. The contentive WH phrase moves to the intermediate position to check the +WH feature on C. This intermediate +WH feature will later be disregarded since at LF all WH features merge through a CHAIN construction (a CHAIN is an interpretive chain rather than a syntactic chain), the structure will therefore contain only a single question.
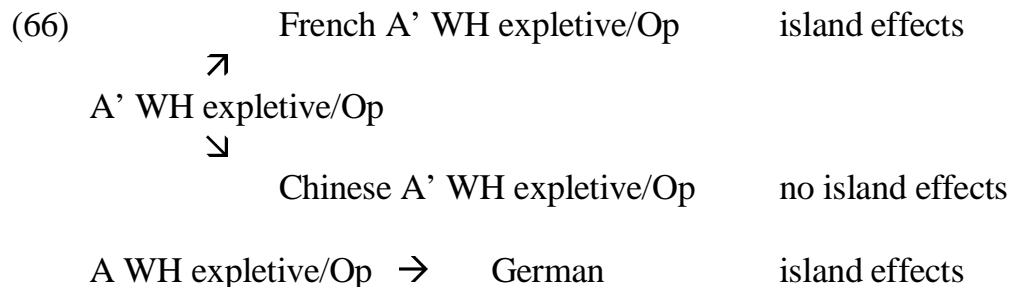
   The French WH expletive is an A' rather than an A-position expletive. It is coindexed via chain formation to the WH phrase directly unlike the German WH expletive. If the WH expletive in German was the same WH expletive we find in French, we would expect German to allow WH in situ in single WH matrix questions contrary to the facts.

The fact that French does not allow the multiple instance of the WH expletive in intermediate Spec-CPs unlike German is further evidence that the two WH expletives are distinct.

The crucial point is that movement of the A-expletive from the embedded clause leaves a trace, which I take to be non-referential[19]. Since the trace is non-referential, it will need a local antecedent. We can therefore explain the intervention effect:

(65) a. $[_{CP1}$ Was$_i$ C ... $[_{AgrP}$ t$_i$ Agr $[_{CP2i}$ WH-phrase$_j$ ... t$_j$]]]?
      b.   *$[_{CP1}$ Was$_i$ C ... $[_{NegP}$ Neg $[_{AgrP}$ t$_i$ Agr $[_{CP2i}$ WH-phrase$_j$ ... t$_j$]$_i$]]]?
      c.   *$[_{CP1}$ Was$_i$ C ... $[_{IP}$ Quant $[_{IP}$ ... I $[_{AgrP}$ t$_i$ Agr $[_{CP2i}$ WH-phrase$_j$ ... t$_j$]]]]]?

To sum-up: I have discussed three different kinds of WH expletives/operators, two of which behave similarly with regard to extraction from islands. Here is a summary in diagram form:

(66)   French A' WH expletive/Op   island effects
              ↗
       A' WH expletive/Op
              ↘
                      Chinese A' WH expletive/Op   no island effects

       A WH expletive/Op →   German   island effects

Island effects are not due to the kind of expletive, but to the kind of variable it binds. In the case of French null question operator and the German WH expletive, they always bind a non-referential variable, whereas in Chinese the question operator may bind a referential variable.

5 Conclusions

It is time for me to conclude this paper. I hope to have shown that the restrictions on French WH in situ do not in fact pose a problem for the uniform characterization of Move as Move F, in view of the fact that it is not heads that block the licensing of WH in situ in French, but XPs, and more generally A'-specifiers. The introduction of acyclic merge (problematic in the first place) is uncalled for.

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[19] Horvath (1997) claims that the Agr position is not theta-marked, however, as already mentioned, we are not looking at a position in a tree, but at the type of the variable.

I have argued that in single WH questions, the WH operator that WH all French phrases contain moves to Spec-CP leaving a non-referential variable behind. This, whether the WH phrase in situ is in adjunct or in object position. The variable needs a local antecedent. Island effects are thus expected, since (antecedent) government is a local relation. It remains to be seen whether a minimalist analysis can account for the data.

In multiple WH questions, the highest WH phrase binds the WH phrase in situ in object position, which is essentially a pure variable, so no WH operator movement is necessary. Islands effects are thus not observed in this particular case, since no non-referential trace has been left behind.

I have accounted for the differences between Chinese and French in claiming that contrary to French WH phrases, Chinese WH phrases do not contain a WH operator. Instead, the equivalent operator can be separated from the variable and base-generated in Spec-CP binding a referential variable.

The question as to why the intervention effect exists in the first place remains to be answered. I have suggested that single WH in situ questions in French may be asking for a relation rather than an individual. A more detailed semantic analysis is required. I hope to return to a more complete study of non overt operators, the variables with which they are associated and their different cross-linguistic properties.

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