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Johan Rooryck
Indiana University

642 Ballantine Hall
Bloomington IN 47405
JROORYCK@IUBACS

ABSTRACT

With respect to negative islands, it is argued that only *believe* type verbs allow negation to bind the head C° of their embedded CP (Neg- raising). *Wh-* elements moving to the higher [Spec, CP] through the embedded [Spec, CP] will pick up the negative value of C°. This results in an unacceptable structure where the *Wh-* element with the negative value in the higher [Spec, CP] is outside of the scope of its negative operator at S- structure. A similar explanation accounts for extraction phenomena out of factive complements. The head C° of the CP selected by factive verbs has a +*Wh-* feature which is picked up by *Wh-* elements moving successive cyclically to the higher [Spec, CP], and which is incompatible with the + *Wh-* feature of the higher C°. Importantly, the presence of an embedded AGR-C° in the case of negative islands and its absence in the case of factive islands explains the fact that negative islands display argument vs. adjunct asymmetries whereas factive islands involve subject/ adjunct vs. object asymmetries.

1. INTRODUCTION[1]

Several restrictions on successive cyclic *Wh-* movement appear not to be exclusively linked to general principles of the grammar, but seem to be in some sense lexically determined. It has been pointed out repeatedly that *Wh-* movement of subjects and adjuncts out of complement CPs of factive verbs strongly contrasts with *Wh-* movement of internal arguments out of these CPs (Rouveret 1980, Kayne 1981, Zubizarreta 1982, Adams 1985):

(1) a. * Who do you regret/ understand/ forget likes this book? (=Adams 1985:(4b))

b. * How did he deeply regret that his son had fixed the car?

c. ? Which article did you regret/ understand/ forget that I had selected?

This type of restriction is not displayed by nonfactive verbs such as *believe*:

(2) a. Who do you believe likes this book? (=Adams 1985:(4a))

b. How do you believe that I selected the article?

c. Which article did you believe that I selected?

However, *Wh-* movement of the adjunct in (2b) is blocked by an intervening negation (Ross 1984, Travis 1984, Kayne 1986:fn.17, Rizzi 1990a:15):

(3) a. (?) Who don't you believe would like this book?

b. * How don't you believe that I selected the article?

c. (?) Which article didn't you believe that I selected?

The negative islands in (3) present a case of adjunct vs. argument asymmetry and the factive islands in (1) present cases of a subject/ adjunct vs. object asymmetry with respect to *Wh-* movement. In the framework of Chomsky (1986), this type of asymmetry is usually linked to the ECP: traces of subjects and adjuncts must be antecedent governed by intermediate traces, whereas traces of object arguments are properly governed by the selecting verb. At first sight, these data suggest that the intermediate trace in the Specifier of CP (hereafter [Spec, CP]) in (1ab-3b) is not antecedent governed by the successive cyclically moved *Wh-* phrase. Obviously, this type of solution will not suffice in light of the difference between the asymmetries in both types of islands.

With respect to negative islands in (3b), Rizzi (1990a) argues that the negation in the matrix clause is a potential antecedent governor for the trace in the embedded [Spec, CP]. The *Wh-* phrase in the higher [Spec, CP] will be unable to antecedent-govern its intermediate trace in the embedded [Spec, CP] position, thus violating the ECP. The problem with this analysis is that there are a set of counterexamples where negation does not seem to intervene to create opacity effects. Melis (1988) observes that the asymmetry noted in (3) does not extend to identical constructions with volitional verbs in French such as *vouloir*.[2]

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[1] I would like to thank Andrew Barss, Judy Bernstein, Guglielmo Cinque, Yves d'Hulst, Richard Larson, Ludo Melis, Ljiljana Progovac, Mel Scullen, Raffaella Zanuttini, Nigel Vincent, Laurie Zaring and two anonymous *Journal of Linguistics* referees for useful suggestions and discussions.

[2] Recall *want* type verbs are not ECM verbs in French as they are in English. As observed by Lakoff (1970), *want* in English is a Neg- Raising verb, but not *desire* or *wish*. This is due to the fact that the Exceptional Case Marking construction of *want* has Neg raising:

i. I don't want him to come/ I want him not to come.

(4) a. Qui ne veux/ désires-tu pas qui vienne encore chez nous?
'Who don't you want (that) still comes to see us?'

b. Voilà la façon de laquelle je ne veux/ désire pas qu'il répare la voiture
'This is the way in which I don't want that he fixes the car'

c. Voilà les moments auxquels je ne veux/ désire pas qu'on me dérange
'These are the times during which I don't want that anyone bothers me'

Other nonfactive verbs which behave like *want* type verbs are verbs such as *prétendre* 'claim'. Admittedly, the negation in these sentences has to be stressed and the interrogative element has a universal reading. These sentences are clearly not echo questions, though, and they are not necessarily rhetorical questions.[3]

(5) a. Cet imposteur a prétendu que les personnes les plus diverses viendraient à la fête. Qui n'a-t-il PAS prétendu qui viendrait à la fête?
'That impostor claimed that lots of different persons would come to the party.
Who did he NOT claim (that) would come to the party?'

b. Ce type a prétendu avoir réparé des voitures de toutes les façons imaginables. Mais comment n'a-t-il PAS prétendu qu'il avait réparé des voitures?
'That man claimed to have fixed cars in all possible ways.
But how did he NOT claim that he had fixed cars?'

c. Si je me souviens bien, il a prétendu qu'il est resté à Chicago pendant quinze jours. Savez-vous pendant combien de temps il n'a PAS prétendu qu'il est resté à Chicago?
'If I recall correctly, he claimed that he had stayed in Chicago for two weeks. For how long did he NOT claim that he stayed in Chicago?'

The sentences (4-5) display exactly the same configuration as the sentences in (3): in both cases, negation intervenes between the *Wh-* element in the matrix clause and its trace in the embedded [Spec, CP] position. If Relativized Minimality were responsible for the acceptability status of the sentences in (3), the sentences (4-5) should have the same status. This is clearly not the case. Against the predictions of Relativized Minimality, the matrix negation does not seem to function as a potential governor for the trace in the embedded [Spec, CP] in (4) and (5). Apparently, there seem to be verbs which allow *Wh-* subjects and adjuncts to be extracted over negation. Therefore, the exclusive appeal to Relativized Minimality and the ECP cannot account for negative islands. Instead, the solution could be sought in lexical properties of verbs of the *believe* type that are different of those of verbs of the *want* and the *claim* type.

The French counterpart of *want*, *vouloir*, does not display the ECM construction, and consequently it does not have Neg raising. In English, then, the ECM construction of *want* obscures the fundamental difference with respect to Neg raising between volitional verbs on one hand and verbs such as *think* on the other. (cf. infra)

3 This very specific reading is probably due to the fact that the matrix negation of verbs such as *prétendre* 'claim' may not have scope over *Wh-* elements originating in the embedded clause, unlike the negation of volitional verbs. We will make abstraction of this difference between verbs such as *prétendre* 'claim' and volitional verbs, since it is linked to independent factors regarding scope of negation (cfr infra). It is pointed out to me by an anonymous reviewer that negation in these cases involves constituent negation. The negation not being clausal, it does not intervene in the operator - trace relation. Since this problem does not crucially affect the arguments to be developed, we will leave it for future research.

A similar problem arises with existing accounts for the islandhood of factive complements. Preceding analyses (Rouveret (1980), Kayne (1981), Zubizarreta (1982), Adams (1985), Rizzi (1990a)) crucially rely on the special status of CPs selected by factives. Rouveret (1980), Kayne (1981) and Adams (1985) exclude (1a) by the ECP. Rouveret's (1980) solution prohibits movement to the [+N] Comp of the clausal complement of factive verbs. Kayne (1981) stipulates that a factive verb cannot govern Comp: as a result, the *Wh-* trace would not be properly governed. Adams (1985) rightly criticizes Rouveret's (1980) and Kayne's (1981) solutions for being too stipulative, and explains (1a) by the fact that a factive [+N] Comp, like other nominal elements, cannot properly govern across IP into the subject position. Nonfactive verbs have [-N] complementizers which can properly govern the subject position. Adams (1985) nevertheless still accepts the stipulation that a verb can assign a nominal feature to the head of CP. Zubizarreta (1982) explains (1a) by a modification of the i-within-i condition which again crucially involves the nominal character of factive complementizers. Zubizarretta's (1982) and Adams' (1985) analyses rely crucially on the special status of the subject with respect to the nominal character of C, and hence do not allow for an explanation of the impossible extraction of adjuncts as in (1b). Rizzi (1990a:112) acknowledges the adjunct extraction facts, and assumes that the sentential complement of factive verbs are inherent Barriers. He relates this Barrierhood to the analysis of factive verbs by Kiparsky & Kiparsky (1970) according to which the sententential complement is selected by an N node. We will try to show that there are no independent arguments for either the nominal property or the empty nominal projection of sentential complements selected by factive verbs. In any case, it will be clear that a solution for factive islandhood invoking either nominal properties or invisible nominal projections of sentential complements is less attractive than an analysis that can do without such stipulations.

We would like to argue that, despite appearances, the restrictions on *Wh-* movement out of negative and factive islands cannot and indeed should not be solely explained by the ECP, but that semantic properties assigned to the embedded C° by the matrix verbs also intervene. In the approach advocated here, the apparently unrelated restrictions on *Wh-* movement of adjuncts out of negative islands and both subjects and adjuncts out of factive islands will be explained by essentially the same means: successive cyclic *Wh-* movement is restricted by the value attributed to the embedded C° by respectively the matrix V or the matrix negation. Our analysis crucially involves the value given to the head C° of CP by verbs of the *believe* type and factive verbs. We will argue that *Wh-* phrases passing through the Spec of the embedded CP pick up the value attributed to C° by Spec - Head agreement, and that this value interacts with independently motivated principles in the grammar to prohibit successive cyclic movement of the *Wh-* phrases to the higher [Spec, CP]. Extraction out of negative and factive islands involves the interaction between the ECP and semantic properties of intermediate C°s.

2. ON INNER ISLANDS, NEG- RAISING AND NEGATION-BOUND C.

The contrast between *believe* type verbs in (2-3a) and *want* or *claim* type verbs in (4-5) suggests that its explanation involves a semantic property of these verbs which interacts with negation. We would like to claim that this property is what used to be known in generative grammar as Neg- raising (Lakoff 1970, see Horn 1978, 1989 for a detailed overview). The term Neg- raising covers the paraphrase relation which holds between sentences (6a) and (6b): the negation of the embedded clause seems to have scope over the matrix clause as well:

(6) a. I do not think that he will come

b. I think that he will not come

Volitional verbs such as *wish, desire, hope, want* do not intrinsically involve Neg-raising: Lakoff (1970) notes that *want* is a Neg raising verb in English, but not *desire* or *wish*: This observation can be explained by relating it to the fact that *want*, but not *desire* or *wish*, has an ECM construction:

(7) I don't want him to come/ I want him not to come.

It is well known that French *vouloir* 'want' in (4) does not have the ECM construction, although ECM constructions of course do exist in French. It is important then to point out that the Neg- raising property of *want* is not linked to the semantic class of *want* type verbs, since *wish* and *desire* do not have Neg raising. Rather, Neg- raising of *want* in linked to the ECM construction: it seems that the matrix negation in ECM constructions necessarily has scope over the embedded IP. Outside of the ECM construction, volitional verbs do not have Neg- raising.

Horn (1978:151) points out that verbs of volition only display Neg- raising with infinitival complements. In particular, he observes that (8a) and (8b) are equivalent, but not (9a) and (9b):

(8) a. I don't/ never wish to see you again (=Horn 1978: (54a)

b. I wish not/ never to see you again (=Horn 1978: (54a')

(9) a. I don't/ never wish that I will see you again (=Horn 1978: (54b)

b. I wish that I will not/ never see you again (=Horn 1978: (54b')

However, it is not possible to view volitional verbs as Neg- raising verbs with infinitival complements. Horn (1978:192) quotes the examples from de Cornulier (1974:50) where the first sentence certainly cannot serve as a paraphrase for the second:

(10) a. Je ne voudrais pas être Dieu
'I wouldn't want to be God'

b. Je voudrais ne pas être Dieu
'I would want not to be God'

With French *croire* 'believe', which unlike English *believe* can be a control verb, the two sentences do have a paraphrase relation:

(11) a. Je ne crois pas être Dieu
'I do not believe to be God'

b. Je crois ne pas être Dieu
'I believe not to be God'

The question remains however why in a lot of cases sentences with volitional verbs do have a paraphrase relation of the type exemplified in (7). Horn (1978:180) cites the following as almost synonymous:

(12) a. Je ne veux pas que vous sortiez
'I don't want you to leave'

b. Je veux que vous ne sortiez pas
'I want you not to leave'

Comparing (10) and (12), the reason for this is easily found. The unmarked interpretation of the embedded sentential complement of volitional verbs typically refers to the future (Stowell 1982). When the presuppositions of the embedded sentence comply with a future interpretation as in (12), both sentences will be in a paraphrase relation. When the presuppositions of the embedded sentence do not exclusively refer to the future as in (10b), the paraphrase relation with a sentence

having only the future interpretation for the embedded sentence is impossible. This can also be checked for a tensed embedded sentence corresponding to (10):

(13) a. Je ne veux pas que mes poissons soient malades
'I do not want that my fish be sick'

b. Je veux que mes poissons ne soient pas malades
'I want that my fish not be sick'

(13a) only has the interpretation that the fish aren't sick yet and that I don't want it to happen. (13b) can both have this interpretation and the interpretation that they are indeed sick and that I would want them not to be sick anymore. Again, sentences such as (13) cannot be constructed for *croire* 'believe'. This of course shows that volitional verbs are not Neg- raising verbs, but there is more. Informally stated, the fact that the presuppositions of both sentences can be different means that they can have independent truth values. *Believe* type verbs do not seem to allow their embedded sentences to have independent truth values: the matrix and embedded sentences seem to constitute a single truth value domain.

Unlike the properties of volitional verbs with respect to Neg- raising, the properties of *claim* type verbs and factive verbs are immediately obvious: (14a) is not in a paraphrase relation with (14b):

(14) a. I claim/ regret that George hasn't thought of the long term consequences

b. I don't claim/ regret that George has thought of the long term consequences

We may conclude that *believe, think* type verbs are Neg- raising verbs, whereas volitional verbs such as *want, wish*, *claim* type verbs and factive verbs are not.

How can the informal insight that *believe* type verbs have a single truth value domain for their matrix and embedded clause be implemented in an updated generative grammar? More importantly, how can it be linked to an explanation of negative islands? Obviously, it would be quite difficult, if not impossible,[4] in present-day generative grammar to view the paraphrase relation between (7a) and (7b) as the result of a rule raising the negation of the embedded clause to the matrix clause. Instead, we would like to formalize the observation that the matrix and embedded sentences of *believe* type verbs constitute a single truth value domain. If this observation is correct, there must be a way in which the domain of the matrix sentence is extended to the embedded clause in order to allow negation to have scope into the embedded clause. Clearly, scope of negation cannot be a property of matrix verbs themselves. More likely, certain properties of the embedded clauses which are determined by matrix verbs can or cannot be targets for the scope of

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[4] One anonymous reviewer suggests that it would be possible to view the paraphrase relation in Neg raising as resulting from head- to- head movement of the embedded negation to the higher clause, combined with reconstruction for the scope of negation. This ability to reconstruct the scope of negation would depend on properties of the matrix verb. It seems to us that this solution would raise more problems than it solves. In view of Kayne's (1989) work on clitic climbing as head movement of the clitic to the matrix clause, one may wonder why only negation would be allowed to move to the matrix clause in the case of *believe* type verbs. Also, if reconstruction of negation into the embedded clause depends on lexical properties of the matrix verb, one would like to know exactly which properties are involved. One does not want to stipulate a feature [± reconstruction of negation]. The analysis developed here does not face these problems: the semantic feature of the matrix verb which derives Neg- raising involves selectional properties expressed on the embedded C°. These selectional properties give a value to C° which enables it to function as a variable for the matrix negation.

negation. Matrix verbs govern the head C° of their embedded CP, and determine the semantic properties of C° in the same way as they determine selectional properties of NPs. For example, it has long been noted that the temporal interpretation of infinitives is determined by the matrix verb: for volitional verbs of the *want* type, the infinitive is interpreted as a future event with respect to the tense of the matrix verb, but the interpretation of the infinitival complement of a verb such as *regret* involves a past event. Stowell (1982) explains this temporal determination of the infinitival complement by the matrix verb by postulating a temporal operator in the infinitival Comp the value of which is determined by the governing matrix verb. It is likely that certain values of the head C° of an embedded CP can function as variables for the negation of the matrix verb, whereas other values cannot function in this way. We would like to propose that the precise value attributed to the head C° of CP by *believe* type verbs allows the truth value of the matrix clause to be extended to the embedded clause. With respect to the negation of the matrix clause, this means that the head C° of the embedded CP of *believe* type verbs is a variable for the negation of the matrix clause. In this way, the negation of the matrix clause has scope over the embedded clause. The matrix and the embedded clauses thus constitute one single domain for negation. This operator - variable relation can be morphologically expressed in French. Embedded tensed clauses in French can be either in the subjunctive or in the indicative mood, depending on the semantics of the matrix verb. *Believe* type verbs have the peculiar property of changing modality restrictions from indicative to subjunctive if the matrix *believe* verb is negated:

(15) a. Je crois que Dorine est/*soit contente de son livre
'I believe Dorine is happy with her book'

b. Je ne crois pas que Dorine est/ soit contente de son livre
'I do not believe Dorine is happy with her book'

In the framework developed here, we may view this change of modality in the embedded clause as a morphological expression in the embedded clause of the operator - variable relation between negation and C°: the negation bound C° triggers the subjunctive mood in the embedded clause. Embedded Cs of volitional verbs, factive verbs, and *claim* type verbs cannot be bound by the negation of the matrix verb. The semantic value which volitional verbs, factive verbs, and *claim* type verbs attribute to their embedded C° does not allow this C° to function as a variable for negation. In this way, we can formally represent our informal observation that the matrix and embedded clauses of these verbs have independent truth value domains.

The adjunct vs. argument asymmetries of negated *believe* type verbs can now be explained straightforwardly. *Wh-* phrases moving successive cyclically to the higher clause will pick up the negative value of the embedded C° by Spec - Head agreement while moving through the embedded [Spec, CP]. This means that by passing through the [Spec, CP] position, *Wh-* phrases become themselves variables of negation by Spec - Head agreement with the negation-variable C. The *Wh-* phrases moved to the [Spec, CP] of the matrix verb then end up as elements with a negative feature, the value of a negation-bound variable. It is well known that general principles governing operator - variable relations at Logical form require that a variable must be in the scope of its operator at LF. The *Wh-* elements in the matrix clause which have moved through the lower [Spec, CP] have become negative variables by doing so. These negation bound *Wh-* elements are not in the scope of the negative operator at S-structure. Consequently, the resulting sentences will be excluded in LF.

Adjunct *Wh-* phrases extracted from the clausal complements of negated *believe* verbs can only move successive cyclically, since their traces have to be antecedent governed following the ECP (Chomsky 1986). Consequently, these *Wh-* phrases

necessarily pick up the negative value from C° via Spec - Head agreement. Upon arrival in the matrix [Spec, CP], the *Wh-* adjunct is outside of the scope of its negation.[5] Consequently, the sentences (3b) will be ruled out at LF. *Wh-* phrases originating in internal argument positions have another option, since their traces are properly governed by the verb selecting them. These *Wh-* phrases may move over the embedded CP Barrier, yielding sentences with at best a weak *Wh-* island violation as in (3c).[6] The ECP is thus only indirectly involved in the explanation of the adjunct vs. argument asymmetries under discussion: the ECP only ensures that adjunct *Wh-* phrases move through the embedded [Spec, CP], but it does not directly account for the unacceptability of the relevant sentences. This analysis is confirmed by the impossibility of Stylistic Inversion in these sentences. Kayne & Pollock (1978) convincingly show that *Wh-* phrases or their traces in [Spec, CP] trigger Stylistic Inversion in French.

(16) L'homme que je crois qu'aime Euphrasie
'The man that I think Euphrasie loves'

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5 An anonymous referee points out that the following example, from Cinque (1991:85) might pose a problem for our analysis:

i. In un modo diverso, non credo che si comporterà
'In another manner, I don't think that he will behave'

At first sight, the adjunct moves through the lower [Spec, CP] and ends up outside the scope of negation. However, Cinque (1991) extensively argues that cases of clitic left dislocation involve no *Wh-* movement. Moreover, dislocated elements must be in the scope of negation (Cinque 1991:84). This sentence then confirms our analysis: as long as (dislocated or *Wh-* moved) elements are in the scope of negation, sentences should be fine under our analysis.

6 The analysis presented here should be slightly modified in view of some additional data. For ease of exposition, we have hitherto assumed that Neg- raising with *believe* type verbs is obligatory: the matrix negation binds the embedded C°. Data from French suggest that this binding of C° by the matrix negation may be optional. In our discussion of (15), we have assumed that negative binding of C° triggers a change of mood in the embedded clause to the subjunctive. Interestingly, for several French speakers, extraction out of the embedded clause in *believe* sentences becomes much better if the embedded clause is in the indicative:

i. C'est une procédure par laquelle je ne crois pas
que nous ? avons/ * ayons déjà sélectionné un article
'This is a procedure by which I don't think we have
already selected an article'

Slightly modifying our analysis, we may assume that the matrix negation optionally binds the embedded C°. When C° is bound by negation, the analysis developed in the text for *believe* verbs applies. When C° is not bound by the negation of the matrix clause, there is no negative value to be picked up in the embedded [Spec, CP] and the sentences will be acceptable. With the indicative mood in the embedded clause, *believe* type verbs then behave exactly like *want* or *claim* type verbs: there are no negative islands. The optionality of negative binding of C° (and hence Neg-raising) then can be checked in French by the switch in indicative or subjunctive mood.

This also explains an objection raised by an anonymous referee with respect to the predictions of this analysis regarding the relation between extraction over a *Wh-* island and over a negative C°. At first sight, our analysis predicts that (ii) and (iii) should be equally bad.

ii. (?) Who don't you think John wants to visit?
iii. ?? Who do you wonder whether John wants to visit?

The reviewer correctly points out that (iii) is worse than (ii). We would like to suggest that the acceptable reading of (ii) corresponds to the reading without Neg- raising, hence without binding of C° by the matrix negation.

The sentence (17) shows that Stylistic Inversion is not possible when the matrix *believe* verb is negated, and thus confirms that no *Wh-* phrase moved through the embedded [Spec, CP].

(17) * L'homme que je ne crois pas qu'aime Euphrasie
'The man that I do not believe that Euphrasie loves'

The account presented here can be extended to the other cases of inner island effects cited by Rizzi (1990a). Rizzi (1990a:19) observes that inner island effects are not limited to sentential negation, but that negative-like 'affective' operators induce the same behavior:

(18) a. It is by lethal injection that many people believe that John was executed (Rizzi 1990a:(51a))

b. * It is by lethal injection that few people believe that John was executed (Rizzi 1990a:(51b))

'Affective' operators are operators licensing negative polarity items. We may assume that the negation-sensitive embedded C° of *believe* verbs can function as a variable of the 'affective' operator. The embedded C° of *believe* verbs then functions in the same way as a negative polarity item bound by its operator, assuming the syntactic approach to the licensing of negative polarity items by operators proposed by Progovac (1988, 1991). In (18b), then, the *Wh-* operator passing through the embedded [Spec, CP] picks up the variable value of C° by Spec - Head agreement before moving successive cyclically to the higher [Spec, CP]. In the matrix [Spec, CP], however, the relative *Wh-* operator will be outside of the scope of the operator *few* which licenses its negative value picked up in the lower [Spec, CP], and the sentence will be ruled out.

How does this solution interact with the extraction of subjects? Subject extraction seems to have the same degree of acceptability as object extraction, as shown in (3a) (Rizzi 1990a). According to the Barriers framework (Chomsky 1986), subjects are not theta- governed, so we would expect *Wh-* elements originating in this position to move through the [Spec, CP] position before moving further up to the matrix [Spec, CP] position. Under our analysis, however, the sentence (3a) should then be disallowed, since the *Wh-* element would have picked up the negative value of C° while passing through the lower [Spec, CP]. Our analysis then seems to make the wrong prediction for subjects extracted out of negative islands. However, the solution proposed here cannot be entirely wrong since the counterparts of (3a) in Standard[7] French are entirely unacceptable, as pointed out by Melis (1988):

(19) a. (?) Who don't you think can help us? (= Rizzi 1990a:83(23))

b. * Voilà la personne que tu ne croyais pas qui pouvait nous aider
'This is the person who you did not think could help us'

In some Southern Dutch dialects (e.g. West Flemish, Haegeman 1983) there is an optional rule which replaces the neutral complemantizer *dat* with *die* when the subject has been extracted. Interestingly, sentences with the complementizer *dat* are acceptable in the context of a negative island, whereas the form of the complementizer agreeing with the subject *die* yields unacceptable sentences:

(20) a. Dit is de man die ik dacht die/ dat zou komen
'This is the man who I thought (who/ that) would come'

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[7] I am informed that sentences without *qui* 'who' in Québec French are entirely acceptable. Québec French then functions in the same way as English.

b. * Dit is de man die ik niet dacht die zou komen
'This is the man who I did not think (who) would come'

c. (?) Dit is de man die ik niet dacht dat zou komen
'This is the man who I did not think (that) would come'

It seems then that languages which have a productive rule of C° agreeing with both its Spec and its complement do not allow this agreement to take place in the context of a negative island. These data can be accounted for if we take into account Rizzi's (1990a) analysis of agreement in the domain of C°. In order to explain *that* - trace effects, Rizzi (1990a) suggests that empty embedded C°s are manifestations of an empty AGR-C° morpheme which agrees with the *Wh-* element passing through the embedded [Spec, CP].

(21) Who_i did you think [$_{CP}$ t_i AGR-C° [$_{IP}$ t_i came]]

This empty AGR-C° is in complementary distribution with *that* in standard English, and head- governs the subject trace in [Spec, IP]. Rizzi (1990a:83) shows that theta-government is insufficient to explain (19a) for two reasons: either a trace in [Spec, CP] should be antecedent governed by the intervening negation under Relativized Minimality, ruling out the sentence, or there would be no trace in [Spec, CP] but then the trace in [Spec, IP] is not licensed by a governing head. Surprisingly, Rizzi (1990a) does not come back to this example to explain why it has the status of a weak *Wh-* island violation. In Rizzi's framework, which we will adopt in the remainder of this section, the subject trace in (3a-19a-21a) is head governed .

Rizzi (1990a:99) then proposes that the object trace can be connected to its antecedent in (22a) by both binding and antecedent government. In (22b), only binding can establish the required relation over the embedded CP Barrier, yielding a weak *Wh-* island violation.

(22) a. Which book do you think [t [John gave t to Bill]]
(=Rizzi 1990a:(51a))

b. ? Which book do you wonder [why [John gave t to Bill]]
(=Rizzi 1990a:(51b))

Extending this analysis, there are two options for the subject trace to be connected to its antecedent in (3a-19a). Recall that in our analysis of negative islands proposed here, the intermediate trace in the embedded [Spec, CP] is not separated from its antecedent by the negative A' binder as in Rizzi's (1990a) analysis. In our analysis, however, the trace in the embedded [Spec, CP] marks the position in which the *Wh-* element picks up the value of the negative variable in C°. The antecedent-government strategy then yields an unacceptable sentence, as outlined above. However, the relation between the trace in [Spec, IP] and the antecedent in the matrix [Spec, CP] can also be reconstructed via binding, since the trace in [Spec, IP] will be governed by AGR-C°. The trace in [Spec, CP] through which the negative value was given to the *Wh-* element by Spec - Head agreement will then be disregarded. Since the antecedent-government chain is no longer taken into account, the *Wh-* element in the higher [Spec, CP] does not have the value of the negative variable anymore either. Consequently, the sentence (3a-19a) receives the status of a weak *Wh-* island violation in exactly the same way as (3c-22b).

How can the unacceptable cases (19b-20b) of French and Southern Dutch be explained? Rizzi (1990a) proposes that in these languages, agreement of C° is both with the [Spec, CP] and with the complement, whereas agreement of AGR-C° in English is only with [Spec, CP]. This explains the fact that *qui/ die* can only appear when the subject is moved through [Spec, CP]. Since agreement is both with [Spec, CP] and with the complement in these cases, the trace in [Spec, CP] and the trace in

[Spec, IP] are necessarily identical in every respect. Consequently, under our analysis, the trace in [Spec, IP] will have to receive the value of the negation variable in C°. The sentences with *qui/ die* will then be ruled out on our analysis because the *Wh-* element in the higher [Spec, CP] necessarily has the value of the negation variable, but is out of the scope of its negation. In English, this problem will never arise, since the AGR-C° never agrees with its complement: in the sentences (3a-19a), the negation-variable AGR-C° will head-govern the trace in [Spec, IP] without being able to transmit its negative value to it by agreement. In Southern Dutch, still another option exists: the *Wh-* element originating in subject position does not have to move through the embedded [Spec, CP]. In (20c), the subject does not pass through the [Spec, CP] to agree with the complementizer and hence does not yield *die*. The complementizer *dat* remains in C°, and the sentence has the status of at most a weak *Wh-* island violation. The difference between French and Southern Dutch dialects is that in French the *Wh-* element must move through the embedded [Spec, CP] position to licence an AGR-C° head that may head-govern the subject. Hence, there never are sentences parallel to Southern Dutch in French such as (23):

(23) * Voilà l'homme que je ne croyais pas qu'allait venir
'This is the man who I did not think (who/ that) would come'

Dutch being a verb-second language, it can safely be assumed that the *dat* C° is a sufficient head governor for the trace in subject position without having recourse to the AGR-C° licensed by a trace in [Spec, CP]. The analysis of negative islands proposed here can thus be reconciled with Rizzi's analysis of agreement in the domain of C°.

The approach in terms of variable binding does not extend to the other negative island constraints noted by Ross (1984) which concern the extraction of certain types of adverbials and amount quantifiers in root sentences. Ross (1984) has playfully pointed out a number of interesting cases of negative islands:

(24) a. What did no imitation pearls touch? (= Ross 1984:(2a))
b. * What did no imitation pearls cost? (= Ross 1984:(2b))

The unacceptability of these sentences has been successfully dealt with by Kroch's semantic analysis of the restrictions on amount quantifier *Wh-* movement. Kroch's (1989) explains the impossibility of (24b) in terms of the fact that this sentence does not have plausible presuppositions.

(25) a. * How much didn't it cost? (=Kroch 1989:(32a))
b. * How much didn't you pay? (=Kroch 1989:(32b))

Kroch (1989) convincingly points out that the sentence becomes markedly better when a definite amount is being introduced in a relative clause (26a), or in an ironic context (26b):

(26) a. How much didn't you pay that you were supposed to?
(=Kroch 1989:(38))
b. Oil prices change so rapidly that one might ask: how much didn't it cost? (cfr Kroch 1989)
c. What didn't that repair job cost you that you thought it would have cost?

Notice that in both cases negation is stressed. A similar interpretation can be constructed for (24b). Kroch's (1989) analysis can be extended to the remaining cases of inner islands which involve adverbs.

(27) a. * It was with this stiletto that they (never) stabbed the lasagna
(= Ross 1984:(10b))

b. (Mafioso to judge:) I can assure you, your Honor, it is precisely with this type of stiletto that we would never stab a lasagna.

But finding a context which works for Ross's (1984) examples doesn't really solve the problem he pointed out. It remains puzzling why certain *Wh-* sentences require this very specific context and some don't. Ross (1984:262) points out that locative, temporal (*when*), durational, conditional and comitative adverbs never show any inner island effects. Importantly, the examples cited by Ross (1984) involve adverbials that are not restricted by the thematic structure of the verb. Ross (1984) then cites a number of cases involving manner, benefactive, and instrument adverbials which show a minimal opposition between immediately acceptable and less acceptable cases:

(28) a. How did(*n't) you find a solution? (= Ross 1984:(17a.i)))
b. How did(n't) you fulfill the requirements? (= Ross 1984:(17a.ii))

(29) a. It was with this spoon that they (*didn't) put the milk into the bottle
b. It is with this kind of glue that one should (never) repair shoes

(30) a. For whom did(*n't) you enter the race? (= Ross 1984:(18))
b. * It was for my dog that I didn't change jobs (= Ross 1984:(18))

Some other cases with locatives and directionals can be added:

(31) a. Along which road did(n't) you drive home every day?
b. Along which lines did(*n't) you develop the argument?

(32) a. It was near Paris that we didn't find/ found gasoline
b. It was near the refrigerator that we (*didn't spot/ spotted) the cockroach

Pace Kroch's (1989) solution, some additional factor must be at work here which prevents certain adverbials from being outside the scope of a nonstressed negation. In our opinion, the factor involved has to do with the selection of adverbials. The adverbials cited in (28-32) are all restricted by the thematic structure of the matrix verb to a greater or a lesser extent. We would like to suggest that it is precisely the extent of semantic selection which determines the contrasts noted in (28-32). The inner island effects noted are limited to those cases where the adverb is closely restricted by the matrix verb. In (28a), *how* can only refer to a limited set of manner adverbials which determine the specific Theme of *find* (*She easily/ *attractively found the solution* vs *She easily/ attractively decorated the room*). It cannot refer to the much larger set of attitude adverbials such as *courageously* which are only restricted by Agency, since *find* isn't agentive. *How* in (28b) however only refers to this set of attitude adverbials which is not restricted by the specific Agent selected by *fulfill*, but by Agency in general (*Fulfill the requirements courageously/ brilliantly/ prudently etc*.). A similar argument can be made for the contrast in (29): the instruments with which milk can be put in a bottle are more restricted than those with which shoes can be repaired: milk cannot be put in a bottle with a round rock, but one can imagine a situation in which shoes can be repaired with a rock, for example when hammers are lacking, or even with a spoon. The same is true for stabbing in (27), an activity which clearly limits its instruments to sharp objects, preferably stilettos, but round rocks won't do. Benefactives in (30) arguably change the thematic structure of the verb. The Path adverbial in (31a) is clearly less restricted than the more abstract Manner/ Path of (31b). The locative adverbial in (32) is restricted by a verb such as *spot* which presupposes a specific location, but not by a verb such as *find*.

Frequency adverbials do not exhibit inner island effects because they are not as restricted semantically as other adverbs. Frequency adverbials modify the whole thematic structure, not just parts of it, they are event external.

(33) a. ? It was six times that he didn't talk to me (= Ross 1984:(17d.i))

b. How many times did(n't) they show up (= Ross 1984:(17d.ii))

In fact, the idea that only adverbials which are narrowly linked to the thematic structure of the verbs cannot be outside the scope of unstressed negation fits in nicely with Kroch's (1989) account. Being selected by the thematic structure, the adverbials mentioned are like amount quantifiers in the sense that they are presupposed by the verb and hence the sentence. It seems then that there is a way of getting Ross's (1984) "pretty tatterdemalion set of cases" under control. Adverbs which are restricted by the thematic structure of the verb must occupy structural positions within the domain of negation. These adverbs cannot be extracted beyond the domain of negation, presumably because negation acts as a barrier for antecedent government.[8]

We may conclude that some inner island effects first observed by Ross (1984) are better explained in terms of binding of the embedded C° by negation or negative polarity operators, and the general principle requiring that a variable be in the scope of its operator at S- structure. The C-variable binding approach has allowed us to effectively explain the differences between *believe* type verbs and volitional and *claim* type verbs with respect to the interaction of negation and extraction. We will now try to explain the extraction asymmetries out of the complements of factive verbs in a way which is quite similar to the explanation of negative islands.

3. ON FACTIVE ISLANDS AND *WH*- FEATURE COMPATIBILITY.

Before going into the explanation of the restriction on extraction out of sentential complements of factive verbs, we would like to discuss the hypothesis that the CP complement of factive verbs is nominal, and take a closer look at the acceptability status of the extraction data given in (1). First of all, we would like to dispell the idea that the sentential complements of factive verbs have in some sense a nominal feature. As pointed out in the introduction, this idea originates in Kiparsky & Kiparsky (1970), and has been implemented into more recent frameworks by attributing a nominal value to the head C° of the CP selected by factive verbs (Rouveret 1980, Zubizarreta 1982, Adams 1985), or by assuming that there is an empty nominal projection which would make the selected CP an adnominal complement and as such an island to extraction (Rizzi 1990a). The [NP [CP]] analysis of factive complements has also been rejected by Cinque (1991:30) and Cardinalletti (1989). A first additional criticism of the analyses which assume the nominal character of factive CP complements has to do with the nature of C. Since C° is usually viewed as a temporal element (Stowell 1982, Radford 1988:307 and references therein) which can in addition bear interrogative and declarative values, it remains unclear what it means for C° to bear a nominal value. We have already pointed out that any solution to factive islandhood that can do without such a stipulation would be preferable over one that crucially relies on this assumption. Let us nevertheless focus for a moment on the arguments for the nominal character of these CP complements. Adams (1985) agrees that the contrasts pointed out by Kiparsky & Kiparsky (1970) between factive and nonfactive verbs concerning the

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[8] I owe this idea to an anonymous reviewer.

selection of gerunds complements and the noun *fact* do not necessarily point to the nominal character of the CP of factive verbs.

(34) a. Sally regrets having come to the party/ the fact that she came to the party

b. * Sally claims having come to the party/ the fact that she came to the party

Adams (1985) offers some other arguments in favor of the nominal character of the CP of factive verbs. Following Kiparsky & Kiparsky (1970), she observes that only nonfactive complements can be pronominalized by the anaphor *so*:

(35) a. You believe that Tom is ill, and I believe so, too. (= Adams 1985:(7a))

b. *You regret that Tom is ill, and I regret so, too. (= Adams 1985:(7b))

Adams (1985) claims that this result is predicted by the nominal CP hypothesis, since *so* is an anaphor only for CP and VP, not for NP. Notice that the argument for the nominal character of these CPs is only negative: is does not positively show that these CP have nominal features, but it derives this feature from properties factive CPs do not have. The argument in favor of the nominal character of factive CPs overlooks the reason why *so* is an anaphor for VP and CP. The reason for this certainly cannot be categorial: CP and VP have no categorial features in common. Therefore, it must be that VP and certain semantic types of CP have a feature in common which is not shared by the CPs of factive verbs, and which can be morphologically expressed by *so*. A good candidate for such a feature is the notion Eventuality. VPs do not have an independent Tense and are as such not linked to a precise reference point on a time axis. In this sense, they can be considered inherent Eventualities, a temporal value that can be expressed morphologically by the infinitive. This semantic analysis of VPs has been proposed by Carlson (1984). The CPs selected by nonfactive verbs can also be argued to have a feature not unlike Eventuality: the truth value of nonfactive sentential complements is never presupposed as a fact by the nonfactive matrix verb, they are possible events. Factive verbs however assign a 'factive' truth value to their CP complements: these complements are never presented as merely possible, but as presupposed events. This semantic difference in truth value of the sentential complements between factive and nonfactive verbs is mirrored in the selection of NPs such as *fact* (34). The difference between factive and nonfactive verbs with respect to *so* pronominalization is more likely to be linked to the semantic value of *so*, than to the nominal character of the CPs *so* cannot replace.

Adams (1985) cites one more so-called nominal property of factive CPs that was noticed by Zubizarreta (1982). In Spanish, only the complements of factive verbs can be preceded by a determiner.

(36) Lamento/ *creo el que Pedro no haya pasado el exámen
(=Adams 1985:(8))
'I regret/ believe DET that Pedro did not pass the exam'

However, no arguments are given to show that *el* really is the determiner of CP. Rather, it seems to be the case that *el* introduces an empty nominal head (or that it is itself the head of DP). The construction in (i) then reduces to a noun - complement construction of the type *the fact that*. An argument for this analysis comes from extraction phenomena in Spanish. Zubizarreta (1982) observes that extraction of internal arguments out of the factive complement in Spanish is quite good. However, if the CP is preceded by *el*, the sentence receives the same acceptability status as extractions out of noun - complement structures where the noun does not L- mark the sentential complement. In a Barriers framework, both sentences are ruled out by

Subjacency, since the Barrier of the adnominal complement is inherited by the nominal projection in (37bc) (Chomsky 1986:34).

(37) a. ? ¿A quién lamentas que Juan haya llamado? (=Zubizarreta 1982:(13))
'Whom do you regret (that) Juan has called?'

b. * ¿A quién lamentas el que Juan haya llamado?
'Whom do you regret (Det that) Juan has called?'

c. * Whom did you cite the fact that John called?

The contrast between (37ab) also provides evidence against Rizzi's (1990a:112) analysis of factive CP complements as having an additional NP projection. This projection prevents direct selection and L- marking by the matrix verb, and the CP complement can be viewed as an adnominal CP. Intermediate traces in [Spec, CP] of this sentential complement cannot be antecedent governed because of this intervening Barrier. The problem with Rizzi's (1990a) analysis is that the 'invisible' nominal projection in (1) and (37a) should inherit the Barrierhood of the CP complement in the same way as the explicit noun - complement constructions in (37bc). In short, for an ECP type approach to extraction from factive islands to work, one needs a single inherent Barrier, the factive CP. Rizzi's additional nominal projection predicts that (37ab) are both ruled out by Subjacency, unless some additional stipulation is made for 'invisible' nominal projections. An approach which can do without such a stipulation seems more promising to us.

Despite the subject/ adjunct vs. object asymmetry observed in (1), we would like to argue that sentential complements of factive verbs do not constitute inherent Barriers to government. This assumption not only amounts to a mere stipulation, it would also prevent an explanation of the obvious selectional properties factive verbs express on their complements. The fact that the ECP is not involved in an explanation of the restrictions on extraction from factive islands can also be derived from the acceptability status of the unacceptable sentences. It is necessary to reassess the judgments on sentences such as (1ab). It seems that extraction of adjuncts out of the clausal complements of factive verbs is marginally possible as long as it is clear that the adjunct cannot be construed with the matrix clause. This gives rise to echo question interpretations in the case of interrogatives, and marginal but not impossible relative clauses.

(38) ?? HOW did he deeply regret that his son had fixed the car?

(39) a. ?? In WHICH hotel did we regret that they would hold the meeting?

b. ?? This is the hotel in which LSA members regretted that they would never hold a meeting

(40) a. ?? HOW did John very well know that his son would have fixed the car?

b. ?? This is the precise way in which John knew that his son would fix the car

(41) a. ?? In WHAT year did we discover two months ago that Stendhal wrote some chapters of *Armance*?

b. ?? This is the year in which we discovered two months ago that Stendhal wrote some chapters of *Armance*

It is important to point out that these sentences do not have the flavor of ECP violations which are typically much stronger. Compare the preceding sentences with the following:

(42) a. * How did John very well know who would have fixed the car?

b. * In what year did we discover two months ago who really wrote *Ficciones*?

Note that in these cases echo-question interpretations are excluded. In a Barriers account, (42) is excluded by the ECP because the VP adjoined trace in the embedded clause is not antecedent-governed by an intermediate trace in [Spec, CP], this position being occupied by *who*. The intermediate matrix VP- adjoined trace of *Wh*- adjuncts in (42) cannot govern over the embedded CP inheritance Barrier (Chomsky 1986:11). In view of examples such as (38-41), we would like to propose that the judgments on (1) should be revised. It seems that sentences such as (1ab) are possible as echo questions in the same way as (38-41). Relative clauses are marginally possible if the selectional restrictions of the factive verb in the relative clause are different from those of the subject of the factive complement clause, so as to prevent interpretations where the relativized complement is interpreted as a complement of the factive verb:

(43) a. ?? WHO did you regret did not help you for the party?

b. ?? WHO did you understand would organize the colloquium?

(44) a. ?? This is the person who I knew/ regretted would organize the colloquium

b. ?? This is the person who I understood would organize the colloquium

(45) a. "It is a question that I am discovering that does not want to answer itself" (NPR, Radio Reader, November 14 1990)

b. "This is a man who you know full well is on the right side of this issue" (overheard on a television debate)

If this interpretation of the extraction facts out of factive clausal complements is correct, the subject - object asymmetry remains, even if the acceptability status of the sentences involved has been reevaluated and, in our opinion, made more precise. Indeed, the extraction asymmetry involves an opposition between subjects and adjuncts on one hand and internal arguments on the other hand. In view of Chomsky's (1986:§7) discussion of Island Violations, the fact that traces of internal arguments are theta- governed can be expected to play an important role in the relative acceptability of (1c). However, it is unlikely that the ECP is involved in the marginal acceptability of (38-41) and (43-45). If the sentences in (38-41) and (43-45) were to be excluded by the ECP as (42) is, even the echo- interpretation should be impossible as this is the case in (42). Moreover, to exclude these sentences by the ECP, there should be a Barrier preventing antecedent government in (38-41). This does not seem to be the case, since [Spec, CP] is in principle available for successive cyclic movement and the matrix verb L-marks its complement. The question then remains why these sentences are marginal. We will address this problem shortly.

In order to stress even more clearly the fact that the ECP is not what is involved in the subject/ adjunct vs. internal argument asymmetry under discussion, let us briefly consider some more data with untensed CPs. A specific subset of factive verbs such as French *discuter* 'discuss', *parler* 'talk' selecting infinitival constructions differ crucially from the other factive verbs in that they have arbitrary control properties. These verbs are minimally different from obligatory subject control verbs such as *se plaindre* 'complain', which are also factive:

(46) a. Nous$_i$ avons discuté de PRO$_{arb/i}$ se$_{arb}$/ nous$_i$ raser au rasoir traditionnel
'We discussed shaving oneself/ ourselves with a traditional razor'

b. Nous$_i$ sommes contents de PRO*$_{arb/i}$ *se$_{arb}$/ nous$_i$ raser
au rasoir traditionnel
'We were glad to shave oneself/ ourselves with a traditional razor'

Whatever the correct explanation for control in general, the minimal hypothesis would certainly be to explain cases of obligatory control by configurational principles of government that exist independently in the grammar. This line of reasoning has been pursued by various researchers (Williams 1980, Bouchard 1985, Manzini 1983, Koster 1984, Borer 1989) which we will not review here. Most recently, Kayne (1990) has proposed that all controlled PRO be governed at some level of representation. Since in (46), arbitrary PRO cannot be argued to be controlled by an implicit argument of the matrix clause, it could be proposed that these cases of arbitrary PRO be linked to the fact that PRO is either not governed or cannot be bound by an antecedent in its governing category, the matrix clause. Let us assume PRO cannot be bound by an antecedent in its governing category in (46a) because the embedded CP is an inherent Barrier in (46a) but not in (46b). We would like to suggest that the Barrier involved in (46a) is a result of *discuss* type verbs not L-marking their complement. The reason for this might be that these verbs do not seem to impose selectional restrictions on their complement.[9] For the analysis of extraction phenomena which concern us here, it is important to point out that extraction out of the complement of *discuss* type verbs confirms the presence of a Barrier. Contrary to other factive verbs, the marginal extraction of adjuncts is completely disallowed in this case.[10]

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9 These verbs take any type of nominal complement [+/- animate], [+/- abstract] etc. In itself, this is not an argument for the absence of selectional restrictions, since this type of selection is not an exclusive property of *discuss* type verbs: verbs such as *love* and *hate* can also take any type of complement. However, *discuss* type verbs allow for a 'conceptual' interpretation of their complements, which is absent in other verbs taking any type of complement. *love* type verbs assign a concrete interpretation to [+ abstract] nouns they select: sentences such as *Jeff loves courage/ interpretation* does not normally mean that Jeff loves the concept courage or the concept of interpretation, but specific instances of it, or all of these instances together. *Jeff discussed courage / interpretation* freely allows for the concept interpretation, showing that no restrictions are imposed on the complement by the matrix verb. If it is accepted that such interpretive notions are part of selectional restrictions, it can be argued that *discuss* type verbs do not impose selectional restrictions on the complement, thus allowing for 'conceptual' readings of their complements. The syntactic counterpart of this 'conceptual' interpretation then arguably is a Barrier. This is also true for *compare* type verbs, which also have arbitrary control readings as in *John compared shaving oneself to daily torture*. cfr Rooryck (1991b) for an analysis of the arbitrary control properties of these verbs along these lines.

10 Notice also that subject extraction out of the clausal complements of *discuss* type verbs cannot be checked in English and in French. This is because in English subject extraction out of the clausal complements of verbs which have obligatory complementizers (*like, discuss*) would give rise to *that* trace configurations which are excluded independently. In French, extraction out of a tensed clausal complement introduced by a preposition is always impossible. Compare the following:

i. Voilà le livre que je me suis félicité d'avoir lu
'This is the book I am glad to have read'

ii. * Voilà le livre que je me suis félicité de ce que Jean a lu
'This is the book I am glad (of it that) John read'

Verbs such as *discuter* 'discuss' also select a *de ce que* tensed complement. Consequently, extraction of of this complement may be excluded for independent reasons linked to the syntactic nature of *de ce que*.

(47) a. ??De QUELLE façon ont-ils été contents de se raser pendant les vacances?
'In which way were they glad to shave themselves during the holidays?'

b. * De QUELLE façon ont ils vivement discuté de se raser pendant les vacances?
'In which way did they vividly discuss shaving themselves during the holidays?'

(48) a. ?? Pour QUELLE occasion se sont-ils souvent plaints de devoir se raser?
'For WHAT event did they often complain of having to shave?'

b. * Pour QUELLE occasion ont-ils souvent discuté de devoir se raser?
'For WHAT event did they often discuss having to shave?'

(49) a. ?? Voilà le livre que nous avons discuté de lire ensemble

b. ? This is the book we discussed reading together'

(50) a. ?? Voilà la personne à qui nous avions discuté de donner les livres

b. ? This is the person to whom we discussed giving the books

If the embedded CP of *discuss* type verbs is an inherent Barrier, the sentences in (47b-48b) are ruled out by the ECP: the traces of adjuncts and subjects have to be antecedent-governed, and an intervening Barrier will prevent the trace in the embedded [Spec, CP] from being governed by the VP adjoined trace in the matrix clause. Extraction of internal arguments out of the complement clauses of *discuss* type verbs is possible and the resulting sentences (49-50) receive the status of weak *Wh-* Island violations: these internal arguments only cross one Barrier and their trace is properly governed. At the same time, these data show that the marginal, but nevertheless possible extraction out of the complements of other factive verbs such as *être content* (47a) and *se plaindre* (48b) cannot be an ECP violation.

After assessing the acceptability status of the subject and adjunct extractions out of factive islands, we still have to explain the subject/ adjunct vs. object asymmetry. As in the case of negative islands, we would like to link the impossibility of extraction out of factive complements to an independent and less well known lexical characteristic of these verbs. In our view, this lexical characteristic involves the licensing of embedded *Wh-* sentences. Lahiri (1990) notes that Berman's (1989) view on the quantificational variability of indirect questions entails that all factive predicates must be able to take embedded questions. Lahiri (1990) points out that this is not the case, and that apparent *Wh-* sentences selected by factive verbs actually are free relatives:

(51) a. * I regret whether John came to the party (=Lahiri 1990:23)

b. I regret what John saw (=Lahiri 1990:26)

It is however important to point out that factive verbs do take *Wh-* complements that are not free relatives. Factive verbs such as *like* and *hate* select complement clauses introduced by an adjunct *Wh-* element in both French and English.[11] It is important

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11 Some caution is in order here. Weerman (1989) points out that embedded *Wh-* clauses with *Wh-* phrases originating in argument positions are possible for factive verbs when the embedded clause has an exclamative value:

i. Henk regrets what a mess he has made (=Weerman 1989:(127b))

However, in this case the *Wh-* trigger clearly is related to the interpretive exclamative value of the embedded C in the same way root *Wh-* sentences can have an exclamatory value (*What a mess you*

to point out that these embedded clauses are not free relatives in adjunct positions, but complement clauses.[12]

(52) a. J'aime/ déteste quand/ comment tu chantes cette chanson
b. I love/ hate when/ how you sing that song
c. Je regrette combien d'efforts cette investigation vous a couté
d. I regret how much efforts this investigation has cost you

This is obviously not the case for nonfactive verbs:

(53) a. * Je veux/ prétends/ crois quand/ comment tu chantes cette chanson
b. * I want/ claim/ believe when/ how you sing that song

These observations prompt us to formulate a few remarks on the classical interpretation of *Wh-* sentences as involving questions and answers (Baker 1970, Bresnan 1972), on the licensing conditions for embedded *Wh-* sentences which should be specified in the grammar, and on the obligatoriness of *Wh-* movement in embedded clauses. First of all, it is important to realize that the value of C° which determines *Wh-* movement does not coincide with the interpretation of *Wh-* constructions as questions or answers. This should not come as a surprise, after all relative clauses involve *Wh-* movement without a question/ answer interpretation. There is no *a priori* reason in the grammar why *Wh-* movement should be tied to question/ answer interpretation. Once this link is untied, however, the question remains exactly what determines *Wh-* movement. It is not our purpose to investigate this question here. For our purpose, it is sufficient to state that *Wh-* elements in [Spec, CP] have to be licensed, in accordance with Rizzi's (1990b) interpretation of the Principle of Full Interpretation (Chomsky 1988). Following May (1985), Rizzi

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have made!). In short, the *Wh-* movement in (i) is not imposed by the selectional [+*Wh-*] properties of the matrix verb, but, importantly, it is not in contradiction with these "adjunct *Wh-*" properties of factive verbs either.

For *when* clauses in English, these sentences are also possible when the expletive *it* precedes the *Wh-* clause. Nigel Vincent informs me that *it* is obligatory for him with when clauses selected by factive verbs. For one anonymous reviewer, a verb such as *regret*, but not *hate* and *love*, require *it*.. We will not give an explanation for this variation. From a formal point of view, it can be argued that the expletive *it* is coindexed with the extraposed (possibly VP adjoined) *Wh-* clause. They are clearly not base generated as adjuncts.

ii. I love it_i $[\text{when you sing that song}]_i$
iii. * $[\text{When you sing that song}]_i$, I love it_i

Notice that the *Wh-* constructions with factive verbs are limited to tensed clauses:

iv. * J'aime/ déteste quand/ comment chanter cette chanson
v. * I love/ hate when/ how to sing that song

The reason for this is that untensed *Wh-* CPs have a deontic meaning (cfr Rooryck 1991b): *I asked him what to do* does not mean 'I asked him what I will do', but 'I asked him what I should/ can do'. This deontic, and hence unrealized truth value internal to the +*Wh* infinitive is incompatible with the existential truth value restriction imposed by the matrix factive verb on the sentential complement which is presupposed as a fact.

12 This can be shown by the scope of certain adverbs such as *really*. In (i), really has scope over the embedded sentence, whereas it only has scope over the object in (ii), but not over the free relative:

(i) I really love when you sing that song
(ii) I really love all mankind when you sing that song

(1990b:378) assumes that the occurrence and position of *Wh-* elements at LF is determined by principle (54), the *Wh-* criterion (=Rizzi 1990b:(9)):

(54) a. Each +*Wh-* X° must be in a Spec-Head relation with a *Wh-* phrase
b. Each *Wh-* phrase must be in a Spec-Head relation with a +*Wh-* X°

Obviously, in the case of embedded *Wh-* complements, the +*Wh-* value of C° is determined by the matrix verbs, following Bresnan (1972). More specific and largely unknown restrictions of the matrix verb determine the modalities of the restrictions on a +*Wh-* C°. It is well known that verbs of the *wonder* type always require a + *Wh* feature to be spelled out. Other verbs such as *know* can trigger a + *Wh* embedded C° depending on +*Wh-* conditions in the main clause. The contrast between (56a) and (56bc) illustrates that the embedded C° of verbs such as know and ask can be + or - *Wh*.

(55) a. I wonder whether/ *that George had this in mind long before the deadline
b. I wonder (when)/ what George had (this) in mind

(56) a. I know that George had this in mind long before the deadline
b. Do you know whether George had this in mind long before the deadline?
c. I know (when)/ what George had (this) in mind

We must conclude that the obligatory or optional appearance of a + *Wh* C° is somehow determined by lexical features. It seems that factive verbs, like verbs such as *know* and *ask*, select a ± *Wh* C°. The C° selected by factive verbs is only special in the sense that +*Wh* feature cannot be realized on this complementizer.

Obviously, the meaning of the verb determines the interrogative or declarative interpretation of the embedded *Wh-* clause. However, the existence of sentences such as (52) shows that providing the *Wh-* clause with such an interpretation is not a requirement for the matrix verb. Once the question/ answer interpretation is removed from the C° *Wh-* feature, the question as to whether (51b) is a free relative or not becomes important: it has to be determined whether *Wh-* movement in the complements of factive verbs is restricted to adjuncts or not. Some factive verbs such as *know* and *realize* obviously select *Wh-* complements with both arguments and adjuncts of the complement sentence in [Spec, CP], the traditional indirect questions/ answers. It is unclear whether this property can be generalized to all factive verbs. One well known difference between free relatives and indirect interrogatives is the Matching phenomenon: unlike indirect interrogatives, free relatives require that the phrase introducing the relative clause conform in category (and in some languages case) to the selectional restrictions and subcategorization requirements of the governing verb. This can be illustrated by the contrast between (57) and (58):

(57) a. I visited who you want
b. J'ai rencontré qui tu voulais que je rencontre
(=Hirschbühler 1976:(1a))
'I met whom you told me to meet'
c. He will go where no man has gone before
d I will visit the town with whom I want/ how/ when I want

(58) a. * I visited with whom you talked (=Harbert 1983:(1a))
b. * J'ai rencontré à qui tu m'as dit de parler (Hirschbühler 1978)
'I met with whom you told me to talk'

c. I play what/ *whom I found

If *Wh-* complements of some factive verbs do not have the properties of a *Wh-* element in [Spec, CP] whose selectional restrictions do not correspond to those of the matrix verb, we may conclude that the factive verb selects free relatives and not indirect questions. Factive *regret* does not easily select animate objects, and does not allow animate *Wh-* elements in the Spec position of the CP it selects.

(59) * I regret who John saw (=Lahiri 1990:(24))

Another difference between free relatives and indirect interrogatives is that only indirect interrogatives allow for adjectival *Wh-* phrases contained in NPs in French (60ab).[13] The sentence (60c) shows that *regretter* 'regret' patterns with free relatives in this respect:

(60) a. Je me demande quelle décision Jean a prise
'I wonder which decision John made'

b. * J'accepterai quelle décision Jean a prise
'I will accept which decision John made'

c. * Je regrette quelle décision Jean a prise
'I regret which decision John made'

We may conclude that factive verbs do assign a +*Wh-* feature which is not spelled out by the C° of the CP they select. This *Wh-* movement in the complements of factive verbs such as *love, hate, regret* seems to be restricted to adjuncts.[14]

This restriction is of course lexically determined by the restrictions of the matrix factive verb on C°, but it is important to find out why there is such a restriction in the first place. What is the property of C° restricting *Wh-* movement in factive complements to adjuncts? It seems that a close look at the interpretation of (52) may answer this question. In (61a), the embedded *when* can be replaced by *whenever*, showing that the embedded sentence has a universal operator in C°, following standard formal semantic analyses of *when-* clauses (Kamp 1981, Heim 1982). This *whenever* interpretation is obligatory in (61a). Interestingly, it is excluded for verbs selecting indirect interrogatives:

(61) a. I love when(ever) you sing that song

b. I asked you when(*ever) you sing that song

In French, there is another test to establish this difference. Nongeneric interrogative *when-* clauses can take what can be analysed as the complex C° morpheme *est-ce que/ c'est que* 'that' (62a), but it cannot appear in free relatives (62b).

(62) a. Quand est-ce/ c'est que tu chantes cette chanson?
'When [is it that] do you sing that song?'

b. Quand (*c'est/ est-ce que) tu chantes cette chanson,
tout le monde pleure.
'When [is it that] you sing that song, everybody weeps'

In embedded clauses, indirect interrogatives allow for *est-ce que/ c'est que* 'that', but this complex complementizer cannot appear in factive complements:

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13 French *quel(le)(s)* 'which' cannot have the 'whichever' interpretation available in English.

14 At first sight, it seems that factive verbs expressing cognition such as *know, realize* and *admit* allow for the classical indirect questions with both arguments and adjuncts of the embedded sentence in [Spec, CP]. Factive verbs expressing emotion (*love, hate, regret*) only seem to allow for *Wh-* adjuncts in the embedded [Spec, CP].

(63) a. Je me demande quand/ comment (est-ce que/ c'est que)
Jean a fait ça
'I wonder when/ how [it is that] he did that'
b. J'aime/ déteste quand/ comment (*est-ce que/ c'est que)
Jean a fait ça
'I wonder when/ how [it is that] he did that'

We would like to claim that the universal operator in C°, which is determined by the factive verb, is incompatible with the presumably existential value of *est-ce que/ c'est que* 'that'.[15] This universal operator in C° also explains the restriction of *Wh-* movement in factive complements to adjuncts. With the exception of free relatives, clauses involving *Wh-* movement of an argument, both interrogative and relative, always presuppose the existence of the *Wh-* moved element, either by the truth-functional properties of interrogation or by the predication involved in relative clauses. This referential property of certain *Wh-* elements has been emphasized recently by Rizzi (1990) and Cinque (1991) with respect to their possibilities for extraction. This characteristic can be represented as an existential property of C°.[16] It is likely, then, that the universal operator in the C° of factive complements in (52) conflicts with the existential value required by *Wh-* elements originating in argument positions. Only nonreferential or adjunct*Wh-*elements can move to the embedded [Spec, CP] position, since only these elements are compatible with a universal operator in C°. We may conclude that the embedded C° of factive verbs such as *love, hate* and *regret* receives from these verbs both a [+*Wh*] feature and the value of an universal operator.

How can this analysis of lexical restrictions on C° explain the problem of the restriction on subject/ adjunct extraction out of factive complements? We would like to suggest that these restrictions are related to the compatibility of the +*Wh-* feature of the embedded C° with the +*Wh-* feature of the higher C. A *Wh-* element which moves successive cyclically to the higher clause picks up the lexically determined +*Wh-* feature of the embedded C° by Spec - Head agreement when passing through the embedded [Spec, CP] position. It is not unreasonable to assume that the +*Wh-* value the *Wh-* element picks up in this embedded CP through Spec - Head agreement will be incompatible with the +*Wh-* feature of C° in the matrix clause. +*Wh-* values of the lower and the higher C° are communicated to the *Wh-* phrase by successive cyclic Spec - Head agreement (cfr principle (54)). As a consequence of the incompatibility of both +*Wh* values, the sentences receive a marginal

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15 This analysis may also explain why embedded interrogatives can be truncated, but not the embedded *Wh-* complements of factive verbs:
(i) I wonder when/ how
* I love/ hate when/ how
It seems that sentences with a universal operator in C° cannot be truncated.

16 Perhaps the *Wh-* criterion can be made more explicit with respect to the notion [+ *Wh*] feature. We do not really know what a*Wh-* feature is supposed to represent: as stated in Rizzi's*Wh-* criterion, the [+*Wh*] feature is is just an indexical device which does not reveal anything about the semantics of *Wh-* movement. We would like to tentatively propose that the [+ *Wh*] feature Rizzi has in mind really is an existential or universal operator. The existential operator is present in relative clauses predicated of a noun, and in embedded and root questions. The universal operator is present in free relatives, and optionally in the complement clauses of factive verbs. This analysis fits in nicely with Rooryck's (1991a) analysis of free relatives in which it is argued that free relatives are not headed by an empty noun, but are in fact bare CPs: if predication is related to the presence of an existential operator in relative clauses, there can be no predication in the case of free relatives since they involve a universal operator.

interpretation. This is what accounts for (1ab) with their values reassessed as in the sentences of (38-41) and (43-45). Adjunct *Wh-* traces have to be antecedent-governed. In other words, adjunct *Wh-* phrases have to move through the embedded [Spec, CP] position in order to be properly (antecedent-) governed. However, by doing so these *Wh-* elements will pick up the *+Wh-* value of the embedded C°, and cause a *Wh-* feature incompatibility in the higher [Spec, CP]. One might ask at this point why *Wh-* elements originating in subject position behave in the same way as adjunct *Wh-* elements: in the section on negative islands, we saw that subject traces can be head-governed and hence properly governed by an AGR-C°. However, this option is not available in the domain of a factive C°: Rizzi (1990a:57) explicitly limits the AGR-C° expansion to *-Wh* C°s. As a consequence, the *Wh-* trace of the subject in the embedded clause of factive verbs cannot be head-governed, since factive verbs select an embedded C° that is *+Wh*. Hence, the subject trace must be antecedent-governed, forcing the *Wh-* element to move through the embedded [Spec, CP] in the same way as *Wh-*elements originating in adjunct positions. We may conclude that subject and adjunct *Wh-* phrases do not have the option of moving out of the factive island without passing through [Spec, CP]. By moving out of the factive island through this embedded [Spec, CP] position, they always cause rather unacceptable *Wh-* feature compatibility conflicts upon arrival in the higher [Spec, CP]. The observation that subject extraction out of factive islands is on a par with adjunct extraction can thus be explained by the fact that the embedded C° cannot govern the trace in subject position, a fact which is in turn related to our claim that this embedded C° has a *+Wh-* feature.

It might even be argued that the echo interpretation in the interrogative sentences of (38-41) and (43-45) is the result of the impossibility of Spec - Head agreement in the matrix clause. Nonfactive verbs such as *believe* type verbs do not assign a *+Wh-* feature to their embedded C°. *Wh-* phrases moving successive cyclically to the higher clause do not pick up any *+Wh-* feature through Spec - Head agreement when passing through the embedded [Spec, CP]. No incompatibility arises, and the sentences are acceptable. This accounts for the sentences in (2). The *Wh-* compatibility requirement can be easily integrated into Rizzi's principle (54b) by including the exclusiveness in its formulation: each *Wh-* phrase must be in a Spec-Head relation with one and only one *+Wh-* X°

This explanation does not immediately account for the relative acceptability of (1c) and (37a). Recall however that the *Wh-* traces of internal arguments are theta-governed and hence properly governed, so that *Wh-* phrases originating in internal argument positions do not have to move through the embedded [Spec, CP]. In this way, *Wh-* phrases originating in internal argument positions do not pick up the *+Wh-* feature of the embedded C°. The *Wh-* phrases only cross CP which is a Barrier by inheritance from IP, and move to the matrix [Spec, CP]. This results in a weak *Wh-* island violation which is reflected in the judgments of (1c) and (37a). Our analysis then explains Adams' (1985:fn.1) observation that 'Factive verbs do not as a rule make good bridge verbs. Some speakers therefore find awkward any extraction out of factive complements. Even for these speakers, however, the relative subject - object asymmetry seems to hold'.

This analysis of the extraction of internal arguments out of the clausal complements of factive verbs offers an immediate explanation of the fact that Stylistic Inversion in French is only possible in clausal complements of nonfactive verbs, as observed by Kayne (1981) and Adams (1985).

(64) a. Le livre que Jean croit que Marie aime (=Adams 1985:(1a))
'The book that Jean believes that Marie likes'
b. Le livre que Jean croit qu'aime Marie (=Adams 1985:(1b))

(65) a. Le livre que Jean regrette que Marie aime (=Adams 1985:(2a))
'The book that Jean regrets that Marie likes'
b. * Le livre que Jean regrette qu'aime Marie (=Adams 1985:(2b))

According to our analysis, Stylistic Inversion in (65b) is impossible for the simple reason that there is no *Wh-* trace in the embedded [Spec, CP] of (65b). Notice that in our analysis, the absence of Stylistic Inversion in the clausal complements of factive verbs is exclusively linked to the presence of *Wh-* elements or their traces in [Spec, CP] as predicted by the analysis of Kayne & Pollock (1978).

4. CONCLUSION

With respect to negative islands, we have shown that the examples in (4-5) offer conclusive evidence against an account in terms of Relativized Minimality as proposed by Rizzi (1990a). Negation does not function as a potential governor for *Wh-* traces. We have argued that *believe* type verbs allow negation to bind the head C° of their embedded CP, thus effectively extending the scope of negation to the embedded CP. Neg- raising can then be viewed as an instance of an operator - variable relation from the matrix clause into the embedded clause. This option is disallowed for other verbs. *Wh-* elements moving to the higher [Spec, CP] through the embedded [Spec, CP] will pick up the negative value of C°. This then results in a structure where the *Wh-* element with the negative value in the higher [Spec, CP] is outside of the scope of its negative operator at S- structure. This structure is ruled out given standard assumptions about operator - variable relations.

A similar explanation involving the value of the embedded C° has been extended to extraction phenomena out of factive complements. In the case of extraction out of factives, the head C° of the CP selected by factive verbs has a +*Wh-* feature which is picked up by *Wh-* elements moving successive cyclically to the higher [Spec, CP], and is incompatible with the + *Wh-* feature of the higher C°, resulting in an unacceptable sentence. Importantly, the possibility of an embedded AGR-C° in the case of negative islands and the conspicuous absence of this possibility in the case of factive islands has allowed us to explain the fact that negative islands display argument vs. adjunct asymmetries whereas factive islands involve subject/ adjunct vs. object asymmetries. Factive islands are reduced to *Wh-* islands.

In the approach presented here, the restrictions on extraction of subject and adjunct *Wh-* phrases out of the sentential complements of both factive verbs and negated *believe* type verbs can be derived by the lexically determined value of the embedded C°, a +*Wh* feature and a negation-variable feature, respectively. Lexical semantic properties expressed on C° under government by the matrix verb interact with general principles of operator - variable relations, Spec-Head agreement, and feature compatibility to yield the desired array of data. The ECP is only indirectly involved in the explanation of the subject/ adjunct vs. object asymmetries discussed here by ensuring that subject and adjunct *Wh-* phrases move successive cyclically. With the exception of extraposition islands, all so-called 'weak' islands (Cinque 1991) can be reduced to cases of operator (*Wh*) islands or (C°) variable islands.

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