

Parasitic Gaps: A History

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The parasitic gap (henceforth P-gap) construction is exemplified by the following examples. The first gap, marked *t*, is called a “true gap” because it is in a position that normally permits extraction; e.g., *which articles did John file t*.² The second gap, marked *pg* for “parasitic gap,” appears in a location that normally does not permit extraction.³

- (1) a. Which articles did John file *t* without reading *pg*? [E83:5,(1)]
- b. This is the kind of food you must cook *t* before you eat *pg*. [E83:5,(2)]

The key property of the P-gap construction is that a single filler, e.g. *which articles*, is the antecedent of more than one gap. Engdahl (1983) notes the following examples in support of this point.

- (2) a. Here is the paper that John read t before filing pg. [E83:14,(35a)]
- b. ?Here is the paper that John read his mail before filing t. [E83:14,(35b)]
- c. Here is the paper that John read t before filing his mail. [E83:14,(35c)]
- (3) a. Who did John's talking to pg bother t most? [E83:14,(36a)]
- b. ?Who did John's talking to t bother you most? [E83:14,(36b)]
- c. Who did John's talking to Mary bother t most? [E83:14,(36c)]

The ungrammatical examples are typical violations of extraction constraints (Chomsky (1973); Chomsky (1981); Chomsky (1986)).

The first section of this introductory chapter summarizes and gives examples to illustrate what I will call the Current Consensus Position (CCP) on P-gaps, much of it based on Engdahl's seminal work. Not surprisingly, almost everything that has been claimed about P-gaps has been challenged in the literature at one time or another, and the central sections of this chapter explore the variety of factual and theoretical issues that have been touched on since Engdahl (1983).

1. In the beginning: Engdahl (1983)

The study of P-gaps was effectively initiated by the publication of Engdahl (1983), although the phenomenon had been noted previously (Ross (1967); Bresnan (1977)⁴; Taraldsen (1981)). We reprint Engdahl's paper in this collection because it not only describes the phenomenon of P-gaps in some detail, but it systematically identifies the majority of the important questions that have attracted the attention of researchers since its publication. I highlight the essential points here.

The canonical P-gap examples are given in (1). Engdahl observes that even where a P-gap is licensed, native speaker judgments vary according to the precise configuration in which the P-gap appears. For example, she notes that while P-gaps in subordinate clauses are often quite acceptable (cf. (1a) and (2a)), acceptability declines for English P-gaps when the subordinate clause is tensed.

- (4) a. Who did you tell t that we were going to vote for pg? [E83:11,(18)]
b. Which colleague did John slander t because he despised pg? [E83:11,(19)]

The question of precisely where a P-gap may appear, and what properties of its local domain might affect its acceptability, concern what I will call the "domain of the P-gap." As far as I know there is no consensus position on this question.

A second question discussed by Engdahl concerns the configurational properties of the antecedent. The examples that we have already considered show that a P-gap is licensed by an antecedent in an A'-position. The following show that a P-gap is (apparently) also licensed by Heavy NP Shift (see (5)), Object Raising (see (6)), and object deletion (see (7)).

- (5) John offended t by not recognizing pg immediately [_{NP} his favorite uncle from Cleveland]. [E83:12,(26)]
- (6) These papers were hard for us to file t without reading pg. [E83:12,(28)]
- (7) This book is too interesting to put t down without having finished pg. [E83:13,(29)]

Engdahl suggests (p.13) that the key factor determining the appropriateness of a constituent as an antecedent of a P-gap is that it participates in an unbounded dependency, although this generalization is made somewhat problematic by the inclusion of Heavy NP Shift (p.30, note 3). Suppose, following Chomsky (1977), that all unbounded dependencies are produced by A' movements, either overt as in the case of wh-questions, or involving empty operators, as in the case of Object Raising.. Crucially, NP movement, as in Passive and Raising to Subject, does not license P-gaps.

- (8) a. *John was killed t by a tree falling on pg. [E83:13,(31)]
b. *Mary seemed t to disapprove of John's talking to pg. [E83:13,(32)]

It appears that only A' movements, and not A movements, license P-gaps. This forms a crucial part of the CCP.

CCP1. The antecedent of a P-gap must be in an A' position.

A possible corollary of CCP1 is that the antecedent of a P-gap forms a chain with a trace. For languages in which an operator in A' position appears to form a chain with a resumptive pronoun, it is an open question whether such an operator can be the antecedent of a P-gap (see §3.5.1 for discussion). Moreover, a wh-phrase in situ does not license a P-gap, suggesting that it is S-structure where P-gaps are licensed, and not LF.

- (9) a. *John filed which articles without reading e. [E83:14,(33)]
b. *I forget who filed which articles without reading e. [E83:14,(34)]

This observation forms another important part of the CCP.

CCP2. A P-gap is licensed only at S-structure.

Engdahl also observes in her discussion of Swedish P-gaps that not only NPS but also PPs and APs can serve as the antecedent of P-gaps.⁵

(10) a. [_{PP} Till himlen] är det inte säkert att [_{NP} alla [_{sl} som längtar [_{PP} pg]]] kommer [_{PP} t]

to heaven is it not certain that everyone that longs gets

‘To heaven, it is not certain that everyone who longs (there) gets.’

[E83:17,(47a)]

b. [_{AP} Fattig] vill [_{NP} ingen [_s som någonsin varit [_{AP} pg]]] bli [_{AP} t] igen.

poor want no one that has even been become again

‘Poor, no one who has even been (it) wants to become again.’

[E83:17,(47b)]

These data point to the parallel question for any language that has P-gaps: what is the category of a possible P-gap, and what is the category of the antecedent of a P-gap. If the antecedent/gap pair is taken to form a (uniform) chain, then one would expect that the answer to both questions would be the same. Whether there is in fact a chain containing the antecedent and the P-gap is an independent question. It is logically possible, however, that the category of the antecedent can differ from that of the P-gap.

Although Engdahl provided examples of non-NP antecedents, the CCP position on category is that only NPS can be the antecedents of P-gaps, as discussed in more detail in the next section.

CCP3. The antecedent of a P-gap must be an NP.

Naturally it is incumbent on someone who holds this position to account for the apparent counterexamples in Swedish and other languages. Levine et al., this volume, propose that CCP3 is false, on the basis of a number of robust English counterexamples. They do not, however, provide a complete account of why CCP3 is such a strong generalization. On the other hand, Engdahl (Versatile P-gaps), this volume) suggests that languages with non-NP preforms may have non-NP P-gaps. She thus extends Postal's (1993) proposal that the English P-gap is a null pronoun, a point to which I return below.

Another persistent claim in the literature is that subjects cannot license P-gaps, because of the ungrammaticality of sentences like those in (11).

- (11) a. *Which articles t got filed by John without him reading pg. [E83:20,(53)]
b. *Who t sent a picture of pg. [E83:20,(54)]
c. *Who t remembered talking to pg. [E83:20,(55)]
d. *Who t remembered that John talked to pg. [E83:20,(56)]
e. *Which articles did you say t got filed by John without him reading pg. [E83:20,(57)]

But Engdahl notes that a subject can be the antecedent of a P-gap in other configurations.

- (12) a. Which caesar did Brutus imply t was no good while ostensibly praising pg. [E83:21,(60)]
b. Who did you say John's criticism of pg would make us think t was stupid. [E83:22,(61 ')]

Hence a plausible hypothesis is that what rules out the examples in (11) is that the true gap c-commands the P-gap. This forms

another important part of the CCP.

CCP4. The true gap cannot c-command the P-gap.

As Engdahl points out, there are actually (at least) two types of P-gap constructions. In one, the P-gap appears to the left of the true gap.

(13) Kim_i is a person that everyone who knows pg_i really likes t_i a lot.

In the other, the P-gap appears in a constituent to the right of the true gap.

(14) These are the reports that I filed t_i without reading pg_i.

These two types of P-gaps are distinguished by the fact that the left P-gap is obligatory, in the sense that it cannot be replaced by a pronoun. The right P-gap, on the other hand, is optional.

- (15) a. *Kim_i is a person that everyone who knows her_i really likes t_i a lot.
 b. These are the reports that I filed t_i without reading them_i

When the pronoun appears to the left of the true gap, as in (15), a WCO violation typically occurs, which may account for the apparent obligatoriness of the P-gap.

Engdahl also discusses the question of what kind of gap a P-gap might be. She argues that a P-gap is not an extraction gap of the sort found in cases of coordinate extraction, by noting simply that the contexts that allow P-gaps are not coordinate structures. The possibility remains open that a P-gap is the trace of movement of some kind of empty operator, in which case it would not actually be the trace of its apparent antecedent in an “across-the-board” extraction configuration.

Finally, Engdahl proposes that there is an “accessibility hierarchy” for P-gaps, similar to the extraction hierarchy of Keenan and Comrie (1977). I repeat her formulation here and add the numbers (i) etc. to the groupings for convenience of reference.

(16) *Accessibility hierarchy for occurrence of P-gaps [E83:9,(7)]*

manner adverbs

W= more accessible than

W

temporal adverbs (i) untensed domains

purpose clauses

W

W

that clauses (ii)

than

W

when

because clauses (iii)

tensed domains

cond. *if*

W

relative clauses (iv)

indirect questions

Briefly, the best cases of P-gaps involve manner adverbs, while the worst involve relative clauses and indirect questions. As already noted, untensed domains are in general preferable to tensed domains. Some examples are given below.

- (17) a. Which articles_i did John file t_i without reading pg_i? [E83:5,(1)] [manner adverb, untensed]
b. (?)?Who_i did you talk to t_i when you first met pg_i? [*when* clause, tensed]
c. *This book_i, it would be stupid to give t_i to [_{NP} someone [_S who has already read pg_i]] [E83:11,(22)][relative clause, tensed]

But note that tensed domains have overt subjects, while the untensed subordinate clauses are typically subjectless gerunds or infinitives, or have PRO subjects. Hence the possibility cannot be ruled out that the presence of an overt, uncontrolled subject plays a role in determining the acceptability of a P-gap in a given context.

In summary, Engdahl's seminal paper either directly identifies or immediately suggests the key issues about P-gaps: the **location of the antecedent** (A or A' position), the **level** at which the P-gap is licensed, the **character of the P-gap** (trace or pronominal or otherwise), the **anti-c-command condition**, the **obligatory/optional distinction**, and the **domain of the P-gap**.⁶ In addition, questions have been raised as to whether the antecedent is actually the antecedent of the true gap, or whether the antecedent

is rather some empty element that is linked to the antecedent of the true gap – the **character of the antecedent**.

2. The Common Consensus Position

Here I trace briefly the development of the CCP from the original observations of Engdahl to the work of Kayne (1983) and Chomsky (1986).

2.1. Connectedness

Kayne (1983) observes that P-gaps within islands embedded in other islands produce ungrammaticality comparable to movement. E.g.,

- (18) a. the books that it became difficult to talk about t
 b. *the books that talking about t became difficult
 [Movement][K83:166,(5)]
- (19) a. ?the books you should read t before it becomes difficult to talk about pg
 b. *the books you read t before [talking about pg] becomes difficult
 [P-gaps][K83:166,(3a,b)]

If there is no movement is involved in the P-gap, (19b) and comparable cases are not ruled out by Subjacency (which is a constraint on movement), nor by the ECP, since the P-gap is properly governed. But the generalization with the overt movement cases seems very strong.

Kayne therefore proposes an extension of the ECP to account for these recalcitrant P-gap cases.⁷ The key idea is that in all of these cases, as well as in the standard ECP cases, the problematic empty category is on a left branch. On Kayne's proposal, an empty category is licensed if it and its antecedent are contained in the same "g-projection," defined informally as follows. Let \langle be a structural governor of XP. Then the immediate projection of \langle will be a g-projection of \langle . If there is a sequence of structural governors in a configuration of uniform canonical government, then the g-projection of \langle will extend to the projection of the highest

structural governor. The notion “configuration of canonical government” is a precedence relation that correlates with the relative linear order of verb and direct object in a language. The set of all g-projections constitutes the g-projection set. Kayne proposes an extension of the ECP such that the entire set of g-projections of all of the gaps in a tree must constitute a subtree that is locally c-commanded by the antecedent. A gap in a left branch is licensed just in case the g-projection of this gap meets this condition.

There are four basic cases. First of all, consider the case where " c-commands a gap on a right branch to the right of it.

$$(20) \quad [C' \text{ " }_i [C' [\dots [\dots [(e_i)]]]]]$$

Here, (structurally governs e_i , and (' is a projection of (. (' is a g-projection of (because it is a projection of (. Hence " and e_i are contained in the same g-projection set.

Second, suppose that " c-commands a gap on a left branch, where canonical government is to the right.

$$(21) \quad [\text{ " }_i [C' [(e_i) \dots]]$$

In this case, (' is the largest g-projection of (that contains e_i . There is no g-projection of (that also contains " , and so the empty

category is not licensed. Although (' may be governed, it will not be canonically governed, since its governor will be to the right of it.

But suppose that there is another empty category on the right branch, in the configuration of (20).

(22) [" _i [(' [e_i] ... t_i]]

In this case, the g-projection of t_i contains the g-projection of e_i. So the g-projection set that contains t_i and e_i forms a subtree, namely (' , that is c-commanded by " . This is the configuration of a P-gap in a subject, for example.

Finally, consider a gap that is itself a left branch, say a subject, but in a configuration where there is no g-projection to a subtree locally c-commanded by the antecedent.

(23) " _i [... C [_{IP} t_i ...]]

By assumption, the complementizer C is not a structural governor. Hence the projection of C is not a g-projection of t_i. Thus there is an ECP violation. The maximal g-projection of t_i is IP, which excludes " .

The force of Kayne's analysis is that the antecedent of the true gap forms a chain with the P-gap that is subject to the same locality conditions that govern all chains. Moreover, the P-gap is a variable in the same sense that the true gap is a variable. There is no formal difference, on this analysis, between the chain that contains the P-gap and the chain that contains the true gap. This view has become a central part of the CCP.

CCP5. The P-gap is in a chain with the antecedent of the true gap.

Such a view is argued for by Levine et al. (this volume), although in a much different framework.

2.2. Barriers

Chomsky (1986), taking into account the observations of Kayne (1983), proposes a view of P-gaps having its roots in the proposal of Contreras (1984) that there is a null operator that binds the P-gap. The P-gap, on this analysis, is the trace of the null operator, and the chain produced by movement of the null operator is subject to the usual locality conditions on movement.

In order to relate the antecedent of the true gap and the P-gap, Chomsky proposes that the chain of the true gap and the chain of the P-gap are “composed”; Chomsky (1986:56) gives the following characterization of a composed chain.

(24) If $C = (\alpha_1, \dots, \alpha_n)$ is the chain of the real gap, and $C' = (\beta_1, \dots, \beta_m)$ is the chain of the P-gap, then the “composed chain”

$$(C, C') = (\alpha_1, \dots, \alpha_n, \beta_1, \dots, \beta_m)$$

is the chain associated with the P-gap construction and yields its interpretation.

It is clear that this is a stipulative solution, since there is no independent requirement that chain composition exist. Moreover, (24) is inexplicit regarding the formal operation that produces a composed chain given two primary chains.

Nevertheless, this approach suggests an account of the anti-c-command condition in terms of the Binding theory. The P-gap is c-commanded and A-bound by the true gap, a situation that leads to a Condition C violation. The P-gap (or its chain) must be understood to be an r-expression. Similarly, an antecedent in an A-position A-binds the P-gap and produces a Condition C violation. This view forms part of the CCP, already noted. It is also part of the CCP that anti-c-command is due to Condition C of the Binding

Theory,.

CCP6. Anti-c-command is due to Condition C of the Binding Theory.

2.3. Categorical properties

As noted, the consensus in the literature on P-gaps is that the antecedent of the P-gap must be an NP. This restriction may be related to the pronominal character of the gap; see for example Cinque (1990:115). Cinque cites the following examples from Italian to support this generalization.

- (25) a. *_[AP] quanto importanti] si può diventare t [senza sentirsi pg]
 how important refl can become without to-feel
 ‘How important can one become without feeling?’
- b. *_[PP] a chi] hai lasciato la lettera t [dopo esserti rivolto pg]

to who you-have left the letter after to-be-refl returned

‘To whom did you leave the letter after having returned.’

c. *_[QP] quanti] ne hai presi t [senza pagarne pg]

how much of-them you-have gotten without to-pay-for-of-them

‘How many of them did you get without paying for?’

d. *_[VP] VENUTO A CASA] era t [senza che fosse pg suo padre] came home he-

was without that he-was his father

‘He had come home without his father having (done so).’

e. *_[AdvP] Quanto gentilmente] si è comportato t con te [senza

how nicely refl is behaved with you without

comportarsi pg coi tuoi amici]?

to-behave-refl with your friends

‘How nicely did he behave with you without behaving with your friends?’

[Ci90:102,(15a-e)]

These Italian facts and the comparable English examples appear to contrast with the situation in Swedish. Engdahl (1983) cites Swedish examples in which the antecedent of the P-gap is not an NP; I repeat here the examples in (10).

(10) a . [_{PP} Till himlen] är det inte säkert att [_{NP} alla [_S som längtar [_{PP} pg]]] kommer [_{PP} t]

to heaven is it not certain that everyone that longs gets

‘To heaven, it is not certain that everyone who longs (there) gets.’

[E83:17,(47)]

b . [_{AP} Fattig] vill [_{NP} ingen [_S som någonsin varit [_{AP} pg]]] bli [_{AP} t] igen.

poor want no one that has even been become again

‘Poor, no one who has even been (it) wants to become again.’

[E83:17,(47b)]

Cinque points out (p. 187, n. 9) that in these examples the P-gap is in a subject, and notes that the comparable examples in Italian, while not acceptable, are better than those in which the P-gap appears in an adjunct, as in (25). Cinque speculates that these are cases where extraction from the subject is itself almost acceptable.

Postal 1994 (reprinted in this volume) summarizes the arguments for taking P-gaps to be null pronouns. Cinque's examples, and the more general claim that P-gaps must be NPS, are examined by Engdahl in her paper in this volume. She argues that in Swedish the set of proforms is broader than that in English. If P-gaps are in fact proforms, and not simply pronominals, then this difference could be used to explain the fact that Swedish allows for non-NP P-gaps while English (arguably) does not. Levine et al. (this volume) make the stronger claim that a non-NP P-gap may occur even when there is no suitable overt proform in the language.

2.4. Summary of the CCP

In summary, the CCP is as in (26):

- (26) CCP1. The antecedent of a P-gap must be in an A' position.
CCP2. A P-gap is licensed only at S-structure.
CCP3. The antecedent of a P-gap must be an NP.
CCP4. The true gap cannot c-command the P-gap.

CCP5. The P-gap is in a chain with the antecedent of the true gap.

CCP6. Anti-c-command is a consequence of Condition C of the Binding Theory.

I take up the primary factual challenges to the CCP in §3. I summarize in §4 the major theoretical proposals concerning the licensing of P-gaps, in particular those that seek to derive the existence of P-gaps from general principles of Universal Grammar and the specific properties of individual languages.

3. Challenges to the CCP

3.1. Location of the antecedent

Concerning the location of the antecedent (or the operator that forms part of the antecedent chain), the CCP holds that the antecedent, whatever it is, must be in an A¹ position. There is a crucial relationship between this view and the CCP view that the P-gap is in a chain with the antecedent. But observations about apparent P-gap constructions involving clitic movement in the Romance

languages, Heavy NP Shift in English and scrambling in languages such as German, Hindi and Persian have raised the possibility that the antecedent of a P-gap could also be in an A-position. On the other hand, it is possible that such apparent A-movements are actually A' movements, and a number of researchers have taken this position. There is a substantial literature, which I do not have space to review here, in which the possibility of P-gaps with scrambling is taken as evidence that scrambling is a type of A' movement; see for example the papers in Corver and van Riemsdijk (1994).

In this section I review the evidence for apparent A movement P-gaps.

3.1.1. Clitic movement

3.1.1.1. French

Since Kayne (1975) it has been standard to treat the relationship between an argument clitic and an argument position as involving A movement.⁸ It would then follow that if CCP1 is correct, clitics cannot license P-gaps. Tellier (1991) notes, however, that the following examples in French are not totally unacceptable.⁹

- (27) a. C'est un livre dont_i la critique t_i a été publiée par les détracteurs pg_i
 It is a book of which the critique has been published by the detractors'
- b. ??La critique t_i en_i a été publiée par les détracteurs pg_i
 'The critique of-it has been published by the detractors'
- (28) a. Voilà une idée dont_i on attribue le charme t_i, au caractère subversif pg_i
 'Here is an idea of which one attributes the charm to the subversive character'
- b. ??On en_i attribue le charme t_i, au caractère subversif pg_i
 'One of-it attributes the charm to the subversive character'
- (29) a. C'est là un sentiment dont_i on peut attribuer la pérennité t_i à la manifestation assidue pg_i
 'This is a sentiment of which the perennality is attributable to the constant manifestation'
- b. ??On peut en_i attribuer la perennité à la manifestation assidue pg_i
 'One can of-it attribute the perennality to the constant manifestation'

[Te91:136,(17)-(19)]

Noting that P-gaps are not possible in French with object clitics,¹⁰ Tellier leaves open the question of why the cases with *en*

allow variation in judgments. One possibility is that *en* is adjoined to an A' position, while object clitics are in A position.¹¹

It is clearly not an accident that well-formed P-gap constructions occur in French not only with A' binding antecedents, as in (30), but with *don't* 'of-which/whom', as in (27)-(29).

(30) Voilà le livre_i que vous avez rangé t_i sans avoir lu pg_i.

here-is the book that you have put-away t without to-have read

'Here is the book that you put away without having read.'

[Te91:135,(16a)]

I discuss the "double-*don't*" type of P-gap construction in §3.6.3.

3.1.1.2. Spanish

Campos (1991) argues that Spanish P-gaps have the following distinctive properties: (i) they can be licensed by clitics, and (ii) they can be licensed by wh-in-situ. Some relevant examples are the following.

- (31) a. Lo archivaron t_i sin leer pg_i.
 it they-filed without to-read
 ‘They filed it without reading (it).’
- b. Conozco a un muchacho que los archivó t sin leer pg.
 I-know a boy that them filed without to-read
 ‘I know a boy that filed them without reading (them).’
 [Ca91:119,(6a)]
- c. No sé quién preguntó por qué José los archivó sin leer pg.
 Neg know who asked why Jose them filed without to-read
 ‘I don’t know who asked why Jose filed them without reading (them).’
 [Ca91:119,(6b)]
- (32) a. ¿Tú archivaste cuál artículo sin leer pg?
 you filed which article without to-read
 [Ca91:120,(9a)]
- b. ¿Tú mandaste cuál artículo sin revisar pg?

you sent which article without to-proofread

[Ca91:120,(9b)]

Campos ties the possibility of P-gaps in (32) to the fact that wh-in-situ in Spanish can be used as a direct question, which he takes to mean that in Spanish it is generally possible to have an operator in situ at S-structure. To account for the P-gap with clitics, Campos suggests that the true gap is a null operator-in-situ that is bound by a null topic that also binds the clitic.¹² The structure is thus the following.

(33) TOPIC_i lo_i archivaron OP_i [sin leer pg_i]

The P-gap is then licensed by the operator-in-situ. The question naturally arises as to why the same construction is impossible in French, which also permits wh-in-situ in direct questions.

Suñer and Yépez (1988) note the following in Quiteño.¹³

- (34) a. Te permitirán entregar [e] sin terminar [e]
 to-you they-would-allow to-hand-in without to-finish
 ‘Would they allow you to hand it in without finishing it?’
- b. La carta de ese idiota, ahí dejé t sin siquiera abrir pg
 the letter from that idiot there I-left without even to-open
 ‘That idiot’s letter, I left it there without even opening it.’

Suñer and Yépez suggest that there are null object pronominals in both clauses in the a-example that happen to have the same referent. Campos proposes that the empty argument of *entregar* could be a null operator that licenses the P-gap in the same way that the *wh-in-situ* does in (32).

Campos also discusses examples in which a null subject appears to license a P-gap, an apparent counterexample to the anti-command condition (CCP4).

- (35) Qué pasó con el avión? - Explotó antes de hacer revisar pg
what happened with the plane it-exploded before of to-make to-check
'What happened with the plane? - It exploded before they checked (it).'
- [Ca92:135,(35a)]

Campos proposes that there is a null operator (not *pro*) in the subject position in such cases. An empty pronominal does not license the P-gap.

- (36) *Los restos del avión muestran que explotó antes de hacer revisar pg
the remains of-the plane show that pro exploded before of to-make to-check
- [Ca92:135,(36)]

Nor does an overt subject.

- (37) *El avion explotó antes de hacer revisar pg
the plane exploded before of to-make to-check
'The plane exploded before they checked (it).'
- [Ca92:135,(35b)]

It is particularly striking that a null operator in subject position could license a P-gap, in view of the general tendency for overt operators in situ and in subject position not to do so.

The factual claim that P-gaps are licensed by clitics in Spanish is independently attested by García-Mayo (1992:17), who also notes that this stands in sharp contrast with French (Tellier (1991:135)). Rizzi (1986) and García-Mayo (1992:17) note that only [-animate] clitics may license P-gaps in Spanish. Catalan and Italian also allow for the licensing of P-gaps by clitics, as in the following examples.

- (38) a. *Catalan*
El_i vaig enviar t_i [sense signar pg_i com indicavan les instrucciones
- b. *Italian*

L_i'ho spedito t_i senza firmare pg_i come indicato nelle istruzioni.

it I-have sent without to-sign as indicated (in) the instructions

(39) a. *Catalan*

El_i vaig cuinar t_i sense posar pg_i al forn

b. *Italian*

L'ho cucinato t_i senza mettere pg_i al forno

it I-have cooked without to-put in-the oven

[G-M92:22,(23)-(24)]

García-Mayo proposes that the structure in these cases is one that has a null operator binding *pro* in the position of the gap in the clause that contains the P-gap. The null operator forms a chain directly with the clitic, which is assumed to be adjoined to IP, and is thus in an A' position. These observations are consistent with the proposal of Rizzi (1986) that Italian allows for object *pro* in certain cases and with the proposal of Cinque (1990) that P-gaps are in fact *pro*.

An important question that arises in this case is the adjunction site of the clitic such that it can be an antecedent of the P-gap. The difference between Spanish-Italian-Catalan on the one hand and French on the other follows if the clitic is adjoined to IP in the

first case, but to V in the second case. García-Mayo points out that this is precisely the difference proposed by Kayne (1991) to account for the fact that French clitics adjoin to the left of infinitives, while clitics adjoin to the right of infinitives in the other languages.¹⁴

Contrasting with the Italian data given by García-Mayo is the claim by Haverkort (1993) that Romance clitics cannot license P-gaps, citing Sportiche (1983) and Chomsky (1982). Haverkort gives the following example from Italian, due originally to Rizzi (see Chomsky (1982:65)).

(40) *Italian*

**Gl*_i-*li*_i dobbiamo far mettere *t*_i nello scaffale invece di lasciare *pg*_i sul tavolo

to-him-them we-must to-make to-put on-the shelf instead of to-leave on-the table

‘We must make him put them on the shelf, instead of leaving (them) on the table.’

[H93:137,(14a)]

Moreover, as discussed in the next section, Haverkort makes the same proposal for Germanic that García-Mayo suggests for those Romance languages in which clitics license P-gaps, and he rules out such an analysis for the Romance languages in which they do

not.

3.1.1.3. Germanic

Haverkort (1993) cites the following data in support of the claim that Germanic clitics license P-gaps.

- (41) a. *German*
- Der Peter hat'n_i [ohne pg_i anzusehen] t_i zusammengeschlagen
the Peter has-him without to-look-at beaten-up
'Peter beat him up without looking at (him).'
- b. *Swiss German*
- Der Peter het'ne_i [ooni pg aaz'luege] t_i zämegschlage
the Peter has-him without to-look-at beaten-up
'Peter beat him up without looking at (him).'
- c. *Dutch*

Dat ik't_i [zonder pg_i uitgelezen te hebben] t_i opgestuurd heb
that I-it/them without read to have sent have
'That I sent it/them away without reading (it/them).'

d. *West Flemish*

Dan-k ze_i [zunder pg gelezen t'een] t_i opgestierd een
that-I it/them without read t-have sent have
'That I sent it/them away without reading (it/them).'

[H93:137-38,(15)-(16)]

The explanation that Haverkort gives for the Germanic data is that a clitic is a maximal projection in an A' position. Specifically, the clitic adjoins to IP (p.131). The Germanic clitic is thus distinguished from the Romance clitic, which is a head, and the adjunction of the Germanic clitic is distinguished from scrambling, which is typically viewed as an A movement. (For discussion of Romance clitics that license P-gaps, see §3.1.1.1 and §3.1.1.2, and for discussion of cases in which scrambling licenses P-gaps, see §3.1.2.)

3.1.2. Scrambling

The literature on the configuration of the antecedent has generally taken one of two positions on the position of the antecedent of the P-gap. Some researchers have held to the CCP that the antecedent of the P-gap is in an *A*-position, thus drawing the conclusion that scrambling to various positions is *A*!-movement. This is the conclusion of Browning and Karimi (1994) for Persian, Felix (1985) for German, and Bennis and Hoekstra (1985a) (also Bennis and Hoekstra (1985b)) for Dutch. Webelhuth (1989) suggests that there can be “mixed” *A/A*!-positions, in order to accommodate the fact that scrambling in German also shows *A*-properties, as it does in Persian. But Bayer and Kornfilt (1994) note that there are differences in judgments in German P-gap examples depending on whether an antecedent NP is moved to [Spec,CP] or adjoined to IP under scrambling. In the latter case, only a pronominal clitic and not a full NP allows for an apparent P-gap.

(42) *Da hat diesen Mann_i der Polizist [ohne p_g_i verwarnt zu haben] t_i ins Gefängnis gesteckt.

there has this man the policeman without warned to have in-the prison put

[B&K94:25,(11e)]

‘The policeman has put this man into jail without having warned him.’

(43) Da hat ihn_i der Polizist [ohne p_g_i verwart zu haben] t_i ins Gefängnis gesteckt.

there has him the policeman without warned to have in-the prison put

[B&K94:25,(11d)]

‘The policeman has put him into jail without having warned him.’

Bayer and Kornfilt appear to suggest that these cases are not true P-gaps and that they are therefore not evidence for the A-character of scrambling. There is an alternative, which is that the movement of clitics is different from scrambling, a position taken by Haverkort (1993).

Huybregts and van Riemsdijk (1985) note that while scrambling appears to be an A' movement that licenses P-gaps in Dutch, there are problems with this view. (44) shows the apparent P-gap in Dutch, while (45) shows the same configuration with a pronoun in place of the gap.

(44) Hij heeft deze artikelen [zonder PRO ec te lezen] opgeborgen

he has these articles without to-read filed

- (45) Hij heft deze artikelen [zonder ze te lezen] opgeborgen
 he has these articles without them to read filed

If the NP *deze artikelen* were in an A' position then we would expect a WCO violation, as in the case of topicalization. Huybregts and van Riemsdijk (1985) propose that the construction in (44) is not in fact a P-gap construction, but an instance of the leftward counterpart of Right Node Raising. I return to this interpretation of this class of P-gaps in §3.1.3; see also Kathol (this volume), who argues that the (apparent) P-gaps in German are pseudo-P-gaps.

Müller and Sternefeld (1994:373-375) argue that scrambling is an A' movement that licenses P-gaps in German, and that there is no need to assign scrambling a mixed status, as proposed by Webelhuth (1989). Compare the following examples.

- (46) ?weil Fritz jeden Gast_i [ohne e_i anzuschauen] seinem_i Nachbarn vorgestellt hat
 because Fritz every guest-ACC without to-look-at his neighbor-DAT introduced-to has
- (47) *?weil Fritz jeden Gast_i seinem_i Nachbarn [ohne e_i anzuschauen] vorgestellt hat
 because Fritz every guest-ACC his neighbor-DAT without to-look-at introduced-to has

- (48) *?weil Fritz jeden Gast_i der Maria [ohne e_i anzuschauen] vorgestellt hat
 because Fritz every guest-ACC ART Maria-DAT without to-look-at introduced-to has

According to Mahajan (1990) the P-gap in (47) is bound by *jeden Gast_i*, which renders it ungrammatical. But Müller and Sternefeld note that (48) is equally ungrammatical without the bound pronoun. Hence, they argue, there is no need to consider the scrambled antecedent of the P-gap in the grammatical case to be in a mixed or A position. Lee and Santorini (1994) make the same point.

Neeleman (1994) claims that P-gaps in Dutch are much less acceptable than they are in English, and cites the Bayer/Kornfilt claim for German. But Neeleman goes on to suggest that the P-gap is in a null operator chain that is actually licensed by an antecedent in an A position. In the following example, the P-gap is licensed by an NP that is also the antecedent of an anaphor.

- (49) Dat Jan [de rivalen]_i namens elkaar_i [OP_i [zonder t_i aan te kijken]] feliciteert
 that Jan the rivals on-behalf-of each-other without at to look
 congratulates

[N94:403,(30)]

Neeleman notes the same P-gap pattern in passives –

(50) Dat [de boeken]_i door Jan [OP_i [zonder pg_i in te kijken]] t_i afgekraakt worden
that the books by Jan without in to look slated are

-- and a gap in nominalizations.

(51) Het [OP_i [zonder t_i in te kijken]] afkraken van boeken_i
the without in to look slating of books

In (51) there is no basis for a movement analysis. Neeleman concludes that in Dutch (but not in English), P-gaps can be A-bound. The mechanism that produces this result is a difference in the status of the null operator: in Dutch it is governed, while in English it is not. By stipulation, adjuncts in Dutch are in the governing domain of the verb, while in English they are not.

Mahajan (1994:317-323) argues that Hindi has P-gaps on the basis of examples such as the following:

(52) kOn sii kitaab (mohan soctaa hE ki) raam-ne [binaa PRO e₂ paRhe]
 which book Mohan thinks that Ram-ERG without reading
 e₁ pheNk dii
 threw away

‘Which book (does Mohan think that) Ram threw away without reading?’

The issue for Mahajan is whether a constituent that is in a scrambled argument position can also be the antecedent of a P-gap. In the following example, the reflexive cannot be in an argument position because it must reconstruct in order to be bound.

(53) apnii_i kOn sii kitaab_i binaa PRO e₂ paRhe us aadmii ne_i e₁ pheNk dii
 self’s which book without reading that man-ERG threw away
 lit. ‘Self’s which book without reading the man threw away.’

However, in the following example the wh-phrase binds the pronoun from an argument position and hence cannot be the antecedent of the P-gap.

- (54) *kOn sii kitaab_i [us aadmii ne jis-ne use_idekhaa thaa] [binaa PRO e₂
 which book that man-ERG who it saw be-PST without
 paRhe] e₁ pheNk dii
 reading threw away
 ‘Which book did that man who saw it throw away without reading?’

But if there is no pronoun, the wh-phrase can be analyzed as being in an A' position.

- (55) kOn sii kitaab_i [us aadmii ne jis-ne mohan-ko dekhaa thaa] [binaa PRO e₂
 which book that man-ERG who Mohan saw be-PST without
 paRhe] e₁ pheNk dii
 reading threw away
 ‘Which book did that man who saw Mohan throw away without reading?’

Taking a somewhat different perspective, Browning and Karimi (1994) in their study of Persian suggest that the classical A/A'

dichotomy is not the correct one for characterizing the licensing of P-gaps. Rather, they suggest, the key property of the antecedent of the P-gap is that it is in an adjoined, not an argument position, but it is also in a Case position and in virtue of this can be the antecedent of a reflexive.

Deprez (1994) contrasts the German/Dutch scrambling with object movement (O-M) in Icelandic and Danish, which does not appear to license P-gaps.

(56) *Icelandic (Deprez (1989))*

a. *Eg las baekunar_i alltaf/ekki t_i [an tehss adh kaupa p_{gi}]

I read book always/not without buying

[D94:108,(16a)]

b. *Eg bothadhi petta granmetii ekki/aldreai t_i [an thess adh sjodha p_{gi}]

I I eat this
vegetable not/neve r without
cooking

[D94:108,(16b)]

(57) *Danish (Vikner (1990))*

*Han inviterede dem_i [uden at kende pg_i pa forhand] t_i

he invited them without to know beforehand

[D94:108,(17)]

But both Icelandic and Danish license P-gaps with wh-antecedents.

(58) *Icelandic*

Hvadha granmeti_i bortar thu t_i [an thess ath sjotha pg_i]

which vegetable eat you without cooking

[De94:108,(18a)]

(59) *Danish (Vikner (1990))*

Hvor mange gaester_i har han invitered t_i [uden at kende pg pa forhand]

how many guests has he invited without to know beforehand

[De94:109,(18b)]

Icelandic also allows O-M of a wh-phrase. Example (60) suggests that it is the particular configuration of the landing site that determines whether a P-gap is licensed, not the character of the antecedent as an operator (e.g. at LF).

(60) *Hver etur hvadah granmetti_i ekki/aldrei t_i [an thess adh sjodha t_i]
who eats which vegetable not/never without cooking

Deprez proposes that the landing site of O-M is different in those languages where P-gaps are licensed and in those where they are not. She suggests that where O-M licenses a P-gap, its landing site is a Caseless position, while it is a Case position when it does not. The A₅ properties of the antecedent of a P-gap in the case of O-M are attributed to the absence of Case; however, a Caseless position may be an argument position in other respects, which accounts for the A-properties of O-M noted by Webelhuth (1989).

3.1.3. *Apparent VP-adjoined antecedents*

Heavy NP Shift is generally viewed as adjunction within VP, produced by local movement. A similar approach is taken to VP-scrambling in languages like German and Dutch. It is an open question whether these are A or A' movements. There is evidence that both Heavy NP Shift and scrambling license P-gaps, a property that is typically reserved for A' movements.

The possibility of P-gaps with Heavy NP Shift in English is illustrated by Engdahl (1983) with examples such as (61).

(61) John offended t by not recognizing pg immediately [_{NP} his favorite uncle from Cleveland]. [E83:12,(26)]

The independent claim by Engdahl (1983) that P-gaps are only licensed by an antecedent in an S-structure A' position is called into question if the heavy NP can be shown to be in an A position. But another variable at play here is whether or not there is actually a P-gap in this type of sentence. Postal (1994, reprinted in this volume) denies that these cases involve P-gaps; if this is correct, then they do not bear on the analysis of P-gaps.

Briefly, on Postal's analysis, the structure of (5) is derived not by Heavy NP Shift from the object position of *offended*, but by applying RNR to the direct object of *offended* and the direct object of *recognizing*. This produces the following structure, parallel to that of (5).

(62) John offended [e] by not recognizing [e] [_{NP} his favorite uncle from Cleveland]

This analysis has a range of potentially very dramatic consequences for the analysis of P-gaps themselves. It raises the possibility that cases of apparent P-gaps produced by any instance of A' movement are actually produced by RNR or an equivalent construction. So, in the case of scrambling for example, it is possible that what has been claimed to be the P-gap configuration in (63a) is actually the mirror image of the RNR configuration, shown in (63b), suggested by Huybregts and van Riemsdijk (1985).

- (63) a. ... NP_i PP [_{Adjunct} pg V] t_i V
b. ... NP_i PP [_{Adjunct} [e] V] [e] V

Of course, the soundness of any proposal along these lines depends on independently motivating such a left mirror image counterpart of RNR in these languages. See Bennis and Hoekstra (1985a) and Postal (1994) for additional discussion of this point.

A proposal along related lines for German is due to Kathol (1995) for cases such as (64), due to Felix (1985:190). Note that the antecedent is the scrambled direct object.

- (64) a. Hans hat Maria_i [ohne pg_i anzusehen] geküßt
 H. has M. without to-look-at kissed
- b. Man hat Hans_i [ohne pg_i zu verständigen] entlassen
 one has H. without to notify laid off

Kathol proposes an HPSG analysis in which the PP headed by *ohne* and the V' share the same COMPS (complements) list. Such an approach is motivated by the fact that at least in German the P-gap construction with scrambling has a quasi-coordinate character.

A crucial property of this analysis is that it cannot accommodate subject P-gaps, owing to the branching structure of the subject and the VP. Interestingly, in contrast to English, German and Dutch lack subject P-gaps.

- (65) a. *Dit is een vraag_i waar [iedereen [die pg_i over dent]] een antwoord t_i op weet
 this is a question which everyone who about thinks an answer to knows
- b. *Dies ist ein Umstand_i wo/welcher [jeder [der pg_i von gehört hat]] t_i mit rechnen muß.
 this is an understanding where/which everyone who heard has with count must

[K94:367,(11)]

P-gaps are possible only with *ohne* ‘without’, *(an)statt* ‘instead of’ and *um* ‘in order to’ (p.308f).¹⁵

An additional piece of evidence for the shared COMP analysis is that the shared antecedent can be dative –

(66) Maurice hat seiner Tochter [ohne Geld zu geben] helfen können

M. has his daughter-DAT without money to give help could

‘Maurice was able to help his daughter without giving her money.’

[K94: 313,(22a)]

– but only when the dative is assigned by both V’s, as in (67).

(67) a. *Hans hat seine Tochter [ohne Geld zu geben] unterstützen können

H has his daughter without money to give support could

b. ?Peter hat jeden Gast seinem Nachbarn ohne anzuschauen vorgestellt

P. has every guest his neighbor without to-look-at introduced

c. Peter hat jeden Gast ohne anzueschauen seinem Nachbarn vorgestellt

[K94:313f:(23b),(26a,b)]

Kathol (this volume) extends his analysis to argue that there are no P-gaps in German. He argues that the cases of putative German P-gaps actually represent Left Node Raising; that is, German only has pseudo P-gaps.

Another potential consequence of Postal's proposal is that even standard P-gap constructions may turn out to be pseudo-parasitic. Such a possibility arises if the constituent that is separated from the rest of the sentence in the RNR construction in a language like English can itself move to another position. Under such circumstances, the configuration in (68a) would actually be that in (68b).

- (68) a. $XP_i \dots V t_i [_{\text{Adjunct}} \dots pg_i]$
b. $XP_i \dots V [e] [_{\text{Adjunct}} \dots [e]] t_i$

Again, the soundness of such a proposal rests on independent motivation for the properties of RNR, as well as the theoretical status of the notion that a construction such as RNR can be completely neutralized by a subsequent movement.

In part Postal's argument for the existence of pseudo-P-gaps rests on the observation that non-NPS may undergo RNR,

producing the appearance of P-gaps with non-NP antecedents.

- (69) a. John seemed t_i to everyone [_{AP} very pleased with the outcome]_i.
- b. John seemed [e] to everyone and Mary certainly was [e] when I last saw her [_{AP} very pleased with the outcome]_i.
- c. John seemed [e] to everyone without actually being [e] [_{AP} very pleased with the outcome]_i.

If leftward movement of an RNR constituent is permitted, it follows that there should be pseudo-P-gap constructions with non-NP antecedents to the left as well. If such cases exist, they would be consistent with the CCP in a strict sense, although they would produce apparent counterexamples. If these non-NPS in fact fail to produce P-gaps, then we would have to rule out the possibility that movement could apply to the RNR structure.

This last possibility is explored by Steedman (1987), who applies Dowty's (1988) device for handling non-constituent negation to P-gaps. Dowty (1988) showed that it is possible in a categorial grammar to conjoin non-constituents, each of which must be combined with a particular category in order to form a complete phrase. This device can be applied to RNR. For example, if *John saw* requires an NP for completion and *Bill insulted* also requires an NP for completion, then the conjunction *John saw and Bill*

insulted is a coordinate that can be completed with an NP: *[[John saw and Bill insulted] Mary]*. The application to pseudo-P-gaps is evident. Extending this device to P-gaps is conceptually straightforward; in these cases the expression that completes the phrase is to the left, not to the right, as in the case of RNR. What remains unclear in such an approach is why non-NPS cannot freely be the antecedent of a P-gap, given that non-NPS can freely undergo RNR. Moreover, Steedman's approach does not account in any obvious way for the evidence that a P-gap is pronominal. See §3.2 for further discussion.

3.2. The character of the gap

CCP5 holds that a P-gap forms a chain with some antecedent, and hence is a trace. The literature also contains arguments that it is pronominal. There are two variants of both approaches. On one variant of the trace analysis, T1, the empty category forms a chain with the antecedent of the true gap. On the second variant, T2, the empty category forms a chain with a null operator which in turn is linked to the chain that contains the antecedent and the true gap.¹⁶ On one variant of the pronoun analysis, P1, the parasitic gap is an empty pronoun.¹⁷ On the other variant, P2, the parasitic gap is an anaphor, related to a reflexive or the trace of NP movement.

3.2.1. *P-gaps as traces*

T1 was proposed originally by Chomsky (1982), within a framework in which there is only one empty category [e]. This is assigned values of the features [pronoun] and [anaphor] on the basis of its contextual distribution. A trace, which is [-pronoun, -anaphor], occurs when [e] is A' bound by an operator. This is the case for both the true gap and the P-gap, as can be seen in (70), on the assumption that the relative pronoun is an operator.

(70) which_i [we filed t_i [without reading pg_i]]

This theory was undermined in two ways. First, as Kayne (1983) observed, the P-gap shows Subjacency effects. While the P-gap is not subjacent to the antecedent in either (70) or the following example, only the latter is ungrammatical.

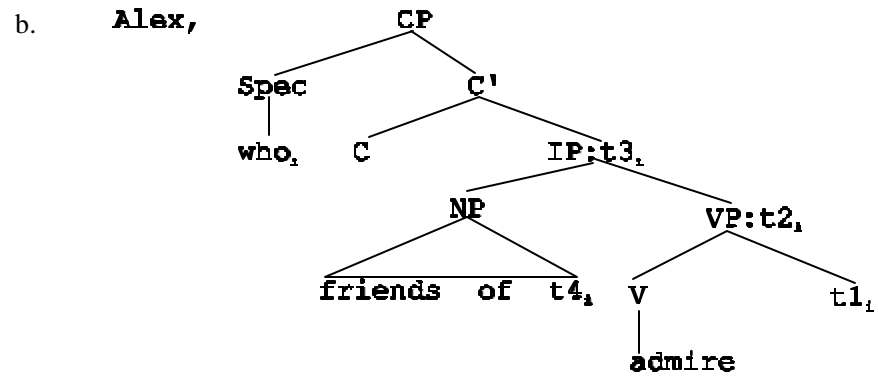
(71) *which [we filed t_i [without meeting [„ the person who wrote pg_i]]

The Subjacency violation suggests that there is an extraction from the constituent labeled "", but application of the contextual determination of empty categories to P-gaps does not involve extraction from the P-gap position.¹⁸

Second, Brody (1984) showed that Chomsky's theory of the contextual definition of empty categories was in part factually incorrect, and in part followed from independent grammatical principles such as the ECP and the 2-Criterion.

A different version of T1 is the proposal of Frampton (1990). Here the traces are base-generated and Subjacency is a condition on the well-formedness of chains. On his analysis there are two chains, one containing the true gap and one containing the P-gap. The head of the P-gap chain is replaced by a trace, allowing this chain to be linked to the higher chain. Movement of the antecedent of the true gap introduces an intermediate trace that locally c-commands the trace that heads the P-gap chain. As a consequence, a chain is formed between the P-gap and the antecedent.¹⁹ (72) illustrates.

(72) a. Alex, who friends of pg admire t [F90:49,(1b)]



Here, the traces t1, t2 and t3 are produced by movement of *who* from the VP into [Spec,CP]. The trace t4, on the other hand, is not

produced by movement at all; it is the trace of the deleted wh-phrase.

A consequence of Frampton's analysis is that extraction from an adjunct produces a Subjacency violation, while the links of a parasitic chain obey Subjacency. Tellier (1991:182f) notes that Frampton's analysis does not work for French P-gaps involving double-*don't* (see §3.6.3), because the true gap in this case is in the subject, while the P-gap is in the VP. There is thus no intermediate trace in the true chain that is attached to VP that can be used to link to the parasitic chain without a Subjacency violation.

Apparent evidence that the P-gap is a trace is the fact that it appears to produce ECP violations. The following are due to Munn (1992:22).

(73) the man

- a. *who John suspected t after pg had committed the crime
- b. *who Bill said t was innocent after pg had committed the crime
- c. *who Bill believed t to be innocent (even) after pg had been convicted of the crime

These cases can be analyzed as similar to *that-t* violations, where the conjunction *after* blocks proper government of the P-gap by the null operator, e.g.,

(74) $[_{pp} OP_i [\text{after } [_{IP} t_i \dots]]]$

In contrast, it has been argued (Perlmutter (1971)) that languages that permit empty subject pronominals lack *that-t* violations. If this proposal is correct, then it might constitute a difficulty for the anti-CCP view discussed in §3.2.2 that the P-gap is a pronominal. Complicating the situation is the fact that the two types of pronominals are not necessarily the same, since the putative pronominal in the P-gap construction would have an A' antecedent, while the empty subject pronominal is either free or A bound.

3.2.2. *P-gaps as pronominals*

An important proposal of type P1 is due to Cinque (1990). Cinque argues that there is a class of apparent extractions that are the consequence not of movement, but of binding of an empty pronominal by an operator. In certain cases where extraction is impossible, which Cinque calls “weak islands”, the empty pronominal can be bound. This difference makes it appear that only NPs can be extracted from such islands. E.g.,

- (75) a. Who did you leave the party without talking to t?
b. *To whom did you leave the party without talking t?

P-gaps appear to display the same behavior with respect to weak islands, a result that follows if the P-gap is in fact a pronominal. See Levine et al. (this volume) for a critique of Cinque's proposal.

In support of P1 is the following observation, attributed by Chomsky (1986) to Kearney (1983).

- (76) a. [Which books about himself]_i did John_i file t_j before Mary read t_j
b. *[Which books about herself]_j did John file t_j before Mary_i read t_j

The striking fact here is that reconstruction of the NP containing the reflexive into the true gap in (76b) produces an agreement violation, but no such agreement violation arises in the case of a putative reconstruction into the position of the P-gap, as in (76a). If the P-gap is a variable whose antecedent is the fronted wh-phrase, this difference is puzzling, given the lack of agreement in **before Mary_i read (which) books about himself_i*. But if the P-gap is a pronominal of some type, an example like (76b) patterns just like (77).

(77) [Which books about himself]_i did John_i file t_j before Mary read them_j.

On the other hand, a similar phenomenon occurs in the case of extraction from coordinate structure.

(78) a. [Which books about himself]_i did John_i file t_j and Mary read t_j?

b. *[Which books about herself]_i did John file t_j and Mary_i read t_j

There are a number of possible approaches to the similarity, including taking into account linear precedence in the processing of the reflexive, and taking coordination to have essentially the same structure as P-gaps. For discussion, see Munn (this volume),

Additional evidence that a P-gap is pronominal is adduced by Postal (1993), who argues that P-gaps do not appear in contexts that are “anti-pronominal”. One particularly robust example involves *there*.

(79) a. *There are them in the soup. [Po93:744,(29a)]

b. What kind of spiders are there t in the soup? [Po93:744,(29b)]

c. *What kind of spiders did he praise t before learning there were pg in the soup? [Po93:744,(29d)]

- d. The kind of spiders that he found t in the chicken soup yesterday and there will be t in the bean soup today are hairy ones. Po93:744,(31)]

Postal expands on his earlier work in his paper in this volume (“”). He presents evidence that shows that the true gap may not occur in a class of contexts that exclude weak pronominals. One example is the following.

- (80) a. What color did she paint her house t?
b. She painted her color yellow/*it.
c. What book did she buy t after discussing pg with Abigail?
d. *What color did she paint her house t after discussing pg with Abigail? (=Postal’s (22b))

See Postal’s paper for his proposal about why both true gaps and P-gaps should display antipronominal properties.

Finally, Hornstein (1995:172) observes the following data.

- (81) a. What did everyone review t?
b. What did everyone review t before I read pg?

According to Hornstein, (81a) is ambiguous, while (81b) is not. The first has the individual or the pair-list reading while the latter has only the individual reading. Only the individual reading is possible when a pronoun is substituted for the P-gap.

- (82) What did everyone review before I read it.

The absence of ambiguity in (81b) would follow if the P-gap were an empty pronominal, on the assumption that such pronominals have the same properties as overt pronominal.

Additional support for P1 is given by Ouhalla (this volume), who shows that the behavior of P-gaps in Moroccan Arabic can be given an elegant explanation if they are taken to be null presumptive pronouns.

P2 is proposed by Bordelois (1986:12), who observes that P-gaps can appear in questions. On this basis she concludes that it is “implausible to analyze both P-gaps and adverbial gaps as silent resumptive pronouns...” The reasoning here is that typically questions do not allow resumptive pronouns, as in

(83) Who did you see (*him)?

even in languages that allow resumptive pronouns in relative clauses

(84) the man who I saw (him)

(However, in Vata there are resumptive pronouns in certain wh-questions according to Koopman and Sportiche (1986).) But the logic is complicated by the fact that the resumptive pronouns on the Cinque/Postal approach are empty, and thus may fall outside of any universal prohibition against **overt** resumptive pronouns in wh-questions. Furthermore, even if the P-gap is pronominal, the presence of the true gap may obviate the restriction against resumptives in wh-questions. So, for example, while (83) is ungrammatical with a resumptive pronoun, there is no problem with (85).

(85) Who did you see t after you called him..

Any general restriction against pronouns bound by an interrogative would appear to hold, if at all, only if there is no true gap.

Bordelais' counterproposal is that the P-gap is actually an empty anaphor. The basic evidence is that in Spanish, P-gaps occur only when the adjunct is infinitival, while clitics cannot occur unless the adjunct is tensed. E.g.,

- (86) a. los artículos que archivaste sin leer(*los)
the articles that you filed without to-read (them)
- b. los artículos que archivaste sin que *(los) liste
the articles that you-files without that (them) you-read

The distinction between these two types of cases is gotten by restructuring the infinitival adjunct with the main clause so that there is a single binding domain for the Binding theory; the anaphor is bound in this domain and the pronoun is not free, a violation of Condition B of the Binding theory. On the other hand, no such restructuring occurs when the adjunct is tensed; here, the anaphor cannot be bound, a violation of Condition A of the Binding theory results, and the pronoun is free, as required. However, as pointed out by Huckabay (1989), the same distinctions do not hold in English, requiring a parametrization of the restructuring rule. Moreover, the presence of tense and an overt subject nevertheless produce degraded acceptability judgments for comparable English examples.

Evidence that the P-gap is pronominal constitutes a challenge to the CCP view that the P-gap forms a chain with the

antecedent of the true gap, as in the connectedness approach of Kayne (1983) (see §2.1) and the composed chain proposal of Chomsky (1986) (see also Frampton (1990)). Locality effects do not in themselves constitute conclusive evidence for the trace approach, given Cinque's observations (Cinque (1990)) that “strong island” effects hold occur even when the empty constituent is pronominal.

3.2.3. *Other views*

Lasnik and Stowell (1991) address the fact that P-gap constructions in general do not appear to yield weak crossover (WCO) effects, in violation of the Bijection Principle of Koopman and Sportiche (1982). The problem is partly solved under the CCP, following Contreras (1984) and Chomsky (1986), if the P-gap is bound by a null operator. Hence there is not a configuration in which there are two variables bound by one operator. But they point out that if the Bijection Principle is accepted, then the question arises as to why there is no WCO effect in examples like the following.

(87) Who_i did you gossip about t_i [despite his_i teacher's having vouched for pg_i] ? [L&S92:695,(23a)]

There would be a null operator in the adjunct containing the P-gap, which should produce the WCO violation.

(88) [OP_i [despite his_i teacher's having vouched for pg_i]

Their solution is that the WCO effect occurs only when the operator is a “true Quantifier Phrase” (pp. 703-4). They argue that the trace of a non-QP null operator is not a variable, but a null epithet. In the P-gap construction the null epithet is an r-expression, and hence a condition C violation is produced when it is c-commanded by the true gap. Postal (1997:34) cites the following data from Barss (1986) and Cinque (1990) to illustrate that P-gaps produce strong crossover effects when they are c-commanded by pronouns, consistent with the view that they are r-expressions.

(89) a. *It's John who_i Mary voted for t_i after he_i asked someone to nominate pg_i.

[Barss 1986:378]

b. *Who_i did they find t_i hostile before he_i realized they wanted to help pg_i?

c. *What woman_i did Joe discuss t_i while she_i tried to persuade Mike to hire pg_i?

[Cinque 1990:150]

However, as also pointed out by Postal, the proposal that the P-gap is an r-expression is clearly at odds with the evidence cited earlier in this section that it is a pronominal.

3.2.4. *Chomsky 1982*

The P-gap analysis of Chomsky (1982) is based on the theory of functional determination of empty categories. On this theory, an empty category acquires the properties of being a pronoun, an NP trace (and hence an anaphor), PRO or a variable as a function of the context in which it appears. An empty category is a variable if it is in an A-position and is locally A' bound (p. 34). On this view, the two empty categories in the following example are both variables.

(90) Who_i did you give a picture of e_i to e_i.

Since there are two variables bound by a single operator, this example formally violates the Bijection Principle (Koopman and Sportiche (1982)), as discussed in §3.4.3.²⁰ Chomsky also considers examples such as the following.

- (91) a. a man whom everyone who meets e knows someone who likes e [Ch82:57,(79a)]²¹
b. a man whom to know e is to like e [Ch82:57,(79d)]

He suggests that these are preferred because of the parallelism that is not found in the WCO cases with one gap and one pronoun. This suggestion is developed in some detail by Safir (1984).

For the case where the P-gap is in an adjunct, Chomsky proposes that the empty category is an empty pronominal that alternates with the overt pronominal that is possible in the same position.

- (92) a. Which articles did John file t without reading pg/them.
b. This is the kind of food you must cook t before you eat pg/it.
c. Here is the influential professor that John sent his book to t in order to impress pg/him.

[Ch.82:38,(54)]

A pronoun is licensed in this position because by assumption it is not locally A-bound. However, what needs to be explained is why the empty pronominal can **only** appear when there is a true gap in the particular configuration of the P-gap construction. If the true gap c-commands the P-gap, then there will be a chain that contains the two, hence two $\bar{2}$ -roles, in violation of the $\bar{2}$ -Criterion. An operator in situ cannot c-command the P-gap, for the same reason. The only possibility that is admitted is one in which the antecedent of the true gap c-commands and A' binds the P-gap.

Consider the case where there is a wh-phrase generated in COMP that A' binds an empty pronominal. Chomsky proposes that only a phrase in an A position at S-structure has an index; thus the base-generated wh-phrase cannot bind the pronominal.

Chomsky points out that P-gaps are possible without overt movement, a fact that is consistent with the assumption that null operators can license P-gaps. E.g.,

(93) this book is too interesting [OP [PRO to put down t without PRO having finished pg]] [Ch82:45,(64b)]

Since movement does not produce the P-gap on this analysis, there need not be intermediate traces in COMP. On the view that a trace in COMP permits a trace in subject position while an overt COMP does not, it is predicted that the familiar alternation associated with *that-t* will not occur with a P-gap; neither [_{CP}*that pg...*] nor [[_{CP}*e*][*pg...*]] will be acceptable. This prediction assumes, of course, that intermediate traces cannot be freely generated in COMP. Chomsky (1982:53) cites the following examples as evidence that supports the prediction.

- (94) a. someone who John expected t would be successful though believing pg is incompetent
b. this is the student everyone thinks t is intelligent because John said pg was intelligent
c. a woman who t called John an idiot as often as pg called him a cretin

[Ch82:53,(71)]

For Chomsky these examples are ungrammatical, in contrast to cases where the P-gap is in a governed position.

- (95) a. someone who John expected t to be successful though believing pg to be incompetent
b. *this is the student everyone expected t to be intelligent because John believed pg to be intelligent²²
c. a man who Mary called t an idiot as often as Jane called pg a cretin²³

[Ch82:54,(72)]

Compare examples (94a) and (94b) with the following.

- (96) a. someone who John expected t would be successful though believing that pg is incompetent
b. this is the student everyone thinks t is intelligent because John said that pg was intelligent

Chomsky (1982:55) notes that these examples with *that pg* are worse than those without *that*, suggesting a problem with either the analysis of P-gaps or of the *that-t* effect.

In summary, on the analysis of Chomsky (1982) P-gaps in adjuncts are empty pronominals, while in multiple gap constructions (as in (90) *Who did you give a picture of to?*) the two gaps are variables both bound by the operator.

3.3. Case properties

Related to the question of whether the P-gap is a trace or a pronominal is the question of the compatibility of Case assignment to the P-gap and the true gap. On the assumption that there are two chains in the P-gap construction with a common head, it would follow that the true gap and the P-gap would have to have the same Case, the Case of the head. However, if we take the position that the P-gap is a pronominal, then it does not form a chain with the antecedent of the true gap, and hence there is a possibility that its Case may be different from that of the true gap.

3.3.1. *Kiss 1985*

The relevance of case compatibility was first noted by Kiss (1985), reprinted in this volume. In Hungarian, the cases of the P-gap and the true gap must be identical, in the sense that the overt case marking on the antecedent must be compatible with the chain that it forms with the true gap and with the chain that it forms with the P-gap. Case compatibility may hold even if the cases associated with the two gap positions are different, since extraction through the Comp position of a complement of a transitive verb changes a

nominative case to an accusative case (p.55). Kiss's condition on case identity is the following, generalized to all features.

- (97) In a parasitic gap construction, the syntactic features of both the real gap and the parasitic gap are properly transmitted to the phonologically realized operator. [K85:62,(48)]

For cases in which the true gap c-commands the P-gap, condition (97) holds even though the P-gap is not grammatical.

- (98) *which man_i do you think [_{t_i} t_i warned the police [t they should arrest pg_i]] [K85:63,(50)]

Kiss proposes (p.63) that the two chains must have the same case at the point in the tree at which they meet. In (98) the accusative case of the P-gap and the nominative case of the subject are in conflict at the lowest node that dominates both, and the nominative case only gets changed to accusative in the Comp of the complement of *think*. However, Horvath (1992) argues that even when case compatibility is observed, there are examples where c-command must be invoked in order to account for ungrammaticality; see §3.3.2. Furthermore, Kiss herself notes (p.68) that (97) will not account for the following cases, which fall under the anti-c-command condition.

- (99) a. *Who did you introduce t to pg? [K85:68,(63)]
b. *Which man do you expect t to warn the police that they should not arrest pg. [K85:68,(64)]
c. *This is the student that we consider t sure that we can help pg. [K85:68,(65)]

3.3.2. *Nakajima, Horvath*

Nakajima (1985-1986) notes a number of problems with the formal apparatus proposed by Kiss for transmitting case to a chain.

Nakajima also considers another type of P-gap construction (see (100)), noted originally by Haegeman (1984).

- (100) a. a man who [whenever I meet pg] t looks old
b. This is a note which [unless we send pg back] t will ruin our relationship.

The key property of these examples for Kiss' proposal is that there cannot be case identity between the two chains, yet they are grammatical. The examples are also of broader interest because they show that a subject of a clause that contains the adjunct in which the P-gap appears can be the antecedent for a P-gap. I discuss this point at greater length in §3.4. For further discussion of Kiss'

proposal, see also Kiss (1988) and Nakajima (1990).

Horvath (1992) argues against Kiss' proposal that case identity is sufficient to account for the distribution of P-gaps in Hungarian without considering configurational properties. Horvath shows that even if there is case compatibility, it is also necessary to incorporate an anti-c-command condition between the true gap and the P-gap. Horvath cites the following examples to support her argument.

- (101) a. *a férfiak akiket hallotunk, [t' hogy [szeretnek t [mindenkit aki ismeri pg]]]
the man-pl who-pl-acc we-heard that like everyone-acc who-nom knows
'the men who we heard t like everyone who knows pg'
- b. *kiket gonodlsz, [t' hogy [figyelmeztették t a rendőrséget
who-pl-acc you-think think warned-def.do the police
[hogy [le ne tartóztasson pg]]]
that v.prefix not it-should-arrest
'who do you think t warned the police that they should not arrest pg'

In both of these examples the subject trace is linked to an accusative operator, because of the phenomenon of "Case-switch" in Hungarian. Hence case compatibility is maintained, yet the examples are ungrammatical.

3.3.3. *Franks 1992*

Franks (1992) discusses the function of case agreement in Slavic, particularly Polish and Russian. He argues that there are two sorts of case conditions on ATB extractions, where two (or more) chains share a single head. First, the morphological form of the case marking on the head of the chains must be consistent with the case assignment on the tail of the chain. So, for example, an accusative chain and a genitive chain can be joined at a single head if the form of the accusative and of the genitive are identical. This occurs when a masculine animate NP is in the accusative, which has the same form as the genitive. Second, the gaps must be thematically parallel, in the sense that the 2-roles associated with the two gaps must be the most prominent ones in their individual clauses.

Similar conditions hold in P-gap constructions in Russian.²⁴ The case condition is illustrated in the following examples.

(102) mal'..ik, *kotoromu/*kotorogo Maša davala den'gi t do togo, kak (ona) stala izbegat' pg, ...
 boy who(dat)/(gen) (nom)gave money until she started to-avoid
 'the boy who Masha gave money to until she started to avoid him'
 [F.92:15,(30)]

(103) devuška, katoroj Ivan daval den'gi t do togo, kak (on) stal izbegat' pg, ...
 girl who(dat-gen) (nom) gave money until he started to-avoid
 'the girl who Ivan gave money to until he started to avoid her'
 [F.92:13,(27a)]

The verb *davit* 'give' governs the dative case, while *izbegat* 'avoid' governs the genitive. The masculine dative and genitive forms of the relative pronoun are morphologically distinct, while the feminine dative and genitive forms are identical. Thus (103) is grammatical while (102) is not.

The following example illustrates the role of thematic prominence when case forms agree.

- (104) *devuška, kotoroj t bylo veselo do togo, kak Ivan stal izbegat' pg, ...
 girl who(dat-gen) was merry until (nom) started to-avoid
 'the girl who was merry until Ivan started to avoid her'
 [F.92:13,(28a)]

In this example, the subject of *bylo veselo* is thematically most prominent in its clause, while the object of *izbegat'* is not. But an argument can be made that the subject of *bylo veselo* c-commands the P-gap in this example, as in the following.

- (105) *okno, kotoroe razbilo t vetrom do togo, kak my uvideli pg na zemle, ...
 window which(acc) broke wind(inst) before we saw on ground
 'the window which the wind broke before we saw it on the ground'
 [F.92:14,(28b)]

Case identity appears to display the same pattern in Polish, as discussed by Kardela (1990), except that Kardela does not discuss whether nominative case can be changed to accusative as a consequence of extraction through Comp.

3.4. The anti-c-command condition on the true gap

3.4.1. *Anti-c-command, not anti-subject*

The original observation that a subject cannot license a P-gap if it c-commands it is due to Engdahl (1983). Various proposals have been made in the literature to account for this generalization, and some apparent counterexamples have been discussed as well. As pointed out in §1, the generalization cannot be simply that subjects do not licence P-gaps, because an embedded subject that does not c-command a P-gap can license it, as illustrated by the examples in (12), repeated here.

- (12) a. Which caesar did Brutus imply t was no good while ostensibly praising pg. [E83:21,(60)]
b. Who did you say John's criticism of pg would make us think t was stupid.

Moreover, as noted by Haegeman (1984) (see also Nakajima (1985-1986)), there are cases where a main subject does not c-command

the P-gap, in which case the construction is grammatical.

(106) a note which [unless we send back pg] t will ruin our relationship. [Ha84:231,(9)]

But when the same adjunct follows the true gap in subject position, ungrammaticality results.

(107) *a note which t will ruin our relationship unless we send back pg

So the relevant property would appear to indeed be that of c-command.²⁵

3.4.2. *Accounting for the condition*

A natural approach to accounting for the anti-c-command condition is to relate it to Binding theory, which in its classical form crucially invokes the relation of c-command. Failure to license a P-gap could in principle be related to any of the three standard conditions: Condition A, which requires an anaphor to be locally bound, Condition B, which requires a pronoun to be locally free, and

Condition C, which requires a referring expression to be free.²⁶ The approach that one takes is thus tied to arguments for the character of the P-gap, as outlined in §3.2.

Engdahl (1984) considers the properties of P-gaps whose antecedents are subjects and those whose antecedents are non-subjects, as in (108) (the judgments are Engdahl's).

- (108) a. *Which candidate did you say [t shook hands for 7 hours to make people vote for pg]? [E84:92,(2)]
b. ?Which candidate did you [_{VP} convince t that you were going to vote for pg]? [E84:93,(8)]

Example (108a) is ruled out in a phrase structure approach such as GPSG because there is no subject gap in the complement at all. The complement, which is a VP, lacks a SLASH feature that corresponds to the initial wh-phrase, and hence the P-gap is not licensed. Cases such as (108b) are allowed because the SLASH feature is on the VP headed by *convince* and therefore licenses both the true gap and the P-gap.

Engdahl points out that the same type of difference does not follow from an account based on (anti-)c-command. Crucially, it is not possible to get around the problem by assuming a non-c-command structure for examples like (108b) given the standard small clause analysis for the following examples, in which the subject and the predicate are sisters.

- (109) a. ?Which famous linguists do you consider [t smarter than most friends of pg]?
b. ?Which painter did John regard [t as more promising than most contemporaries of pg]?
[En84:96,(15)-(16)]

The same conclusion also follows if the structure is [V NP Pred], but not if it is the non-standard [[V NP] Pred]. On the GPSG analysis, the feature SLASH may appear both on the subject and the predicate of the small clause.

The crucial quality of the GPSG analysis that produces the effect of an anti-c-command condition is that just in the tensed sentence the extracted subject is not a trace.²⁷ Engdahl suggests that a counterpart to this analysis can be constructed in GB terms, using the notion of antecedent government.²⁸

(110) Parasitic gaps may not be bound by an antecedent governed empty category.

A trace that is the subject of a tensed S is only antecedent governed, while traces that are the subject of a small clause, a direct object, the object of a preposition, and so on are lexically governed. (As Engdahl (p.103) notes, they are also antecedent governed, hence requirement (110) must be understood in terms of “antecedent but not lexically governed”.)

Another approach is that of Aoun and Clark (1985), who propose that “the non-overt operator in P-gap constructions is treated as an $A^!$ anaphor which is subject to a generalized binding theory.” (See Contreras (1987) for a similar proposal.) On this view, the P-gap is an anaphor with an $A^!$ -antecedent. The overt operator is an $A^!$ anaphor in an $A^!$ position. There is a general condition on S-structure that the anaphor must be bound in its governing category, which is the matrix S^{II} . The local antecedent is a null operator, which is itself an $A^!$ anaphor whose antecedent is the antecedent of the true gap. This null operator is subject to principle A of Generalized Binding Theory. The anti-c-command condition follows from the requirement that an $A^!$ anaphor cannot be A bound (at S-structure). The c-commanding trace is the A binder.

But as Kiss (1985) among others points out, if a direct object c-commands a sentential complement then principle C of the Binding theory correctly rules out examples such as the following:

(111) *The police warned him_i that they would arrest John_i. [K85:45,(9)]

and a quantifier can bind a pronoun to its right --

(112) The police warned everybody_i that they would arrest him_i [K84:45,(10)]

but then surprisingly, the following is a grammatical P-gap constructions:

(113) Which man did the police warn t that they would arrest pg?

Hence the Aoun and Clark proposal runs into a problem, as does any account of anti-c-command, given cases such as (113) where the direct object is taken to c-command the sentential complement and the c-command theory of binding is assumed. Moreover, assuming the proposal of Kiss (1985) that Hungarian has a flat structure, the anti-c-command condition should rule out grammatical P-gap constructions in Hungarian, which show essentially the same subject-object asymmetry as do the P-gap constructions of English.

In the connectedness account of Kayne (1983) and Longobardi (1984), the anti-c-command condition is a consequence of the definition of the Connectedness Condition.

(114) *Connectedness Condition.*

Given a maximal set of empty categories $\$_1, \dots, \$_n$, each locally bound by the same antecedent " in a tree T, the union formed by the g-projection sets of every \$ and by the antecedent " must form a subtree of T.

Since the P-gap is a variable it is an r-expression, and hence falls under Condition C of the Binding theory. If the true gap binds the P-gap, the antecedent is not a local binder of the P-gap. Hence the Connectedness Condition does not apply, and Condition C rules out the P-gap.

3.4.3. *Counterexamples to the anti-c-command condition*

Contreras (1984) observes that there is an apparent conflict between the anti-c-command condition and the fact that direct objects appear to bind into adjuncts to their right.

- (115) a. Which articles did John file t without reading pg. [C.84:698,(2)]
b. *John filed them_i without reading Mary's articles_i. [C.84:698,(4)]

The b-example appears to be a Condition C violation, in which *them* c-commands and therefore binds *Mary's articles*. But then it would appear that the true gap in the a-example also c-commands the P-gap. It would then follow that there is a single chain that contains the true gap and the P-gap, leading to a violation of the 2-Criterion. Contreras also argues that under the theory of Chomsky (1982), the P-gap cannot be an anaphor (NP trace or PRO), since it is not locally bound but is governed, nor a pronominal, since it is not properly identified.²⁹ The solution that Contreras proposes anticipates the approach of Chomsky (1986): there is a null operator in the clause that contains the P-gap that A' binds it. On this view, the P-gap is a variable, and the chain is parasitic on the true chain. See also Stowell (1986).

Contreras (1984) (see also Contreras (1987)) considers the difference in acceptability between examples like (115a) and those like (116) (a type of example originally noted by Engdahl (1983)).

(116) Who_i did you give pictures of e_i to e_i? [C.87:61,(1)]

Contreras suggests that the clausal adjunct that contains the P-gap in the acceptable P-gap construction permits the null operator analysis, which is ruled out in the case of (116).

The following examples suggest that the binding evidence is equivocal.

- (117) a. We admitted them_i without those students meeting even the most minimal standards.]
b. You can't even try to help them without the twins getting very upset.³⁰
c. John filed them without even READING Mary's articles.

[C84:85,fn.1,(i)]

One plausible conclusion, given the grammaticality of the examples in (117), is that the direct object does not c-command the adjunct, and that other factors are responsible for the marginal status of (115b). But this will not help with other problematic examples such as the following.

(118) Who did you warn t that the police were going to arrest pg.

Here it appears that the true gap c-commands the P-gap because of the ungrammaticality of --

(119) *I warned him that the police were going to arrest Bill.

– which appears to be a Condition C violation. It does not appear to be possible to ameliorate this violation using intonation and context, as in the case of binding into adjuncts.

Safir (1987) argues that there is no c-command of the P-gap by the true gap in a case such as (118), since the sentential complement is adjoined higher than VP, in an extraposed position; however, the judgments used to support the argument are not entirely sharp. Saito (1991) also argues that these examples in fact involve extraposition, and attributes the ungrammaticality of (119) to a condition distinct from Condition C which has the same effect in spite of the extraposition.

Koopman and Sportiche (1982:148-9) offer an account of (116) in terms of the Bijection Principle, claiming that it has the same grammatical status as

- (120) a. *Who_i did you give a picture of him_i to e_i? [K&S.87:149,(25a)]
b. *Who_i did you give a picture of e_i to him_i? [K&S.87:149,(25b)]

By definition, the empty category that is not produced by movement is a variable in virtue of being locally A' bound. It is not clear that this is the correct approach, however, in view of the greater unacceptability of the examples with overt pronominals, which are also variables. In fact, for some speakers (including the editors) (116) is completely unobjectionable. It is therefore far from clear that the Bijection Principle is relevant here.

The picture is further confused by the observation (see Contreras (1993)), that various binding relations do not always appear to observe the same configurational conditions. An anaphor must be “strongly” c-commanded by its antecedent (in the sense of Chomsky (1986)), while an r-expression may not be “weakly” c-commanded (or m-commanded) by a pronominal. Contreras (1993) stipulates that Condition C violations such as

- (121) *We accepted them_i without interviewing those students_i.

are due to a condition on backwards pronominalization (citing Chomsky (1986:62) and Cinque (1990:190-191); see also Lasnik and

Stowell (1991:713)), so that it is not necessary to hold either that the r-expression is “strongly” c-commanded by the pronoun, or that there are two notions of “bound”, one for Condition A and one for Condition C.

A perhaps more serious class of counterexamples to the CCP was first noted by Horvath (1992).³¹

- (122) a. Which papers do you think t got published without the editor having read pg? [H92:201,(23)]
b. Who do you expect [t to disappear without anyone having met pg/before anyone could talk to pg]? [H92:210,(31)]
c. Who do you expect [t to withdraw his candidacy before the Committee has a chance to interview pg]? [H92:210,(32)]

(123) *Hungarian*

- a. Kiket mondtál t' hogy sosem panaszkodnak t [azután hogy a tanító megbüntet pg]
who-pl-acc you-said that never complain it-after that the teacher-nom punishes
'Who did you say t never complains after the teacher punishes pg?'
[H92:199,(17a)]
- b. Milyen iratokat hittetek t' hogy el fognak veszni t [ha nem rakunk el e]?
what papers-acc you-believed that away will get-lost if not we-put-pres away
'What papers did you believe t will get lost unless we put away pg?'

[H92:199,(18a)]

- c. Kiket szeretnél t' ha anélkül távoznának t [hogy Mari megismert volna pg]
who-pl-acc you-would-like if without-it left that Mary-nom had-met
'Who would you like if t left without Mary having met pg?'

[H92:199,(19a)]

Horvath observes that the grammatical P-gaps that do not obey the anti-c-command condition are in adjuncts; those in complements are ill-formed.

- (124) a. *Who do you expect [t to warn the police that they should not arrest pg]? [H92:209,(29a)]
b. *Who do you expect [t to convince the boss that he should not fire pg]? [H92:209,(30a)]

Horvath proposes that the ungrammatical examples are condition C violations. In the grammatical examples the P-gap is c-commanded by the subject trace, and so they should be condition C violations too, but they are not. The reason, she suggests, is that the null operator that heads the chain containing the P-gap in the adjunct is not evaluated with respect to condition C at S-structure. Hence the P-gap

is licensed at S-structure. Extending a proposal of Lasnik and Saito (1984), this null operator can be deleted at LF and so avoid the condition C violation at that level as well.

Brody (1995) offers a different explanation for the different status of c-commanded P-gaps in adjuncts and complements. Let the underlying subject position be VP-internal, as suggested originally by Manzini (1983) and argued for by Kitagawa (1986) and Koopman and Sportiche (1991), among others. An adjunct will be adjoined higher than the VP, so the subject position will not in fact c-command it. However, this solution does not avoid the problem that the subject position does c-command into the adjunct from the perspective of condition C. Hence Brody must allow for two types of c-command and two types of binding, a consequence ruled out by Contreras (1984), for example.

A different type of challenge to the anti-c-command condition is of a more technical nature.³² Consider a case such as the following in which the P-gap is ostensibly in a complement and c-commanded by the true gap.

(125) *who_i [t_i bought [_{NP} a picture of pg_i]]

The NP in this case allows extraction.

(126) Who_i did you buy a picture of t_i?

Therefore, the following derivation must also be ruled out.

(127) *who_i [pg_i bought [_{NP} a picture of t_i]]

One might pursue the idea that (125) is ruled out by the anti-c-command condition, while (127) is ruled out by the impossibility of having both the wh-operator and the empty operator corresponding to the P-gap in the same position, as in the following analysis.

(128) [who_i OP_i] [pg_i bought [_{NP} a picture of t_i]]

For longer movements of the wh-operator, such a condition would have to extend to intermediate traces.

(129) [who_i [you think [[t_i['] OP_i][pg_i bought a picture of t_i]]]]

3.5. Licensing

3.5.1. Resumptive pronouns

As noted earlier, it is an open question whether a P-gap can be licensed by an A' antecedent that forms a chain with a resumptive pronoun. Engdahl (1985) shows that resumptive pronouns can occur in Swedish where otherwise an extraction violation would arise. Where resumptive pronouns can occur, they license P-gaps.

(130) Det var den fången_i som läkarna inte kunde avgöra [om han_i verkligen
it was that prisoner that the-doctors not could decide whether he really
var sjuk][utan att tala med pg personligen
was ill without to speak with personally

‘This is the prisoner that the doctors couldn’t determine if he really was ill without talking to in person’

[E85:7,(8)]

The licensing property of resumptive pronouns in Swedish is accounted for if the resumptive pronoun is the ‘spelling out’ of a syntactic variable (essentially a visible trace), and if the licensing of the P-gap depends on its antecedent forming a chain with such a variable (Engdahl (1985:7); see also Rizzi (1990:61f)). (The use of resumptive pronouns as variables is systematic in Swedish only in the subject position of tensed S (p.11).) However, it is quite clear that resumptive pronouns in English, which are at least marginal when extractions are disallowed, do not permit P-gaps, as noted by Chomsky (1982).

- (131) a. *a man whom everyone who meets him knows someone who likes pg
b. *a man whom everyone who meets pg knows someone who likes him

[Ch82:57,(79b,c)]

Chomsky also cites evidence from Spanish due to Torrego that suggests that resumptive pronouns in Spanish cannot license a P-gap.

Sells (1986) appears to have been the first to point out that Hebrew resumptive pronouns do license P-gaps.

- (132) ha'iša še [[ha-anašim še šixnati levaker pg] [te'aru ota]]
the-woman who the-people that I-convinced to-visit described her
[Se86:63,(8)]

The resumptive pronoun is not simply an overt trace since, as Sells points out, it does not produce the Subjacency effects that are found when there is a gap produced by extraction (examples from Borer (1981)).³³

- (133) a. *ha'iša_i še pagašti et ha'iš_j še t_j ra'a t_i
the-woman who I-met the man who saw
b. ha'iša_i še pagašti et ha'iš_j še t_j ra'a ota_i
the-woman who I-met the man who saw her

Schlonsky (1986) proposes to account for this fact, and for P-gaps in general, by adapting the mechanism of scope-indexing of Haik

(1984). Schlonsky argues, first, that there is no operator movement in the case of resumption, which accounts for the absence of Subjacency effects, among other things. Hence the binding relation between the P-gap and the resumptive pronoun is not mediated by chains, but is a function of the indices on them. For Haik, an NP headed by a quantifier phrase receives the index of an NP that it contains; this second index can bind a variable in the scope of the first NP. Haik originally applied this mechanism to so-called “donkey”-sentences.

(134) [Every farmer [who owns [a donkey]_i]_j beats it_i

Here, the index *i* of *a donkey* transfers to [*Every farmer who beats a donkey*], which binds *it*. Hence *a donkey* can bind *it*. In the P-gap construction in (132) the index of the P-gap transfers to the NP that contains it, which in turn binds the resumptive pronoun. Interestingly, Schlonsky points out (p. 575) that where this indexing mechanism cannot apply, the P-gap cannot be licensed by a resumptive pronoun, e.g. where the P-gap is inside of an adjunct.

- (135) a. *ze ha-baxur Se-niSakti oto mibli lehakir
 this the-guy that-kissed+1ms him without to know
 ‘This is the guy that I kissed without knowing.’
- b. ze ha-baxur Se-niSakti mibli lehakir
 this the-guy t that-kissed+1ms without to know
 ‘This is the guy that I kissed without knowing.’

[Sh86:575,(15)]

Tellier (1989) observes that in Mooré, P-gaps are licensed by apparent relative wh-in-situ. Mooré relative clauses can have a gap or can be “internally headed”; that is, the head of the relative clause is in the argument position in the clause itself. E.g.,

- (136) a. m yaa [biig ninga]_i rawa sen seg t_i wa
 1sg see child NINGA man REL meet DET
 ‘I saw the child that the man met.’

[Te89:300,(4)]

- b. m mii [rawa sen seg biig ninga wa]
 1sg know man REL meet child NINGA DET
 ‘I know the child that the man met.’
 [Te89:301,(5)]

Tellier argues that *ninga* marks the head of the relative clause.

Strikingly, both types of relative clauses license P-gaps, as does wh-movement in questions..

- (137) a. m mii neb_i [fo sen t%_o t_i] n yaol n ka ya pg_i ye
 1sg know people 2sg REL insult after NEG see NEG
 ‘I know the people that you insulted without having seen.’
 [Te89:301,(6a)]
- b. m mii [fo sen t%_o neb ninga_j n yaol n ka pogl pg wa]
 1sg know 2sg REL insult people NINGA after NEG hurt DET
 ‘I know the people that you insulted without having hurt’

[Te89:302,(7)]

c. kom b%as_i la [fo t%_i t_i] n yaol n ka ya pg_i

which children WH 2sg insult after NEG see

‘Which children did you insult without having seen?’

[Te89:301,(6b)]

But wh-in-situ does not license P-gaps.

(138) *fo t%_i kom b%se_i n yaol n ka ya

2sg insult which children after NEG see

‘You insulted which children after having seen?’

[Te89:301,(6c)]

Nor do resumptive pronouns.

- (139) *ad neb nins_i yamb sen w%orm t'a Maari pab Cb_i la zaame n yaol n ka pogl pg
 here people NINGA 2pl REL claim COMP Mary hit 3pl DECL yest. before NEG hurt
 'These are the people that you heard the claim that Mary hit them without hurting.'

Furthermore, a P-gap with the internal relative is not possible when the verb takes two arguments unless the head of the relative precedes the second argument (p. 313). Tellier argues that this is because the NP that licenses the P-gap actually undergoes leftward “focus movement” to the left in the VP. The V then raises to Infl, and appears to the left of the arguments. *Ninga* is a focus marker, on this analysis. The focused constituent is in an A' position and thus licenses the P-gap in the usual way.

3.5.2. *Wh-in-situ in Jeddah Arabic*

An additional fundamental point in the analysis of P-gaps is that they do not appear to be licensed by LF movements. The following examples are repeated from §1.

- (9) a. *John filed which articles without reading t/pg. [E83:14,(33)]

- b. *I forget who filed which articles without reading t/pg. [E83:14,(34)]

Hence the CCP is that P-gaps are licensed by an antecedent that c-commands it and the true gap at S-structure.

The CCP can be challenged on this point by showing that there are examples of P-gaps where the wh-phrase is in situ. This has been argued for Jeddah Arabic as summarized in this section. It can also be challenged, although more weakly, by showing that the antecedent of the P-gap and the antecedent of the true gap are not the same (see §3.5.3), or by showing that the P-gap appears in LF but not S-structure (see §3.5.4).

Wahba (1995) provides evidence that wh-movement and resumptive pronouns license P-gaps in Standard Arabic, and that wh-in-situ does as well in Jeddah Arabic. The last observation constitutes a counterexample to the CCP that P-gaps are licensed only at surface structure, since the gap associated with wh-in-situ is present only at LF, if at all. The following examples illustrate the trace and resumptive pronoun constructions in wh-questions.

(140) *Standard Arabic*

- a. maða,Şa` ʔayta e, li-l-walad-i?
what gave-you to-the-boy-gen

‘What did you give to the boy?’

- b. ma-allaḏ_i ṣaʿṣaʿayta-hu_i li-l-walad-i?
what-that gave-you-him to-the-boy

[W93:61,(3)]

It is impossible to have a resumptive pronoun in an island –

- (141) *maḏa_i qaabala omar al-raḡul-a_j allaḏ_i e_j ištaraa-hu_i

9 *ma-allaḏ_i **A**

what(that) meet omar the-man-ACC who brought-him

‘What did Omar meet the man who brought?’

[W93:61,(4)]

– which suggests that the resumptive in the case of wh-movement is a visible trace. There are also resumptive pronouns in relative clauses, but these do not produce Subjacency violations.

The following show that *t* and *pro* both license P-gaps.

(142) *Standard Arabic*

- a. ʔomar_j faqada al-kitaab-a qabla ann PRO_j yaqrša-hu_i
 O. lose the-book before that to-read-it
- b. *ʔomar_j faqada al-kitaab-a qabla ann PRO_j yaqrša e_i
- c. maaḏa_i faqada t_i qabla ann PRO_j yaqrša-hu_i pg_i
- d. ma-allaḏi_i faqada-hu_i qabla ann PRO_j yaqrša-hu_i pg_i
 ‘What did Omar lose before he read?’

[W93:62,(5)]

The following show that wh-in-situ licenses P-gaps in Jeddah Arabic as well.

- (143) a. gabal-t miin il-yoom
 met-you whom yesterday
 [W93:64, (10c)]
- b. mona (aarat min miin_i ‘‘ašaan [‘‘omar_j yeb (a [PRO_j yetjawwaz pg_i])]
 Mona was-jealous of whom because omar wants to-marry
 [W93:64, (11c)]

Curiously, the following is ungrammatical.

- (12) *‘‘ali xabbar miin_i inn-u biyekrah pg_i
 Ali told whom that-he hates
 [W93:(12a)]

Wahba argues that this is because *miin* c-commands the P-gap, but note that the comparable sentence is grammatical in English.

(144) Who did John tell t [that he hates pg]

3.5.3. *Weak P-gaps*

Safir (1984) notes the following contrast.

- (145) a. the report which_i Mary read t_i without filing pg_i
b. the report [the author of which]_i Mary married t_j without meeting pg_j
c. *the report [the author of which]_i Mary married t_j without filing pg_j
d. *the report [the author of which]_i Mary filed t_i without reading pg_i [Sa84:665,(12)]

These examples confirm that the antecedent of the P-gap must c-command and A' bind it at S-structure. Seely (1991) notes, however, that the following are possible.

- (146) a. ?a report [before filing which]_i one must be sure to label pg_i correctly t_j
 b. ?a comment [immediately after making which]_i the president had to apologize for pg_i t_j
- (147) a. ?Woody Allen, whose_j movies_i I always send reviews of t_i to pg_j
 b. ?the patient whose_j fears_i we discussed possible sources of t_i with pg_j

The two groups of examples have a slightly different character. In (146) the preposed constituent is an adjunct which contains the relative pronoun in situ. In (147) the preposed constituent is a piedpiped argument that moves as a consequence of the relative pronoun in specifier position. But both groups have the characteristic that the antecedent of the P-gap does not c-command it at S-structure.

3.5.4. *Multiple wh-questions*

Kim and Lyle (1996) argue that P-gaps are licensed at LF and argue against S-structure licensing. One key observation is that P-gaps are not compatible with multiple wh-questions.

- (148) a. *Which parcel_i did you give t_i to whom without opening pg_i?
 b. Which parcel_i did you give t_i to Susan without opening pg_i?

[K&L96:288,(3)]

- (149) *¿Que artículos_i asignaste t_i a que estudiantes sin leer pg_i?

[K&L96:288,(4)]

They propose that multiple wh-questions undergo absorption at LF, by the following rule.

- (150) $(Q_1x:M_1)(Q_2y:M_2) M(x,y) \mathbf{\delta} (Q_1x Q_2y:M_1 \& M_2) M(x,y)$

(where $M(x_1...x_n)$ stands for an open sentence).

[Higginbotham and May (1981:61)]

Assume chain composition as in Chomsky (1986b). If there is a multiple wh-question, the wh-chains and the P-gap chains are different in character (the first is binary, the second is unary) and there is a violation of homogeneity (p. 291), a subcase of Chomsky's 1991 Uniformity Condition, reducible to Full Interpretation. The LF object is therefore illegitimate.

There is an obvious problem with this analysis (p.291): Why doesn't QR, which raises a quantifier to an A' position at LF, license P-gaps? The answer proposed by Kim and Lyle is that a chain produced by QR is not homogeneous with a chain for a P-gap, the first being a chain involving an adjunction to IP, and the latter, a CP chain.

Kim and Lyle do not consider the fact that an overt pronoun cannot appear in place of the P-gap in (148a).

(151) *Which parcel_i did you give t_i to whom without opening it_i?

Hence the problem may be not that the P-gap is not licensed, but that the operators in a multiple wh-question cannot serve as the antecedents of unbound pronominal elements, taking a P-gap to be a member of this category. The following suggests that this is the correct explanation.

(152) *Which parcel_i did you give to whom_j without warning her_j.

It may be turn out to be possible, of course, to characterize the problem in terms of absorption.

Kim and Lyle also note the following interesting cases with ellipsis.

(153) which article did John file t without meaning to [e]

(154) a. *Which article did you file t without asking who had read pg?

b. ?Which article did you file t without asking who else had [e]?

c. **Who did you meet the people who didn't know where there would be an opportunity to see t.

d. Chomsky, who everyone met t except the people who didn't know when there would be an opportunity to [e], ...

[K&L96:295,(23)-(24)]

Example (153) shows that it is possible for an elliptical VP to contain a P-gap. Arguably, the interpretation of the sentence must “reconstruct” the P-gap and interpret it at LF, since it is not present in the S-structure representation, as Kim and Lyle suggest.

The examples in (154) illustrate more complex cases of ellipsis. (154a) shows that a P-gap is not licensed in an embedded wh-question, which is an extraction island. When the P-gap does not appear in S-structure, as in (154b), the sentence is far more acceptable. Similar differences hold for complex NPs, as shown in (154c,d). Kim and Lyle argue that these examples support the view that P-gaps are licensed at LF. Again, there is an alternative view in which the reconstructed VP, met Chomsky in (154d), ?is itself reconstructed into the empty VP position at LF.³⁴

In his paper in this volume, Kennedy invokes the notion of "vehicle change" from Fiengo and May (1994), arguing that the

counterpart of a P-gap in an elliptical VP may be pronominal. Kennedy provides evidence in support of this proposal, by showing that in the elliptical VP the counterpart to the P-gap behaves like a pronoun; e.g., it produces Condition B effects, not strong crossover effects. Kennedy's conclusion of course brings to mind the arguments that the P-gaps themselves are pronominal; see section 3.2.2 as well as Postal (this volume, "Missing Parasitic Gaps").

Finally, Kim and Lyle discuss cases involving multiple gaps, as in the following.

- (155) a. *What_i did you show t_i to whom_j [without O_i/O_j giving pg_i (to) pg_j]
b. *Which package_i did you send t_i to which student_j [without PRO wrapping pg_i sufficiently to satisfy pg_j.]
c. What grades did you give to which students without really meaning to?
[K&L96:298,(34)]

On their analysis, (155a,b) have two binary operators formed by absorption and therefore satisfy homogeneity, but are ruled out by the doubly-filled COMP filter applying to the empty operators in the *without*-clause. (155c) also has two binary operators, but at LF, and thus satisfies the homogeneity condition without also violating the doubly-filled COMP filter.

As in the case of the simpler examples discussed earlier, it should be noted that examples like (155a,b) are ungrammatical

when the P-gaps are replaced by overt pronouns.

- (156) a. *What_i did you show t_i to whom_j [without giving it_i to her_j]
b. *Which package_i did you send t_i to which student_j [without PRO wrapping it_j sufficiently to satisfy her_i]]

It thus appears that the ungrammaticality of these cases may be due to the impossibility of non-bound pronominal reference in the case of multiple wh-questions.

3.6. The character of the antecedent

3.6.1. CP antecedents

Perhaps the most robust challenge to CCP3, i.e. that the antecedent of a P-gap must be an NP, consists of examples such as the following, where the antecedent is a CP.

(157) [_{CP} That parasitic gaps don't really exist]_i , I believed t_i even before proving pg_i .

The argument is of course weakened if one assumes that the topicalized CP is actually a member of the category NP (cf. Rosenbaum (1967)), but this view is currently not widely held.

Notice that CP antecedents also license subject P-gaps.

(158) [_{CP} That parasitic gaps don't really exist]_i , no one who believed pg_i could prove t_i.

These cases are parallel to those involving NP antecedents.

(159) a. That proposal_i , I believed t_i even before proving pg_i .

b. That proposal_i , no one who believed pg_i could prove t_i .

Crucially, it may not be possible to argue that the subject P-gaps are pseudo-P-gaps, if applying RNR in cases like (160) produces ungrammaticality.

(160) *No one who really believed [e] could manage to prove [e] [_{CP} that parasitic gaps don't really exist].

3.6.2. *Non-CPs in English*

In §1 I noted Engdahl's (1983) Swedish data suggesting that PPs and APs can be the antecedent of P-gaps (see (10)). Along similar lines, Steedman (1996:98, n.41) judges the following example "impeccable" –

(161) the table on which I placed the book t before carefully positioning the glass pg

Here, the gap is a PP. Note that examples such as these are potentially problematic for the anti-CCP view that a P-gap is an empty pronominal, if it can be shown that there are non-NP P-gaps for which no plausible proform exists. Levine et al. in this volume pursue this question in some detail.

3.6.3. *French double don't*

Another clear case in the literature of non-NP antecedents of P-gaps is that cited by Tellier (1991) for French. Some examples were given in (27)-(29) and are repeated here.

- (27) a. C'est un livre dont_i la critique t_i a été publiée par les détracteurs pg_i
It is a book of which the critique has been published by the detractors'
- (28) a. Voilà une idée dont_i on attribue le charme t_i, au caractère subversif pg_i
'Here is an idea of which one attributes the charm to the subversive character'
- (29) a. C'est là un sentiment dont_i on peut attribuer la pérennité t_i à la manifestation assidue pg_i
'This is a sentiment of which the perennality is attributable to the constant manifestation'

Tellier presents substantial evidence that there are in fact two gaps in this construction, that is, that the argument marked *pg_i* is syntactic and not determined by pragmatic operations at the level of interpretation. Accepting this conclusion, it is then plausible that the antecedent *dont* is a PP, if *de* is a preposition in expressions such as *la manifestation de la pérennité* 'the manifestation of the perennality'. If, on the other hand, *de* is a genitive case marker, then the double *dont* construction is not a counterexample to the claim of CCP3.

3.7. The domain of the P-gap

Comparative considerations suggest a certain degree of variability in the domain restrictions on P-gaps, as well as the contribution of subjects to restricting their appearance.

3.7.1. Spanish

Bordelois (1986) shows that in Spanish P-gaps occur only in untensed adverbial clauses (p.2), a stronger restriction than we find in English, where untensed adverbials are in general preferred. Moreover, there are no P-gaps in Spanish in domains that have an overt subject in the adjunct (p.3), in contrast to English, in which the presence of a subject is dispreferred but not a guarantee of ungrammaticality. Compare

- (162) a. the man that the police arrested t without speaking to pg
b. ?the man that the police arrested t without the officer in charge even speaking to pg

(163) *Spanish*

- a. El poema que todos admiramos al leer
the poem that all we-admired when reading
'The poem that we all admired when PRO reading'
- b. *El poema que todos admiramos al leer el autor
the poem that all we-admired when reading the author
'The poem that we all admired when the author read'
- c. Todos admiramos el poema al leerlo el autor.
all we-admired the poem when reading-it the author
'We all admired the poem when the author read it.'

[B86:3,(9),(10),(8)]

According to Bordelais, P-gaps in Spanish are illicit when there is an adjunct to the main VP that is unselected and intervenes between the main VP and the adjunct containing the P-gap (p 3f). And clitic climbing shows the same distribution as P-gaps, in the sense that it cannot occur when the clause is tensed or has a subject (p.6). Bordelais points out that this restriction on the domain of P-gaps is

reminiscent of the characterization of Opacity in terms of “governing category” in the classical Binding theory (Chomsky (1981)). She argues that the domain restriction on P-gaps in Spanish would follow if P-gaps are anaphors, and therefore subject to Condition A of the Binding theory: “an anaphor must be bound in its governing category.” But note that this approach requires that the P-gap be taken to be an anaphoric variable. This point is discussed in greater detail in the discussion of the character of the P-gap in §3.6.

A different view of the restriction on Spanish P-gaps is taken by García-Mayo and Kempchinsky (1993). They propose that the fundamental difference between English and Spanish P-gaps is that in English the null operator that binds the P-gap is moved into an A' position and binds a trace, while in Spanish the null operator is generated in initial position and binds a *pro* (see §3.5). Considering now temporal adjuncts, they recall the proposal of Geis (1970) that these clauses contain a null temporal operator, which binds a tense variable. In English tensed CP there is an ambiguity depending on where this operator originates, as noted by Larson (1990).

(164) John left after he said he would.

This ambiguity does not occur in untensed adjuncts, since there is only one tense variable that the operator can bind.

(165) John left after saying he would.

García-Mayo and Kempchinsky (1993) propose the following account for the English/Spanish difference. In Spanish adjuncts, the [Spec,CP] position is occupied by the operator that binds the P-gap *pro*. In a tensed adjunct, the temporal operator must adjoin higher than this operator; hence it is not maximal in the adjunct and cannot be linked to the true gap, producing a Subjacency violation.³⁵ In English, on the other hand, the operator that binds the P-gap can move to a position higher than the temporal operator, avoiding the violation.

3.7.2. *German*

Felix (1985) argues that P-gap constructions in German occur and are subject to the same principles that govern English P-gaps. The following are from Bavarian German.

- (166) das ist der Kerl_i den_i wenn ich e_i erwich, erschlag ich e_i
 that is the guy who if I catch, beat I
 ‘this is the guy who I will beat (up) if I catch him’
- (167) das is das Buch_i das_i wenn ich e_i finde, kauf ich e_i auch
 this is the book which if I find, buy I also
 ‘this is the book which I will buy if I can find it’
- (168) ich bin ein Typ_i der_i wenn e_i gefordert wird, leistet e_i auch etwas
 I am a type who if challenged is, accomplishes something
 ‘I am the kind of person who accomplishes something if he is challenged’
- (169) das ist eine Frau_i die_i wenn e_i etwas verspricht hält e_i es auch
 this is a woman who if something promises, keeps it also
 ‘She is a woman who keeps her promises if she promises something’

Felix notes that (i) the embedded *wenn*-clause immediately follows the *wh*-pronoun and precedes the final clause. In Standard German the *wenn*-clause would appear finally and there could be no P-gap.

(170) das ist der Kerl_i den_i ich e_i erschlag, wenn ich *e_i } erwisch
 9 ihm_i }

this is the guy who I beat if I him catch

(ii) the V precedes the subject in the final clause; this is not the normal order.

(171) das ist der Kerl_i den_i ich e_i erschlag

(172) *das ist der Kerl_i den_i erschlag ich e_i

Felix's analysis is that the *wenn*-phrase is in the COMP of the relative clause, that the relative pronoun moves to the front of the *wenn*-clause and then up into the higher clause, and licenses the gap in the relative clause. That is, it is the relative gap that is parasitic, and the gap in the adjunct that is the true gap. The evidence that supports this analysis is three-fold: (i) the inversion of verb over subject is V2, triggered by the fronted *wenn*-clause, (ii) doubly-filled COMP is possible only in Bavarian German but not in Standard German, and (iii) the case depends on the first gap, not the second gap. E.g., (p.177)

(173) das ist der Kerl_i den_i (acc.) wenn ich e_i treff, werd ich e_i helfen
this is the guy whom if I meet will I help

Here, *helfen* governs the dative case, while *treffen* governs accusative.

(174) *das ist der Kerl_i dem_i (dat.) wenn ich e_i treff, werd ich e_i helfen

Felix notes in a footnote (p. 175, fn 2) that this construction is possible only with *wenn*, not with *weil* ('because'), *obwohl* ('although'), *nachdem* ('after') etc.

3.7.3. Dutch

According to some accounts, Dutch lacks P-gaps of the English type. Huybregts and van Riemsdijk (1985) attribute the difference between English and Dutch to a difference in the government properties of prepositions that serve as subordinate conjunctions. They assume the chain composition account of P-gaps of Chomsky (1986b), where the operator that forms a chain with

the P-gap is subjacent to the true gap. In English the preposition *without* governs the subject of a clausal complement, as does the preposition *for* in the *for-to* infinitive. The complement is not a barrier, and the operator is subjacent to the true gap, allowing chain composition to occur. In Dutch, however, the preposition lacks this property, so that the clausal complement is a barrier, and chain composition is blocked.

3.7.4. *French*

In her paper in this volume, Tellier discusses three main differences between English and French P-gaps, all of which have to do with the domain of the P-gap. Unlike English, French disallows P-gaps in adjuncts and in relative clauses. And French permits P-gaps in definite NPs while English does not. Tellier attributes the observed differences to differences in the agreement properties of the functional categories C and D in the two languages, with interesting and somewhat surprising consequences.

4. **Theories of P-gap licensing**

4.1. Subordinate p-gaps

Theories of P-gap licensing can be viewed as combining the values of certain features in different ways. Theories differ on whether the antecedent of the P-gap is the antecedent of the true gap, or an empty operator. For those that do not assume an empty operator, there is the question of whether the domain that contains the P-gap is subordinate to that which contains the true gap, or coordinate. The groupings in this section roughly reflect these features of various proposals.

4.1.1. *Contreras 1987*

Contreras (1987) proposes an extension of the approach of Chomsky (1982), assuming as with Chomsky (1986b) that the P-gap construction is a null operator construction. He proposes that the null operator that binds the P-gap is assigned values for the features [anaphor] and [pronominal] on the basis of where it appears in S-structure. According to Contreras, the null operator in a P-gap construction is governed, and is therefore [-anaphor,-pronominal]. The governor in an expression like *without reading pg* is the preposition (p. 12).

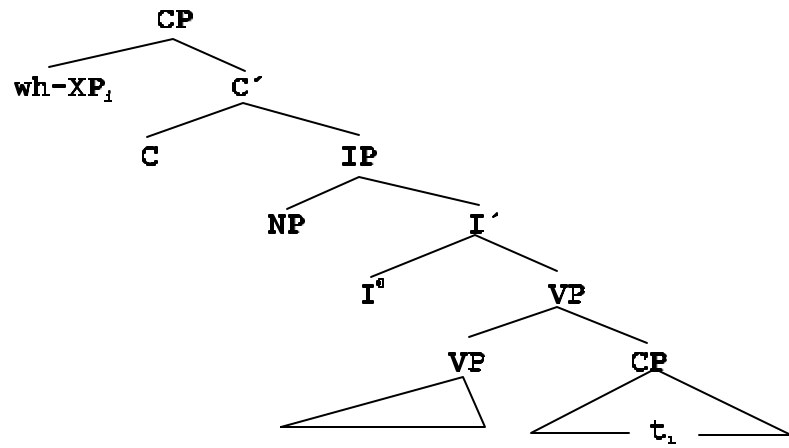
(175) [_{PP} without [_{CP} OP_i [_{IP} ... reading pg_i]]]

The null operator must be free, which accounts immediately for the anti-c-command condition without chain composition. If the null operator is c-commanded by the true gap then Condition C is violated.

4.1.2. *Longobardi*

Longobardi (1984) (see also Longobardi (1985a), Longobardi (1985b)) , considers the case in which there is a gap in an adjunct on a right branch. The following illustrates.

(176)



The question that arises is whether C' is a g-projection (in the sense of Kayne 1983b) of the governor of t_i , which we will call α . Suppose that the lower CP is such a g-projection. The lower VP does not govern this CP but is in the configuration of canonical government with respect to CP, since it precedes it and canonical government in English is left-to-right. The higher VP immediately dominates the lower VP and CP, and CP is a g-projection of α . Thus the higher VP is a g-projection of α . Hence the higher CP is a g-projection of α and, since it contains α , the gap should be licensed. However, it is not; this is the configuration of a standard CED violation.

Longobardi proposes to tighten up the definition of configuration of canonical government so that it includes government. Under such a tightening, the lower VP would not be in such a configuration with CP, since it does not actually govern the CP. Thus the empty category would not be licensed. The requirement for government here anticipates Chomsky's later use of L-marking as a means of accounting for the ungrammaticality of extractions from adjunct islands in Chomsky (1986b). As Longobardi demonstrates (Longobardi (1985b:176)), the approach extends directly to cases where the empty category is in an adjunct within another adjunct. When the containing adjunct contains an empty category, if it is a licensed P-gap, the lower adjunct may also contain a P-gap.

(177) ?Which article should I study t thoroughly before I send pg back to the author without reviewing pg? ((22c))

But if there is no P-gap in the higher adjunct, the P-gap in the lower adjunct is not licensed.

(178) *Which article should I study t thoroughly before I call the author without reviewing pg? ((22a))

4.2. ATB extractions

4.2.1. Sag 1983

Grosu (1980) appears to have been the first to suggest that P-gap constructions are an extension of across-the-board (ATB) extraction from a coordinate structure. Sag (1983) (see also Sag (1982)) was the first to point out that the SLASH feature of a PSG approach can be generalized to all phrasal daughters of a phrase, producing multiple gaps with a single antecedent. It is not necessary to claim that the daughters are coordinate, simply that the gap appears in all of them. Sag's schema –

(179) *P-gap Metarule (PGM)*

(F 6 "/N", \$) Y

(F 6 "/N", \$/N"

[Sa82:39,(11)]

– yields a multiple gap structure involving the sisters in any phrase that can itself contain a gap. Sag shows that this approach yields P-gap configurations such as those in (180).

- (180) a. $[_S [_{NP} \dots e \dots] [_{VP} \dots e \dots]]$
b. $[_{VP} V [_{NP} e] [_{PP} P e]]$
c. $[_{VP} V [_{PP} P e] [_{PP} P e]]$
d. $[_{VP} [_{VP} V e] [_{PP} P \dots e \dots]]$

A point not discussed by Sag is whether there are languages that allow for ATB extraction from coordinate structures but do not allow P-gaps; it would appear that the formalism introduced here would predict that the two would always go together. (Such a question

arises generally for ATB type approaches.) It is also unclear how to account for cases where the true gap appears in one sister, the P-gap appears in another sister, but there is a third sister that lacks a P-gap. E.g.,

- (181) a. the person who John sold [a picture of t] [to a friend of pg] [for a nickel]
b. the person who Mary put t [in the most expensive hotel room] [without warning pg]

If strict binary branching is assumed in the VP in (181a) then *for a nickel* can be taken to be outside of the slashed category; however, it does not appear that such an approach will work for (181b) without additional stipulations, since *in the most expensive hotel room* is between the two constituents containing gaps. If binary branching is not assumed then the status of the non-gapped PPs arises in both examples.

For refinements of this general approach, see Gazdar, Klein, Pullum and Sag (1985) and Hukari and Levine (1987), as well as Levine et al. (this volume). Pollard and Sag (1994) update the proposal in the framework of HPSG. Hukari and Levine point out that using the PSG formalism, the anti-c-command condition follows directly. The c-commanding empty category is immediately dominated by a projection that dominates the P-gap. This projection inherits the SLASH feature from the P-gap, but not from the empty category, which instantiates the feature. Hence there is a mismatch, which is not licensed by the formalism.

4.2.2. Cowper 1985

Cowper (1985) argues that there are similarities in P-gap and ATB constructions. She notes first the relative acceptability of the following, due to Chomsky (1982), noted earlier as (91a).

(182) George is a man who everyone who meets e knows someone who likes e. [Co85:76,(2)]

In this case, neither gap is subjacent to the leftmost *who* and so there should be dual Subjacency violations. Cowper argues that in coordinate structures, Subjacency fails to rule out ATB extractions just in case the antecedent is higher than the branching point and the gaps are lower than the branching point. The following illustrates.

(183) Which students did they decide [[to expel e] and [give raises to everyone who taught e]] [C85:76,(5a)]

Cowper claims that this sentence is more acceptable than the corresponding example with one gap.

(184) *Which buildings did they give raises to everyone who taught in t.

[C85:76,(5b)]

Replace by 'in the editors' view, this conclusion is not sustainable, our judgment being that (183) is on a par with (184).

Cowper raises the technical question of whether the coordinate structure shares with (182) the crucial properties that will produce a violation. Suppose for the sake of exposition that in long extractions there are intermediate traces in the COMP position of each CP. The intermediate trace associated with *which students* is in the COMP position of the CP containing *expel*. There is no intermediate trace in *give raises to everyone who taught e* that forms a chain with *e* that violates Subjacency. Similar observations hold for the expressions *everyone who meets e* and *someone who likes e* in the P-gap construction in (182). Cowper goes on to suggest that if there is an additional barrier (in the form of a bounding node) on one of the branches, a Subjacency violation arises.³⁶

(185) *George is a man who everyone who meets e has read a book about someone who likes e. [C85:78,(10a)]

Here, the problem is with *a book about someone who likes e*. Cowper's account of the phenomenon is that Subjacency is due to syntactic processing (p. 78). A filler such as a fronted wh-phrase forms a chain with its gap or gaps, which must be identified in the

course of processing. In case there is a branching chain, as in a P-gap construction or ATB extraction, the portion of the structure containing the multiple gaps is processed first. Processing involves creating an existential quantifier at the branch point. This quantifier is then linked to the fronted wh-phrase as though it was a variable. If there are no Subjacency violations between the created quantifier and the gaps, or between the fronted wh-phrase and the quantifier, then the sentence is judged to be well-formed.

The well-formedness of (182) also appears to depend on the presence of a quantifier, such as *everyone*, *no one*, or *someone*. Cowper suggests that this is due to the consolidation of the created quantifier and the overt quantifier, eliminating a bounding node. It is not clear precisely what formal mechanisms are entailed by such a proposal.

4.2.3. Williams 1990

Williams (1990) suggests that a P-gap construction may be analyzed as follows.

(186) Who [[would you warn t]][before striking pg]]

where the two bracketed expressions are taken to be in a coordinate structure.

- (187) Who [[would you warn t] COORD [before striking t]]
[W90:265,(3)]

The nature of such coordination is somewhat obscure, especially given that it is necessary to invoke it for cases where the P-gap is in a subject.

- (188) Which stars do [pictures of t] COORD [annoy t]]
[W90:270,(27)]

Postal (1993) criticizes Williams' proposal on on both conceptual and factual grounds. First, it is generally agreed that P-gaps can only have NP antecedents, while ATB extraction can involve any category (but see §2.3). Second, ATB extractions can apply to the subjects of embedded clauses, while P-gaps cannot be the subjects of embedded clauses, according to Postal.³⁷ E.g.,

- (189) a. *Which patient did he convince t pg should visit him? [Po93:737,(8b)]
- b. Which patients did he convince you t were already doctors and t were going to become psychiatrists?
[Po93,737,(10a)]

Third, P-gaps are disallowed in contexts that also disallow passive (see Postal (1990)); ATB extraction does not observe this constraint.

- (190) a. Diphtheria can be caught/*gotten by anyone. [Po93:738,(11b)]
- b. Which disease did everyone who caught/*got pg want Dr. Jones to study t. [Po93:738,(11d)]
- c. Which disease did Dr. Johns study t but Dr. Kline deny that he had ever caught/gotten t? [Po93:738,(12a)]

A set of additional restrictions on passive also appear to hold for P-gaps, but not for ATB extraction. For example,

- (191) a. Abigail felt the rocks move. [Po93:741,(20a)]
- b. *The rocks were felt move by Abigail. [Po93:741,(20b)]
- c. *Which rocks did the gorilla sit on t after feeling pg move? [Po93:741,(20e)]

- d. The rock which Ted sat on t but only Joyce felt move t [Po93:741,(20f)]

and

- (192) a. It amused Sonia to tickle alligators. [Po93:743,(25a)]
b. *Sonia was amused by it to tickle alligators. [Po93:743,(25b)]
c. *It was Ida that Bob contacted t immediately after concluding that it would amuse pg to tickle alligators.[Po93:743,(25e)]
d. the kind of people who Bob might warn t but it would nonetheless amuse t to tickle alligators [Po93:743,(25f)]

Furthermore, as already noted, Postal presents evidence that P-gaps are excluded in positions that cannot contain overt pronouns, a restriction that is not shared by ATB extractions (see §3.2.2 for a summary). Postal notes that these properties of P-gaps, and others not mentioned here, appear to be shared by other “empty operator” constructions, such as Object Raising, complement object deletion (Lasnik and Fiengo (1974)), purposives (Bach (1982)), and infinitival relatives; see Cinque (1990), as well as Browning (1987) and Jones (1987).

4.2.4. *Munn 1992*

Munn (1992) assumes that P-gaps are produced by Across-the-Board (ATB) movement. His approach differs from earlier treatments in that for him, coordinate ATB constructions are a subtype of P-gap construction. The P-gap is produced by null operator movement (along the lines of Contreras (1984) and Chomsky (1986b)), as is the gap in an ATB construction. Munn notes that P-gap constructions are similar to ATB constructions in restricting the category of the antecedent; some of the evidence is summarized in §2.3. However, note that Munn's proposal is incompatible with the evidence of Postal (1993) cited in §3.2 that the P-gap is pronominal. Munn develops his ideas further in his contribution to this volume; arguing for some striking parallels between P-gap and coordinate constructions .

5. Summary

In summary, let us recall the CCP of (26).

- (26) CCP1. The antecedent of a P-gap must be in an A' position.
CCP2. A P-gap is licensed only at S-structure.
CCP3. The antecedent of a P-gap must be an NP.
CCP4. The true gap cannot c-command the P-gap.
CCP5. The P-gap is in a chain with the antecedent of the true gap.
CCP6. Anti-c-command is a consequence of Condition C of the Binding Theory.

It is striking that while there is support for all of these clauses of the CCP, none has gone without serious challenge. CCP1 has been challenged primarily by the evidence that scrambling and clitics license P-gaps in some languages. CCP2 has received a limited challenge from Jeddah Arabic, but otherwise seems fairly robust. Perhaps the most contentious issue is CCP3. There is overwhelming

empirical evidence in support of this position, although it has also been challenged by Levine et al. (this volume) for English. The striking contrast between the extended evidence in support of CCP3 and the robust counterexamples is an intriguing puzzle that merits further study.

The anti-c-command position of CCP4 appears to be substantially correct and without serious challenge in the literature, although CCP6 is not yet firmly established as the basis for CCP4 . Finally, CCP5 is very much at issue, regardless of the status of CCP3..

So, while much has been learned about P-gaps since Engdahl's original paper, most of the central questions remain open. We hope that the papers in the current volume will provide a useful perspective on the key issues, that they will bring together the essential factual material that must be accounted for in any treatment of the subject, that they will offer new insights into the nature of P-gaps in a range of languages, and that they will stimulate new research on the basis of which our understanding of these issues may be advanced.

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1. I am indebted to Paul Postal for numerous comments, suggestions and corrections. Any errors are my responsibility.
2. For consistency I have replaced cited authors' use of *e* in examples with *t* and *pg* where their intention is clear.
3. "E83 refers to Engdahl (1983), "5:" to page 5, and "(1)" to example (1) of her paper. A similar notational scheme is used throughout for references to the literature.
4. See footnote 6 for a discussion of Bresnan's observations.
5. Current terminology calls a noun phrase 'DP', on the view that the determiner (D) is the head of the phrase. This issue is not relevant here and for accessibility I will use the more classical terminology.
6. As pointed out to me by Paul Postal (p.c.), a number of Engdahl's observations were anticipated by Bresnan (1977). Postal observes that in §3.4 ('Across-the-Board' Deletions) Bresnan discussed cases such as her (55) (see also her (56)-(58) and (81)-(84).)

(55) ...a man who Mary called __ an idiot as often as June called __ a cretin

Bresnan took these to be analogous to ATB extractions. (This was, of course, before the early 1980s papers on P-gaps by Engdahl, Sag, Chomsky, etc. and recognition of the special properties did not yet exist.) Bresnan explicitly noted several key properties now

taken to be standard, e.g. that the second gap depends on the first, as expressed in the following observation (p. 189): “Notice also that removal of the second object depends upon the relativization of the first object:

(84) *The French cook one food in the same way that the Italians cook ____.

(Cf. The French cook one food in the same way that the Italians cook it.)”

and that the second “deletion” in effect permits extractions from (comparative clause) islands without violation (p. 182): “In these cases, we can extract elements from combative clauses without creating the ungrammatical effects of violations of ‘island’ constraints.”

Strikingly, Bresnan also gave as well-formed the following:

(58a) ..someone that I believe ____hates me as much as you believe __hates you

In this example, **both** the true gap and the p-gap are embedded subjects. Postal (p.c.) notes that the phenomenon is of course far from free:

- (i) *Who_i did she believe ____i had proved ____i was innocent?

This example would be ruled out by an anti-c-command condition.

Bresnan's cases were noted by Engdahl (1983), who took them to be P-gaps. Besides that, the only discussion we know of is by Chomsky and Lasnik (1977). They claimed that the examples were hypermarginal, but did propose a special pronoun deletion rule to cover some of them.

7. The original proposal to account for P-gaps in terms of "connectedness", that is, the relative configuration of paths in the tree between antecedent and gap, is due to Kayne (1983). A refinement is due to Longobardi (1984; 1985a; 1985b). I summarize Kayne's proposal here and Longobardi's in §4.1.2.

8. See Sportiche (1996) for a review of the literature.

9. "...it is worth pointing out that the relevant constructions give rise to a range of diverging judgements among native speakers. While some find the contrast between *don't* and *en* quasi-inexistent [sic], others reject the *en* cases on the PG interpretation. The diacritics given below reflect my own judgments, which are situated somewhere in between" (Tellier (1991:136)).

10. Cf..

- (i) *Vous l_i'avez rangé sans avoir lu e_i
you it-have put-away without to-have read
'You put it away without having read.'
[Te91:135,(16b)]

11. "Either *en* and other clitics differ in their manner of derivation (the former undergoes movement while the latter are base-generated), or else *en* and other clitics differ with respect to their projection level (*en* is a maximal projection while other clitics are heads)." (Tellier 1991:136)

12. A similar proposal for Dutch clitics is made by Zwart (1992). See Haverkort (1993) for some problems with this approach for West Flemish.

13. Cited by Campos [Ca92:122,(14)].

14. As suggested by Tellier (1991), French *en* could be a phrasal clitic, perhaps adjoining to IP, but keep in mind that *en* adjoins to the left of infinitives like the other clitics in French.

15. Subordinate clauses headed by these elements are extraposable in German.

16. A somewhat different trace proposal is due to Mahajan (1991:93), who suggests that the P-gap is an NP trace that forms an A chain with an antecedent in [Spec,VP]. This antecedent is the trace of a null operator that ultimately moves to an A' position

in the adjunct that contains the P-gap. Hence the scrambled NP can A' bind the P-gap while its trace in A position A binds the pronoun, avoiding Webelhuth's paradox. Lee and Santorini (1994) argue against Mahajan's approach on the grounds that scrambling the constituent containing the pronoun does not produce ungrammaticality even though the P-gap is then A bound.

17. Ross (1967) appears to be the first to have suggested this possibility.

18. Similarly, where extraction out of a relative clause is marginally possible, the corresponding P-gap construction is more acceptable.

- (i) a. a book which I didn't meet [anyone [who had read t]]
- b. which_i we filed t_i without meeting [anyone [who had read pg_i]]

19. A variant of the Frampton proposal, under somewhat different formal assumptions, and particularly with a different implementation of the locality restrictions on chains, is made by Manzini (1994).

20. However, contrary to the claim of Chomsky and of Koopman and Sportiche, such examples are more acceptable than true WCO violations (cf. (77)).

21. Strikingly, there is no true gap in this example, yet it appears to be a genuine case of a P-gap construction. Compare with

- (i) a. *a man whom everyone who meets Mary knows someone who likes e
- b. *a man whom everyone who meets e knows someone who likes Mary

both of which are significantly less acceptable.

22. The ungrammaticality of (95b) may be due to other factors, such as the presence of the subject and Tense; cf.

- (i) This is the student everyone expected t to be intelligent without believing pg to be worthy of promotion

23. This type of example was noted originally by Bresnan (1977); see footnote 6 for discussion.

24. Franks (p. 13, n.13) says that Polish lacks P-gaps, and instead uses a resumptive pronoun where the P-gap would be.

25. Haegeman also notes (p. 232) that this construction is attested at least as far back as Shakespeare.

26. However, it is open to question whether c-command is either a necessary or sufficient condition for Condition C effects; see Postal (1997).

27. This property is also found in some HPSG analyses, e.g. Pollard and Sag (1994).

28. " antecedent governs \$ if

- (i) " and \$ are coindexed
 - (ii) " c-commands \$
 - (iii) there is no C ((an NP or S') such that " c-commands (and dominates \$, unless \$ is the head of C
- [Lasnik and Saito (1984)]

29. Hence the option that the P-gap is *pro* is ruled out on this approach, but not on others. See §3.2.

30. An example due to Robert Levine (p.c.).

31. The judgments here are delicate. Example a is clearly not as acceptable as b,c, which are themselves less than perfect.

32. Pointed out by Paul Postal (p.c.).

33. The assumption here, of course, is that an overt trace will behave in all respects like an empty trace with respect to islands.

This is not a necessary assumption.

34. The data here is reminiscent of the cases discussed by Ross (1969). Ross showed that island violations are mitigated when the actual gap is not present in the S-structure, as in the following.

- (i) a. *Mary met a woman who wrote a famous book, but I don't know which book Mary met a woman who wrote t.
- b. Mary met a woman who wrote a famous book, but I don't know which book.

These data are consistent with the widely held view that Subjacency does not hold at LF.

35. In a Relativized Minimality framework, the P-gap operator blocks the temporal operator from binding the tense variable.
36. Curiously, I find example (185) to be no worse than (182), and possibly better.
37. This example strikes me as unobjectionable. Consider, along similar lines, the following.
 - (i) a. The student who I convinced t_{pg} should run for class president was Otto.
 - b. Which prisoners did you warn t_{pg} would be searched after lunch?