Do Indirect Questions Constitute Islands?

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1. Introduction

It is a traditional observation within generative grammar that indirect questions constitute islands. This observation is acceptable as a first approximation, but there are some residues which remain unaccounted for. First, as originally observed by Rizzi (1982), there is a crosslinguistic variation with respect to the $wh$-island effects. Rizzi observes that Italian allows $wh$-extraction out of an indirect question while English does not, as shown below (Cinque 1990:52):

1. (1) a. * [To whom] did you wonder [what they gave]?
   b. [A chi] ti chiedevi [che cosa avessero dato]?
   to whom you ask what thing have given
   ‘To whom did you wonder what they gave?’

Second, as observed by, among others, Chomsky (1986) and Cinque (1990), there is a tensed/untensed contrast with respect to the $wh$-island effects. $Wh$-extraction out of an untensed indirect question is allowed even in English (Cinque 1990:52):

2. [To whom] did you wonder [what to give]?

It has been pointed out, however, that these data are not so clear as originally assumed. First, as pointed out by, among others, Grimshaw (1986) and Cinque (1990), there is not such a clear contrast between English and Italian as originally assumed. English sentences like (1a) are not totally deviant. Italian sentences like (1b) are not perfect, and its status is perhaps similar to that of the corresponding English sentence (1a). Second, there is not a clear contrast between tensed and untensed indirect questions in English either. Sentences like (2), where the $wh$-phrase to whom is extracted out of an untensed indirect question, are not perfect.

In this paper, I will argue that English and Italian are indeed different from each other with respect to the existence of the $wh$-island effects. It is shown that if we carefully choose a type of $wh$-phrases extracted out of an indirect question, the crosslinguistic contrast emerges. I will also argue that a

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tensed/untensed contrast regarding the wh-island effects also emerges if we choose a certain type of wh-phrases as an extracted element. Developing the traditional subjacency-type analysis of the wh-island effects, I will propose a new analysis of the wh-island constraint based on the Phase Impenetrability Condition (PIC). It is shown that coupled with an economy condition on phrase structure building, the PIC provides a unified account for the English/Italian contrast and the tensed/untensed contrast. The organization of this paper is as follows. Section 2 shows that there emerge crosslinguistic and tensed/untensed asymmetries concerning the wh-island effects if we choose a D-linked wh-phrase as an extracted element. Section 3 proposes a new analysis of the wh-island effects, arguing that the PIC coupled with an economy condition on structure building can account for the hitherto unexplained asymmetries. Section 4 makes concluding remarks.

2. Crosslinguistic and Tensed/Untensed Asymmetries With the Wh-island Effects

In this section, I will show that there emerge crosslinguistic and tensed/untensed asymmetries with respect to the wh-island effects if we carefully choose a type of extracted wh-phrases. More specifically, it is shown that if we choose a D-linked wh-phrase in the sense of Pesetsky (1987) as an element extracted out of a wh-island, we can observe crosslinguistic and tensed/untensed asymmetries.

Let us first look at Italian data:

(3) a. Quale delle riviste ti ricordi/chiedi [quando] which of the magazine you remember/wonder when Gianni ha comprato\[1\]?
   have bought
   ‘Which of the magazines do you remember/wonder when Gianni bought’?

b. Quale dei prigionieri ti ricordi/chiedi [quando la] which of the prisoner you remember/wonder when the guardia ha giustiziato\[1\]?
   warden have executed
   ‘Which of the prisoners do you remember/wonder when the warden executed?’

(4) a. Quale delle riviste ti ricordi/chiedi [quando ha which of the magazine you remember/wonder when have comprato Gianni]?
   bought
‘Which of the magazines do you remember/wonder when Gianni bought’?

b. Quale dei prigionieri ti ricordi/chiedi [quando ha which of the prisoners you remember/wonder when have giustiziato la guardia]?
executed the warden
‘Which of the prisoners do you remember/wonder when the warden executed?’

(5) a. Quale delle riviste ti ricordi/chiedi [quando ha which of the magazine you remember/wonder when have comprato]?
bought
‘Which of the magazines do you remember/wonder when she/he bought’?

b. Quale dei prigionieri ti ricordi/chiedi [quando ha which of the prisoners you remember/wonder when have giustiziato]?
executed
‘Which of the prisoners do you remember/wonder when she/he executed?’

In (3–5), the D-linked wh-phrases, quale della riviste ‘which of the new books’ in (3–5a) and quale dei prigionieri ‘which of the prisoners’ in (3–5b), are extracted out of tensed indirect questions. In (3), there is an overt preverbal subject in the embedded clause. Since Italian is a null-subject language (see, among others, Perlmutter 1971 and Jaeggli and Safir 1989), the subject of the embedded tensed clause may be null as shown in (4). In (5), the embedded subject is inverted and placed postverbally. The results are all acceptable; the wh-island effects are nullified irrespectively of the existence and position of the embedded subject. This is in contrast with extraction of a non-D-linked wh-phrase out of an indirect question, which is illegitimate:

(6) a. *Chi ti domandi [chi ha incontarato]?
who you wonder who have meet
‘Who do you wonder who met?’
b. ??Chi non sai [che cosa ha fatto]?
who not now what thing have make
‘Who don’t you know what did?’ (Rizzi 1982: 51)
c. *Cosa ti chiedi [chi abbia letto]?
what you wonder who have read
‘What do you wonder who has read?’

(7) *Come non sai [che problema potremo risolvere]]?
how not know which problem could solve
'How don’t you know [which problem we could solve]?'
(Rizzi 1990: 88)

In (6), the non-D-linked wh-arguments, chi ‘who’ in (6a-b) and cosa ‘what’ in (6c), are extracted out of tensed indirect questions. In (7), the wh-adjunct come ‘how’, which is not D-linked, is extracted out of a tensed indirect question. The examples in (6) and (7) are all deviant.

Similar facts are observed in Spanish:

(8) a. Cual de los libros nuevos recuerdas/te preguntas
which of the books new remember/yourself ask
[cuando Luis compro]?
when bought
‘Which of the new books do you remember/wonder when
Luis bought?’

b. Cual de los prisioneros recuerdas/te preguntas [cuando
which of the prisoners remember/yourself ask when
el guarda ejecuto]?
the warden executed
‘Which of the prisoners at the cell do you
remember/wonder when the warden executed?’

(9) a. Cual de los libros nuevos recuerdas/te preguntas
which of the books new remember/yourself ask
[cuando compro Luis]?
when bought
‘Which of the new books do you remember/wonder when
Luis bought?’

b. Cual de los prisioneros recuerdas/te preguntas [cuando
which of the prisoners remember/yourself ask when
ejecuto el guarda]?
executed the warden
‘Which of the prisoners at the cell do you
remember/wonder when the warden executed?’

(10) a. Cual de los libros nuevos recuerdas/te preguntas
which of the books new remember/yourself ask
[cuando compro]?
when bought
‘Which of the new books do you remember/wonder when
she/he bought?’

b. Cual de los prisioneros recuerdas/te preguntas [cuando
which of the prisoners remember/yourself ask when
ejecuto]?
executed
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‘Which of the prisoners at the cell do you remember/wonder when she/he executed?’

(8-10), where the D-linked wh-phrase is extracted out of a tensed indirect question, are all acceptable. In contrast, extraction of a non-D-linked wh-phrase out of an indirect question is not allowed:

(11) a. *Qué te preguntas [dónde compró Luis]?
what you wonder where bought
‘What do you wonder where Luis bought?’
b. ??A cuántos te dijeron [si había invitado Carlos]?
how many whether have invited
‘How many did they tell you whether Carlos had invited?’

(12) *Cuándo no recuerdas [quién llegó a este país]?
when not remember who arrived in this country
‘When don’t you remember who arrived in this country?’

(Suñer 1991:305)

Unlike Italian and Spanish, however, English does not allow wh-extraction out of a tensed indirect question even when the extracted wh-phrase is D-linked:

(13) a. *Which of the new books do you remember/wonder [when John bought]?
b. *Which of the prisoners do you remember/wonder [when the warden executed]?
c. *Which of your old cars do you know/wonder [how your mechanic tuned up]?

Hence, the crosslinguistic asymmetry between Italian/Spanish and English with respect to the wh-island effects, which is assumed in Rizzi (1982) and Chomsky (1986), can in fact be observed if we choose a D-linked wh-phrase as an extracted element.

Like Italian and Spanish indirect questions, English untensed indirect questions do not function as islands for extraction of a D-linked wh-phrase as shown in (14), but do function as islands for extraction of a non-D-linked wh-phrase as shown in (15) and (16):

(14) a. Which of the new books do you remember/wonder [when to buy]?
b. Which of the prisoners do you remember/wonder [when to execute]?
c. Which of your old cars do you know/wonder [how to tune up]?

(15) a. ?What do you remember/wonder [when to buy]?
b. ?Who do you remember/wonder [when to execute]?
c. What do you know/wonder [how to tune up]?
(16) *How do you remember/wonder [which problem, to solve $t_j$]

Hence, the tensed/untensed asymmetry with respect to the $wh$-island effects, which is assumed in Chomsky (1986) and Cinque (1990), is also observed if we choose a D-linked $wh$-phrase as an extracted element.

It should also be pointed out that Italian/Spanish indirect questions and English untensed indirect questions are not always devoid of islandhood with D-linked $wh$-phrases. Despite the lack of the normal $wh$-island effects, Italian and Spanish exhibit the "double $wh$-island" effects:

(17) Italian
a. *Quale delle riviste in libreria sai [a quale which of the magazines at bookstore know to which studente si chiedano [perché abbiamo dato]]?`
   student they wonder why have given
   'Which of the magazines at the bookstore do you know [to which student they wonder [why we gave]]?'
b. *Quale dei prigionieri in carcere sai [a quale which of the prisoners at cell know to which poliziotto si chiedano [quando la guardia abbia policeman they wonder when the warden have consegnato]]?
   executed
   'Which of the prisoners at the cell do you know [to which policeman they wonder [when the warden handed over]]?'

(18) Spanish
a. *Cual de los libros nuevos que tienen en la librería which of the books new that have at the bookstore sabes/recuerdas [a que estudiante se preguntan know/remember to which student themselves ask [cuando dio Luis]]?
   when gave
   'Which of the new books that they have at the bookstore do you know/remember [to which student they wonder [when Luis gave]]?'
b. *Cual de los prisioneros de la celda sabes/recuerdas which of the prisoners at the cell know/remember [a que policia se preguntan [cuando to which policeman themselves ask when entregó el guarda]]?
handed over the warden
‘Which of the prisoners at the cell do you
know/remember [to which policeman they wonder
[when the warden handed over]]?’

As shown in (17–18), extraction out of an indirect question which is
embedded in another indirect question is impossible in Italian and Spanish
even if we choose a D-linked wh-phrase as an extracted element. The same is
true of untensed English indirect questions (cf. Frampton 1990):

(19) a. *Which book did you wonder [to which student to ask
[whether to give]]? (Manzini 1992: 5)
b. ?Which assignment did you ask [to whom to find out
[when to give]]?

In the next section, I will propose a new analyses of the wh-island effects
based on the notion of phase, arguing that it can account for the crosslinguis-
tic and tensed/untensed asymmetries.1

3. Proposal

3.1 Successive Cyclic Movement

Before turning to our analysis of the wh-island effects, I will explicate
successive cyclic movement under the notion of phase.

Chomsky (2000, 2001a, 2001b) proposes the Phase Impenetrability Con-
dition (PIC), which ensures that derivations proceed cyclically, i.e., phase by
phase, thereby reducing computational burden. Chomsky’s (2001a) formulation
of the PIC is given below (adapted from Chomsky 2001a:13):

(20) In \([ZP \ldots I_{HP} \alpha [I_{H} \ H \ YP]]\), where HP is a phase and ZP
is the next phase, the domain of H is not accessible to
operations at ZP.

Phases are propositional, i.e., vP and CP.2 What the PIC (20) claims is that
YP, the domain of H, is spelled out at the level of the next phase ZP and thus
not accessible to operations at ZP. Chomsky argues that this follows from the
fact that Spell-Out is subject to the following general condition on operations
(adapted from Chomsky 2001a:13):

(21) Ph\(\text{H}_1\) is interpreted/evaluated at the next phase Ph\(\text{H}_2\).

Chomsky then claims that the head of a phase may be assigned an EPP-
feature, which provides an “escape hatch” for successive cyclic A’-movement
through the edge. To allow the probe-goal theory of movement to apply to
successive cyclic A’-movement without change, Chomsky (2000) assumes that
the head of a phase without unerased φ-features may also be assigned a non-
specific peripheral feature (P-feature), which is contingent on the assignment
of the EPP-feature.
Let us look at Chomsky's analysis of successive cyclic wh-movement, taking (22) as an example:

(22) Where do you think that John bought that book t?

During its derivation, we construct the following structure:

(23) \[ [v_P \text{John} [\nu_{\text{EPP}, p} [v_P \text{bought that book where}_{[Q, \text{wh}, t]]}]] \]

Since the embedded light verb \( \nu \), which is the head of the embedded \( \nu P \) phase, has its \( \phi \)-features erased by the object \textit{that book}, it is assigned an EPP-feature and a P-feature. The \textit{wh}-phrase \textit{where} has a Q-feature, which is interpretable, and a \textit{wh}-feature, which is uninterpretable. P-feature is non-specific in the sense that it is not specified as a force, topic, or focus feature. It may enter into a matching relation with any feature that belongs to the peripheral system. The P-feature of \( \nu \) in (23), being a probe, seeks its goal, entering into a matching relation with the Q-feature of \textit{where}, a force feature. Chomsky assumes that P-feature is "defective" so that it is not capable of erasing the feature which activates the matched goal. In (23), the P-feature of \( \nu \), being "defective," does not erase the feature which makes the goal \textit{wh}-phrase active, that is, the \textit{wh}-feature. The EPP-feature of \( \nu \) requires \textit{where} to be merged in the outer Spec of \( \nu \). The EPP-feature and P-feature of \( \nu \), being uninterpretable, get erased, resulting in structure (24):

(24) \[ [v_P \text{\[Q, \text{wh}, t\]} [v_P \text{\[EPP, p\]} [v_P \text{bought that book } t]]]] \]

As the derivation proceeds, we construct the following structure:

(25) \[ [C_{\text{EPP}, p} [T_{\text{EPP}, p} [T_{\text{EPP}, p} \text{where}_{[Q, \text{wh}, t]} [v_P t_{\text{John}} [v_{[\text{EPP}, p]} [v_P \text{bought that book } t]]]]]] \]

The head of the embedded CP, which is a phase, is assigned an EPP-feature and a P-feature. The P-feature of \( C \), being a probe, seeks its goal. According to the PIC (20), \textit{where}, which is not in the domain of \( \nu \) but in its edge, is accessible to the operation at the CP-phase level. The P-feature of \( C \) agrees with the Q-feature of \textit{where}, which remains active due to the fact that its \textit{wh}-feature remains unerased. \textit{Where} raises to the Spec of \( C \) to satisfy the EPP-feature of \( C \), resulting in structure (26):

(26) \[ [C_{\text{EPP}, p} [T_{\text{EPP}, p} [T_{\text{EPP}, p} \text{where}_{[Q, \text{wh}, t]} [C_{\text{EPP}, p} [T_{\text{EPP}, p} \text{\[EPP, p\]} [T_{\text{EPP}, p} t_{\text{what}} [v_P t_{\text{John}} [v_{[\text{EPP}, p]} [v_P \text{bought that book } t]]]]]]]]] \]

\textit{Where} undergoes further successive cyclic movement, raising to the outer Spec of the matrix \( \nu P \) and then to the Spec of the matrix \( C \), its final landing site.

Contrary to Chomsky's claim that the head of a phase may be assigned an EPP-feature and a P-feature, however, there is evidence to suggest that it is only \( C \) but not \( \nu \) that may be assigned an EPP-feature and a P-feature. The first evidence comes from "\textit{wh}-agreement" facts: Successive cyclic A'-movement leaves a morphological reflex in the C-T system but not in the \( \nu \)-system.
Let us first look at a morphological reflex in the C-system. McClosky (1979) claims that in Modern Irish, when a *wh*-phrase is extracted out of a clause, that clause must be marked with a special complementizer *aL* instead of the usual complementizer *goN*, as shown below (McClosky 1979: 153):

(27) cé aL deir siad aL chum an t-amhrán sin

who C say they C composed that song

‘Who do they say wrote that song?’

We can attribute the emergence of special complementizer *aL* to the existence of ‘*wh*-agreement’ between C and the moved *wh*-phrase. We can account for this ‘*wh*-agreement’ by claiming that the complementizer *aL* is a morphological realization of the erasure of the uninterpretable features assigned to C, *i.e.*, the EPP-feature and the peripheral feature (Q- or P-feature).

Successive cyclic A’-movement also leaves a morphological reflex in the agreement system headed by T in languages like Chamorro (Chung 1994), Kikuyu (Clements 1984), Palauan (Georgopoulos 1985), Hausa (Haïk 1990), and Moore (Haïk 1990). Let us look at Palauan as an example (CL = cleft, PF = perfective, R = realis, IR = irrealis) (Georgopoulos 1985: 67):

(28) a. ng-te?a [a-kileld-ii a sub i]

   CL who R-PF-heat-3s soup

   ‘Who heated up the soup?’

b. ng-ngerai [a le-silseb-ii ti a se?el-il]

   CL what IR-3 PF-burn-3s friend 3s

   ‘What did his friend burn?’

Palauan exhibits an agreement between an extracted *wh*-phrase (or a comparable phrase) and the mood of a clause, which is an element of T. The basic word order in Palauan is VOS. As shown in (28a), when a subject *wh*-phrase (or a comparable phrase) is extracted out of a clause, that clause is marked by realis mood morphology. When a non-subject *wh*-phrase (or a comparable phrase) is extracted of a clause, on the other hand, that clause is marked by irrealis mood morphology, as shown in (28b). It should also be noted that every clause between an extracted *wh*-phrase and its trace is affected by this agreement (IM = imperfective, P = preposition) (Georgopoulos 1985: 81):

(29) ng-te?a [a l-ilsa a Miriam [el milngiu a buk er

   CL who IR-3 PF-see COMP R-IM-read book P

   ngii i]]

   her

   ‘Who did Miriam see reading her book?’

Since the subject *wh*-phrase is extracted out of the embedded clause, the mood of the clause is realis. Georgopoulos claims that the mood of the matrix
clause registers agreement with the complement CP out of which the wh-phrase is extracted. Since the complement CP is not a subject in (29), the mood of the matrix clause is irrealis. Let us assume that there are some features of CP relating to its subject/non-subject property. Let us also assume that those features of the complement CP percolate down to the wh-phrase when the wh-phrase lands in the Spec of the embedded C on its way to the Spec of the matrix C (see Chung 1994). Then, agreement on the matrix T can also be accommodated under "wh-agreement" between a wh-phrase and T. Although we do not go into the detailed mechanism of "wh-agreement" in Palauan, we can account for the Palauan "wh-agreement" in a similar way as the one in Modern Irish if we assume with Chomsky (2001b) that C and T are functioning as a unit inducing agreement. Given this assumption, "wh-agreement" between T and a wh-phrase can be a morphological realization of some feature of a wh-phrase and the erasure of the uninterpretable EPP-feature and the peripheral feature (Q- or P-feature) of C. As exemplified by Irish and Palauan facts, "wh-agreement" in the C-T system, whose morphological realizations are (at least partly) attributed to the erasure of the EPP- and Q/P-features of C, emerges not only in the matrix interrogative clause but also in the embedded non-interrogative clause. Hence, "wh-agreement" in the C-T system constitutes evidence in favor of the claim that the embedded non-interrogative C may be assigned an EPP-feature and a P-feature.

There is apparent evidence to show that v also exhibits a morphological realization of successive cyclic A'-movement. Kayne (1989) claims that past participles in French exhibit agreement with objects when the objects are moved to an A'-position (Kayne 1989: 85):

(30) les chaises que Paul a repeintes
the chairs COMP has repainted

"the chairs that Paul has repainted"

One might argue that the EPP- and P-features assigned to v contribute to a morphological realization of the past participle agreement in the following way. The EPP- and P-features of v trigger movement of a wh-phrase to the Spec of v, erasing these uninterpretable features. The erasure of these feature results in the morphological realization of agreement on the past participle, which is raised to v. It has been pointed out by Branigan (1992), however, that in long-distance movement, a wh-phrase only triggers the past participle agreement in the clause where it originates but not in the other clauses, as shown below:

(31) *la lettre [qu’il a dit que Claire lui] the letter that he has said-FEM-SING that Claire to him
a envoyé] has sent-FEM-SING

‘the letter that he has said that Claire has sent to him’

If the EPP- and P-features of \(v\) were involved in the past participle agreement, the matrix past participle would also agree with the \(wh\)-phrase. In other words, just as in the case of the C-T agreement system in Irish and Palauan, every past participle between the extracted \(wh\)-phrase and its trace would be affected by the past participle agreement. As shown in (31), however, the matrix past participle does not exhibit any agreement. This suggests that the past participle agreement in French cannot be a morphological reflex of successive cyclic A’-movement. Hence, the past participle agreement in French does not constitute evidence in favor of Chomsky’s claim that \(v\) may be assigned an EPP-feature and a P-feature.

There is also theoretical evidence to suggest that \(v\) may not be assigned any EPP- or P-feature. Chomsky (2000) argues that only a probe with a full complement of relevant features is capable of erasing the feature which makes an element active as a goal. For example, when T has a full complement of \(\phi\)-features, it erases the structural case feature of a goal DP. A defective T, on the other hand, does not have a full complement of \(\phi\)-features but only a [person] feature. It does not erase the structural case feature of a goal DP, which enables us to move the DP in a successive cyclic manner. Chomsky (2000) argues that P-feature is analogous for the [person] feature of a defective T. P-feature is defective so that it does not erase the \(wh\)-feature of a \(wh\)-phrase, which enables us to move the \(wh\)-phrase in a successive cyclic fashion. There is a case where C is assigned a Q-feature, a full complement of peripheral features, and thus triggers \(wh\)-movement to its Spec as the final landing site. By analogy with the T-system, it is reasonable to claim that we also have a defective C, which is not assigned a full complement of peripheral features, i.e., a Q-feature, but only a P-feature. However, we never find any cases where \(v\) is assigned a Q-feature, a full complement of peripheral features. A \(wh\)-phrase never moves to the Spec of \(v\) as the final landing site. This casts serious doubt on Chomsky’s claim that there is a defective \(v\), since it is unnatural to claim that \(v\), which is never assigned a full complement of peripheral features, may be assigned a P-feature.

If our discussion above is correct in claiming that C, but not \(v\), may be assigned an EPP-feature and a P-feature, the question now arises as to how to ensure successive cyclic A’-movement. I will argue that given (21), which claims that interpretation/evaluation for a phase is at the next highest phase, we can ensure successive cyclic A’-movement without assuming that \(v\) may be assigned an EPP-feature and a P-feature. Let us consider (22) (repeated here as (32)) as an example:
(32) Where do you think that John bought that book? 
During its derivation, we construct the embedded vP:

(33) \[ [v\ [vP \text{ bought that book where}]] \]

In (33), the head v of vP is not assigned any EPP- or P-feature. At this stage, we move the wh-phrase where to the edge of v, the vP-adjoined position:

(34) \[ [vP \text{ what} \ [vP \text{ John} \ [v \ [vP \text{ bought } t]]]] \]

One might argue that this movement operation should not be allowed, since it is not triggered by any features and thus violates an economy condition which bans superfluous steps in a derivation. Recall, however, that interpretation/evaluation for a phase takes place at the next phase. Interpretation/evaluation for the embedded vP phase, which includes whether or not movement of where to the embedded vP-adjoined position violates the economy condition, takes place at the next phase, i.e. the embedded CP phase. At the embedded CP phase, whose head C is assigned an EPP-feature and a P-feature, movement of where is triggered by these uninterpretable features. Hence, movement of where to the embedded vP-adjoined position does not violate the economy condition. This yields the embedded CP phase:

(35) \[ [CP \text{ what} \ [C_{\text{EPP}}, P] \ [TP \text{ John} \ [T \ [vP \text{ t' } [vP \text{ bought } t]]]]]] \]

The rest of the derivation proceeds in a similar fashion. Hence, we can ensure successive cyclic A’-movement without assuming that v may be assigned an EPP-feature and a P-feature.

3.2 A PIC Analysis of the Wh-islands

In this subsection, I will propose a PIC analysis of the wh-island effects. It is shown that coupled with an economy condition on structure-building, the PIC accounts for the asymmetries with the wh-island effects.

Let us first consider tensed indirect questions in English, which always constitute islands, taking (36) as an example:

(36) *What do you wonder [when John bought]?
During its derivation, we construct the embedded vP phase:

(37) \[ [vP \text{ John} \ [v \ [vP \text{ bought what} \ [\text{when}]]]] \]

Let us assume following Boskovic (1997) that when is base-generated right-adjoined to VP. At this stage, when moves to the vP-adjoined position. Although this movement operation is not triggered by any features at this stage, its evaluation concerning the economy condition takes places at the embedded CP phase. At the embedded CP phase, the EPP- and Q-features of the embedded C trigger movement of when, and thus movement of when to the vP-adjoined position is allowed. This yields (38):

(38) \[ [CP \text{ when} \ [C_{\text{EPP}, Q}] \ [TP \text{ John} \ [T \ [vP \text{ t' } [vP \text{ tJohn}}]]]] \]
[v [vP [vP bought what]]]}

There is, however, no way of moving the other \textit{wh}-phrase \textit{what} from its original position. When we come to the stage where the Q-feature of the matrix \( C \) seeks its goal, \textit{what} is not accessible to the operation at the matrix \( CP \) level due to the PIC (20). This derivation crashes; the deviancy of (36) follows.

Let us next consider extraction out of infinitival indirect questions in English. Before we come on to that, let us take pause here to look at the past participle agreement in French. As mentioned in 3.1, past participles in French exhibit agreement with objects when the objects are moved to an \( A' \)-position. As argued by, among others, Rizzi (2000a) and Boeckx (2001), the past participle agreement is also contingent on D-linking (Rizzi 2000a: 165):

(39) Dis-moi combien de fautes tu as faites
tell me how many of mistakes you have made
‘Tell me how many mistakes you have made.’

(39) is only acceptable with the D-linked interpretation of \textit{combien de fautes}
‘how many mistakes.’ In contexts where the \textit{wh}-phrase cannot receive a D-linked interpretation, the past participle agreement is excluded (Boeckx 2001: 13):

(40) Combien de fautes en plus Jean a-t-il commis(*-es)?
how many of mistakes more Jean has he made
‘How many additional mistakes did Jean make?’

Based on this observation, I argue that a past participle raises to \( v \) and its agreement is a morphological realization of features assigned to \( v \), \textit{i.e.}, \( \phi \)-features and a feature related to D-linking. Since not only D-linked \textit{wh}-phrases but also clitics and relative operators trigger the past participle agreement in French (see Kayne 1989), it is more appropriate to claim that the relevant feature of \( v \) is related to the more general notion of referentiality in the sense of Cinque (1990), under which the notion of D-linking is subsumed.

In the past participle agreement construction, the referential feature of \( v \) functions as a probe and seeks its goal, a D-linked \textit{wh}-phrase. The D-linked \textit{wh}-phrase then raises to the edge of \( v \). Since the \( \phi \)-features of \( v \) match with those of the D-linked \textit{wh}-phrase, they also undergo agreement, which is morphologically realized on the past participle raised to \( v \). It is important to note that movement of a D-linked \textit{wh}-phrase to the edge of \( v \) is triggered by the referential feature of \( v \).

I also argue that a moving D-linked \textit{wh}-phrase goes through a \( vP \)-adjoined position rather than the Spec of \( v \) on its way to its final landing site.\(^3\) If a D-linked \textit{wh}-phrase went through the Spec of \( v \), we would expect that referential non-operator objects may also undergo movement (object shift) to
the Spec of v, checking the referential feature and the \( \phi \)-features of v and triggering the past participle agreement. As shown below, however, *ces tables* 'these tables' never induces the past participle agreement, though it is referential (Kayne 1989: 87):

\[
\begin{align*}
(41) \ & \text{*Paul a ces tables repeintes.} \\
& \text{Paul has these tables repainted} \\
& \text{‘Paul has repainted these tables.’}
\end{align*}
\]

One might argue that since \( V \) moves to the T-domain in French crossing over a shifted object in the Spec of v (see, among others, Pollock 1989), (41), where the object precedes the verb, can be ruled out on independent grounds. Referential non-operator objects, however, do not exhibit any past participle agreement even in (42), where the object follows the verb (cf. Kayne 1989):

\[
\begin{align*}
(42) \ & \text{*Paul a repeintes les tables.} \\
& \text{Paul has repainted the tables} \\
& \text{‘Paul has repainted the tables.’}
\end{align*}
\]

If we assume that a D-linked *wh*-phrase goes through a vP-adjoined position, on the other hand, we can account for the fact that referential non-operator objects like *les tables* never exhibit the past participle agreement. This is because a vP-adjoined position, where an argument never appears, cannot be the target of object shift, an A-movement.

I argue that there is always an agreement relation between a moving D-linked *wh*-phrase and \( v \) in its original clause based on their referential features, though it is only morphologically realized if the \( \phi \)-features of \( v \) match with those of the *wh*-phrase in the French past participle construction. In other words, a D-linked *wh*-phrase always undergo feature-driven movement to a vP-adjoined position in its original clause on the way to its final landing site.

Before returning to the main task, it is useful to discuss a PRO subject. Following Contreras (1987) and Baltin (1995), I claim that a PRO subject does not raise to the Spec of T, but remains in-situ, *i.e.*, in the Spec of \( v \). Baltin presents arguments in favor of his claim, one of which is based on floating quantifier facts. Floating quantifiers can appear before the infinitival marker *to* when the infinitival subject is lexical or a trace as shown in (43), but they cannot when the infinitival subject is PRO as shown in (44) (Baltin 1995: 200):

\[
\begin{align*}
(43) \ & \text{a. They seem all to be happy.} \\
& \text{b. I would prefer for these people all to leave.} \\
(44) \ & \text{*They try all to leave.}
\end{align*}
\]

Baltin argues that floating quantifiers are required to be adjoined to predicates. Baltin assumes with Williams (1980) and Rothstein (1983) that predicates require c-commanding subjects. Since the T's in (43) *to be happy* and *to
leave have c-commanding subjects, i.e., the trace of they in (43a) and these people in (43b) respectively, they are predicates. Then, in (43), the floating quantifier all is adjoined to the T' predicate and thus allowed to appear before to. In (44), the floating quantifier all is also adjoined to T'. Given that a PRO subjects remains in the Spec of v throughout the derivation, however, the T' in (44) is not a predicate. This is because the T' does not have any c-commanding subject. Hence, the floating quantifier all is not adjoined to a predicate and thus not allowed to appear before to. It should be noted that if a PRO subject raised to the Spec of T just like a lexical subject, we could not account for the difference in acceptability between (43) and (44).

Another evidence comes form wanna-contraction facts. As noted by Lightfoot (1977) and others, wanna-contraction is not blocked by a PRO subject of the infinitive as shown in (45), whereas it is blocked by an A' -trace as shown in (46) (Baltin 1995: 244):

(45) I wanna visit Sally.
(46) *Who do you wanna visit Sally?

Under Baltin's analysis of a PRO subject, the contrast between (45) and (46) can be accounted for straightforwardly. Since a PRO subject remains in the Spec of v, it never intervenes between want and to and thus does not block wanna-contraction.

Let us return to infinitival indirect questions in English, which constitute islands for extraction of non-D-linked wh-phrases but not for that of D-linked wh-phrases, as exemplified by (14a) and (15a) (repeated here as (47) and (48)):

(47) Which of the new books do you remember/wonder [when to buy]?
(48) ?What do you remember/wonder [when to buy]?

Let us first consider (47). During its derivation, we construct the embedded vP phase:

(49) \[ vP \ PRO \ [v_{[R]} \ [v_{[VP]} \ [v_{[VP]} \ buy \ which_{[Q, \ wh-]} \ of \ the \ new \ books] \ when_{[Q, \ wh-]}]] \]

In (49), v is assigned a referential feature [R], triggering adjunction of the D-linked wh-phrase which of the new books to vP:

(50) \[ \[v_{[VP]} \ which_{[Q, \ wh-]} \ of \ the \ new \ books]_{i} \ [v_{[VP]} \ PRO \ [v_{[R]} \ [v_{[VP]} \ buy \ t_{j}] \ when_{[Q, \ wh-]}]] \]

We then adjoin when to the embedded vP, yielding (51):

(51) \[ \[v_{[VP]} \ when_{[Q, \ wh-]} \ [v_{[VP]} \ which_{[Q, \ wh-]} \ of \ the \ new \ books]_{i} \ [v_{[VP]} \ PRO \ [v_{[IF]} \ [v_{[VP]} \ buy \ t_{j}] \ t_{j}]] \]]

It should be noted that although this movement operation is not triggered by any features at this stage, its evaluation concerning the economy condition takes places at the next phase. Hence, if the EPP- and Q-features of the head
of the next phase trigger movement of *when* to the Spec of its edge, adjunction of *when* to vP is allowed.

We then construct the following phase:

\[(\text{52}) \quad \text{[[C-T to}_{\text{EPP, Q}}] \text{[vP when}_{\text{Q, wh-1}}] \text{[vP which}_{\text{Q, wh-1}}] \text{of the new books}_{i} \text{[vP PRO [v [vP buy t_j} t_j]]]}
\]

In (52), the PRO subject remains in the Spec of v. What is more noteworthy is that C and T are expressed in a single head. It has been claimed by, among others, Grimshaw (1991), Chomsky (2001b), and Pesetsky and Torrego (2001) that there is a close relationship between C and T. Grimshaw expresses this relation in terms of the notion of extended projection, claiming that both CP and TP are extended projections of V. Pesetsky and Torrego capture this relation in terms of T-to-C movement. Chomsky claims that it is CP but not TP that is the minimal construction which includes Tense and event structure. T has tense and event structure only as a reflex of the C-T relation. I argue that this close relationship between C and T also has an effect on structure building. More specifically, I argue that there is an option of merging C and T into a single head. This option is preferred over the option of selecting two heads, *i.e.*, C and T, unless it is not available because of the activation of the Spec of T. This follows from the principle of avoid structure proposed by Rizzi (2000b), an economy condition on structure building (Rizzi 2000b: 314):^4

(53) Avoid structure

In (52), since a PRO subject does not raise to the Spec of T but remains in-situ, the Spec of T is not activated. According the principle of avoid structure (52), C and T should be merged into a single head, *i.e.*, C-T. The EPP- and Q-features of the merged C-T head, which counts as the head of a phase, trigger movement of *when* to its edge. This yields the following structure:

\[(\text{54}) \quad \text{[[C-T to}_{\text{Q, wh-1}}] \text{[vP t_j} \text{[vP which}_{\text{Q, wh-1}}] \text{of the new books}_{i} \text{[vp PRO [v [vP buy t_j} t_j]]]}
\]

We then construct the matrix vP phase:

\[(\text{55}) \quad \text{[vP you remember/wonder [C-T to}_{\text{Q}}] \text{[vP which}_{\text{Q, wh-1}}] \text{of the new books}_{i} \text{[vP PRO [v [vP buy t_j} t_j]]]}
\]

According to the PIC (20), the *wh*-phrase *which of the new books*, which is adjoined to the embedded vP, is accessible to operations at the matrix vP. I claim that an element is in the domain of H when the element is dominated by the domain. In (55), the domain of C-T is the embedded vP. The *wh*-phrase *which of the new books* is not dominated by the embedded vP, however, if we assume the definition of domination based on the category/segment distinction put forth by May (1985) and Chomsky (1986). The *wh*-phrase *which of
the new books is allowed to be adjoined to the matrix vP at this stage:

\[(56) \text{[vP which}_{ijQ, \text{wh-}} \text{ of the new books}_{i} \text{[vP you remember/wonder } \text{[C-TP when}_{ijQ} \text{[C-T to } \text{[vP } t'_{i} \text{[vP PRO [v [vP [vP buy } t_{j} \text{tj]]]]]]] \]
\]

Although this movement operation is not triggered by any features at this stage, its evaluation concerning the economy condition takes places at the next phase, *i.e.*, the matrix CP phase. At the matrix CP phase level, the EPP- and Q-features of the matrix C trigger movement of which of the new books to its Spec. This licenses adjunction of which of the new books to the matrix vP. This yields (47). Hence, our PIC analysis of the wh-island effects correctly predicts that (47) is acceptable.

Let us next consider (48). During its derivation, we construct the embedded clause:

\[(57) \text{[vP when}_{ijQ, \text{wh-}} \text{ of the new books}_{i} \text{[vP [vP buy } \text{what}_{ijQ, \text{wh-}} \text{ tj]]]]]] \]

In (57), when first adjoins to the embedded vP and then moves into the Spec of the embedded C-T. It should be noted that the other wh-phrase what remains in its original position, since what, which is not D-linked, cannot undergo feature-driven movement to the embedded vP-adjoined position even if the embedded v is assigned a referential feature [R]. The wh-phrase what cannot undergo non-feature-driven adjunction to the embedded vP either, since what does not undergo feature-driven movement at the next phase, *i.e.*, the embedded CP phase, where this movement is evaluated. The non-D-linked wh-phrase what is within the domain of C-T and thus not accessible to operations at the matrix vP or CP due to the PIC (20). This derivation crashes; the deviancy of (48) follows. We can also account for the fact that adjunct wh-phrases like why and how cannot be extracted out of indirect questions, since adjunct wh-phrases are never D-linked.

Recall that tensed indirect questions always constitute islands irrespectively of whether extracted wh-phrases are D-linked or not. Let us consider how our proposed analysis accounts for the fact that even D-linked wh-phrases cannot be extracted out of tensed indirect questions, taking (13a) (repeated here as (58)) as an example:

\[(58) *\text{Which of the new books do you remember/wonder [when John bought]?} \]

During its derivation, we construct the embedded CP:

\[(59) \text{[CP when}_{ijQ, \text{wh-}} \text{ of the new books}_{i} \text{[vP [vP buy } \text{what}_{ijQ, \text{wh-}} \text{ tj]]]]]] \]

In (59), the D-linked wh-phrase which of the new books adjoins to the embedded vP to satisfy the referential feature of v. When first adjoins to the
embedded vP and then moves into the Spec of the embedded C. The D-linked wh-phrase what, however, is within the domain of C and thus not accessible to operations at the matrix vP or CP due to the PIC (20). This derivation crashes; the deviancy of (58) follows.

The above discussion has shown that our proposed analysis can account for the tensed/untensed asymmetry regarding the wh-island effects in English. As shown in section 2, Italian and Spanish indirect questions behave in the same manner as English untensed indirect questions in that they do not function as islands for extraction of a D-linked wh-phrase, but do function as islands for extraction of a non-D-linked wh-phrase. I argue that Italian and Spanish facts also follow from our proposed analysis. It has been observed by, among others, Rizzi (1982) and Jaeggli and Safir (1989) that Italian and Spanish, being null subject languages, allow free subject inversion, which places overt subjects in postverbal positions. This fact leads Contreras (1987) and Suner (1994) to argue that overt subjects in Italian and Spanish can be assigned Case without raising to the Spec of I (the Spec of T in the present framework). It then follows that overt subjects, whether they appear preverbally or postverbally, do not have to raise to the Spec of T for case-theoretic reasons, but they may remain in-situ, i.e., within vP in the present framework. Furthermore, Contreras (1987) argues that the null subject pro appears in the same position as an overt preverbal subject, i.e., in the Spec of v in the present framework, and thus never appears in the Spec of T. If these analyses are on the right track, Italian and Spanish subjects do not appear in the Spec of T but remain within vP, exactly like PRO subjects in English. Then, our proposed analysis can account for the wh-island effects in Italian and Spanish in the same way with those in English untensed indirect questions.

### 3.3 Double Wh-islands

As mentioned in section 2, Italian/Spanish indirect questions and English untensed indirect questions are not always devoid of islandhood with D-linked wh-movement. Despite the lack of the normal wh-island effects, Italian/Spanish indirect questions and English untensed indirect questions exhibit the “double wh-island” effects. Let us consider English untensed indirect questions, taking (19a) (repeated here as (60)) as an example:

(60) *Which book did you wonder [to which student to ask [whether to give]]

As the derivation proceeds, we build the following structure:

(61) [C-TP to which$_{[O]}$ student$_{[I]}$ [[C-T to] [vP t'$_{[i]}$ [vP PRO ask [C-TP whether$_{[O]}$ [[C-T to] [vP t'$_{[i]}$ [vP PRO give which book t$_{[i]}$]]]]]]]

In (61), the D-linked wh-phrase to which student first raises to the most
embedded vP-adjoined position, where it checks the referential feature of \( \nu \). At the intermediate vP phase level, to which student raises from the most embedded vP-adjoined position to the intermediate vP-adjoined position. Although this movement is not triggered by any features, its evaluation takes place at the next phase, i.e., the intermediate C-T phase level. Since at the intermediate C-T phase level, to which student raises to the Spec of C-T to check the EPP- and Q-features of C-T, movement of to which student from the embedded vP-adjoined position to the intermediate vP-adjoined position is allowed. The other wh-phrase which book, however, still remains in its original position and thus not accessible to operations at the matrix vP or CP due to the PIC (20) This derivation crashes; the deviancy of (60) follows. The “double wh-island” effects with Italian/Spanish indirect questions can also be accounted for in a similar way.

4. Conclusion

This paper has first shown that the crosslinguistic and tensed/untensed asymmetries regarding the wh-island effects emerge if we choose a D-linked wh-phrase as an extracted element. I have then proposed a PIC analysis of the wh-island effects, arguing that coupled with the economy condition on structure building, it provides a straightforward account of the asymmetries.

Finally, I will briefly point out theoretical issues raised by our proposed analysis. First, if our proposed analysis is on the right track, it constitutes support for a derivational approach to a language and against a representational approach. Recall that our analysis crucially makes use of the notion of phase. Let us assume with Chomsky (2000, 2001a, 2001b) that phases are assembled to form unified linguistic levels, PF and LF; otherwise no legitimate derivation is formed. The notion of phase is available during structure-building but obscured in the output representation, where phases are put together. Our analysis is only valid under a derivational approach but not under a representational approach, presenting evidence in favor of the former.

Second, our analysis crucially assumes with Chomsky (2001a. 2001b) that interpretation/evaluation takes place locally, specifically at the next phase. Within the theory of computational complexity, it is generally agreed that local considerations induce less computational complexity than global ones (see, among others, Chomsky 1995, Fukui 1996, and Ishii 1997). As argued by Chomsky (2000), however, it is not clear whether computational complexity matters for a cognitive system like language, which does not involve any processing but only stores information. In other words, we need to seek a resolution of this local versus global issue on empirical grounds. Our
analysis presents a local analysis of the *wh*-island effects, constituting support in favor of the language design that language is local in nature.

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1 One might argue that the tensed/untensed asymmetry can be accommodated by the Tense-island constraint, which bans extraction out of a tensed clause. However, putting aside the problem of how to formulate the Tense-island constraint, it cannot account for the fact that while D-linked *wh*-phrases can be extracted out of untensed indirect questions, non-D-linked *wh*-phrases cannot. Furthermore, the Tense-island constraint has nothing to say about the crosslinguistic asymmetry, since, as shown above, Italian and Spanish allow a D-linked *wh*-phrase to be extracted out of an indirect question even if the interrogative clause is tensed. The analysis to be proposed here, on the other hand, provides a unified account for the two asymmetries.

2 Unlike Chomsky (2001a, 2001b), the discussion to follow does not assume a distinction between strong and weak phases.

3 See Kayne (1989) for a similar view. See Lee (1994) and Saito and Fukui (1998) for related discussion.

4 See, among others, Safir (1993), Chomsky (1995), and Boskovic (1997) for similar views.

References


Do Indirect Questions Constitute Islands?

Press.


