The Trace-Fin effect

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May 26, 2005

Abstract

The context in which *that*-trace effects arise is examined in the model of clause structure of Branigan (2005). It is shown that the effect arises when phrases move from Spec-Fin to Spec-C, regardless of the grammatical function of the phrase moved. The *that*-trace effect is then reduced to the improper movement constraint. The different strategies used in various languages to avoid *that*-trace violations are elucidated.

1 Introduction

The trouble with the *that*-trace effect is that it seems to be an isolated grammatical "rule", in which movement of subjects is limited in the context of an overt complementiser or wh-element. Nothing else in grammar looks like this. And since there is nothing to relate the *that*-trace effect to, it has been difficult to devise explanations for the phenomenon which are something more that restatements of the basic problem.

This general difficulty in explaining the *that*-trace effect is compounded by its apparent "anti-local" character. To the extent that our theories of movement, and of grammatical relations in general, are designed to explain why movement (or Agree) cannot relate two positions which are too distant within the phrase marker, the *that*-trace effect, which controls maximally local movement, does not find a natural explanation.

In *The Phase Theoretic Basis for Subject-Aux Inversion* (Branigan, 2005), I show that many outstanding problems and dilemnae and the word order of the "left periphery" can be resolved in a model of clause structure in which the Finite Phrase (Rizzi, 1997) is a strong phase, in the sense of Chomsky (2001), and where Fin bears unvalued ϕ features and the EPP property, which compel it to try to check either the clausal subject or T, and to trigger movement of the goal in this checking operation. As such, the structure of a normal English embedded clause will be as in (1):

(1) ... [$_{\text{CP}}$ that [$_{\text{FinP}}$ Warren Fin [$_{\text{TP}}$ *t* T [$_{\text{vP}}$ *t* loves his cat]]]]

The structure of a verb-second clause, including questions, English negative inversion structures, and Germanic root clauses generally, will be that in which an extra feature added to Fin

attracts a non-subject to Spec-Fin, and Fin resolves its ϕ/EPP feature by attracting an auxiliary verb from T. Negative inversion, for example, takes place when an "monotone decreasing" [MD] feature is supplied to Fin, allowing it to attract a negative phrase to the edge of FinP, where it can be checked by a Foc head external to FinP.

(2) . . . [CP that Foc [$_{\text{FinP}}$ few cats would-Fin [$_{\text{TP}}$ Warren *e* [$_{\text{vP}}$ love *t* more]]]]

In the present paper, I show that these same premises lead to a more principled account of the *that*-trace effect. In reframing the syntactic context in which *that*-trace violations are found, we find that a parallel can be drawn with other grammatical phenomena, including, in particular, the peculiar constraints on long A-bar movement in German first noted by Staudacher (1990). And when these two phenomena are brought together, it becomes possible to formulate a description of this class of data which is more than a restatement of the problem. Ultimately, the *that*-trace effect is shown to be a natural side-effect of the general contraint which prevents movement from an $\bar{\text{A}}$ position to an A position.

I discuss the classical *that*-trace phenomenon first, and then show that the same effect shows up in embedded verb-second contexts generally. Next, I show that the combined "Trace-Fin" effect can be reduced to a constraint which bars improper movement, which is needed in any case in the grammar in some form. Then the various configurations in which subject extraction may take place in different languages are examined, and it is shown that they fall into place within this model.

2 *That*-trace effects

The *that*-trace effect is illustrated in (3):

(3) a. What did Peter claim [*t* had happened]$_{?}$
b. *What did Peter claim [$_{\text{CP}}$ that [*t* had happened]]$_{?}$

(4) a. What did Peter claim [$_{\text{CP}}$ that [Penny had fixed *t*]$_{?}$
b. How did Peter claim [$_{\text{CP}}$ that [Penny had fixed it *t*]$_{?}$

What the contrast in (3) shows is that some principle of grammar blocks subject wh-movement past a local complementiser. In (4), though, we see that this principle does not constrain movement of non-subjects, both arguments and adjuncts.

In the model of clause structure assumed here, subjects occupy Spec-Fin in all clauses in which subject-aux inversion does not take place. In this model, then, the conditions under which *that*-trace effects arise will always involve subjects extracted from Spec-Fin, rather than from Spec-T. Thus, example (3-b) will have the structure (5).

(5) What did Peter claim [$_{\text{CP}}$ that [$_{\text{FinP}}$ *t* Fin [$_{\text{TP}}$ *t* had happened]]]

Within this structure, the subject occupies an $\bar{A}$-position (Spec-Fin) before long wh-movement takes place, so the usual questions concerning the differences between subjects and non-subjects may not arise. In this model, the fact that the *that*-trace effect applies primarily to subjects is epiphenomenal, and is mostly true simply because subjects are often the phrases attracted to Spec-Fin. The *that*-trace effect is also found with locative inversion structures (Bresnan, 1994), which is to be expected if locative inversion involves movement of the preposed PP to Spec-Fin in place of the normal subject (Branigan, 1992; Pesetsky, 1994). The real question raised by *that*-trace effects is not why subjects are difficult to extract, but why extraction from Spec-Fin is difficult.

The *that*-trace effect arises most evidently in structures in which successive cyclic A-bar movement affects the subject of a clause. In order to appreciate the nature of the phenomenon, it will help to first recapitulate what factors constrain successive cyclic movement in general in the theory of clause structure which I now assume.

Successive cyclic A-bar movement takes place when a wh-phrase, topic, or focussed phrase raises from a position in an embedded clause to a CP projection in a higher clause. Successive cyclic movement ensures that the derivation includes no operations in which too large a portion of the phrase marker is skipped over by a single movement. In the approach taken here, successive cyclic movement satisfies the Phase Impenetrability condition, by raising a phrase to the periphery of its phase before the phase is merged with additional lexical material, either by movement to specifier position or by adjunction to the phase itself. If both CP and transitive vP count as phases, then movement to the edge of CP and of vP will play a part in long wh-movement. Escape from CP will normally involve movement via Spec-C; I assume that adjunction to CP will normally be impossible since CP bears a θ-role (Chomsky, 1986b). Objects sometimes escape from vP via adjunction and sometimes via movement through Spec-*v*. In the model adopted here, where two stacked phasal projections—CP and FinP—occur in a single embedded clause, successive cyclic movement is constrained in a second way. Since FinP counts as a phase, and since it normally has a specifier, movement out of FinP will require adjunction: (6).

(6) [$_{\text{FinP}}$ How fast did Claire [$_{\text{vP}}$ *t* [$_{\text{vP}}$ *t* say [$_{\text{CP}}$ *t* that [$_{\text{FinP}}$ *t* [$_{\text{FinP}}$ Pam had been [$_{\text{vP}}$ *t* [$_{\text{vP}}$ *t* driving *t*]]]]]]]]

Now compare the extraction path of the adjunct in (6) with that of the subject in (5). In both cases, a phrase is raised to Spec-C in a complement clause from somewhere inside FinP. In the grammatical (6) case, the escape hatch from FinP is the adjunction site. In the ungrammatical (5), the escape hatch is Spec-Fin. A reasonable description of the *that*-trace effect—although not yet an explanation—is the following:

(7) *Trace-Fin constraint:*
A phrase cannot raise from Spec-Fin to Spec-C.

The next section of the paper shows that this is an accurate description of the facts across a wider domain of data, as well.

3 Constrained landing sites in successive cyclic movement

As discussed in Branigan (2005), A-bar movement in English root clauses can be driven by the presence in Fin of a non-[wh] feature—the [MD] feature—which is used primarily for altruistic purposes. The [MD] feature is added to Fin to permit Fin to attract a wh-phrase or focus phrase to the edge of FinP so that it may be accessible to higher heads. And the same procedure is used more generally in other verb-second constructions throughout Germanic, where Fin may take on additional [MI] features to attract a wider array of topics, focii, etc. to its edge.

In German, Yiddish, and the Belfast dialect of English, the altruistic use of [MD] or [MI] (in the former languages) takes place in a manner which allows successive cyclic movement to take place from inside an embedded verb-second complements. I will illustrate the general pattern with German data, where the facts are the most easily established. Successive cyclic long topicalisation is seen in (8).

(8) [$_{\text{FinP}}$ In zwei wochen$_i$ glaubt Anna [$_{\text{vP}}$ *t* [$_{\text{vP}}$ [$_{\text{FinP}}$ t_i hat Max [$_{\text{vP}}$ *t* [$_{\text{vP}}$ gesagt, [$_{\text{FinP}}$ t_i
in two weeks believes Anna has Max said
werde sie t_i kommen.]]]]]]]
will she come

For some speakers, long topicalisation may also occur with no subject-aux inversion in a complement clauses out of which the topic raises.

(9) [$_{\text{FinP}}$ In zwei wochen$_i$ glaubt Anna [$_{\text{vP}}$ *t* [$_{\text{vP}}$ [$_{\text{CP}}$ t_i daß [$_{\text{FinP}}$ *t* [$_{\text{FinP}}$ Max [$_{\text{vP}}$ *t* [$_{\text{vP}}$ gesagt
in two weeks believes Anna that Max said
hat, [$_{\text{CP}}$ t_i daß [$_{\text{FinP}}$ *t* [$_{\text{FinP}}$ sie t_i kommen werde]]]]]]]]]]
has that she come will

For others, (9) is ungrammatical.

It is never possible, though, to have long topicalisation in which V-to-C is triggered in some but not all intermediate clauses (Staudacher, 1990; Haider, 1993; Müller and Sternefeld, 1993).

(10) *Anke$_i$ sagte sie, daß er glaube, t_i werde ihm seine Arbeit hier bezahlen.
Anke said she that he believes will him his work here pay

Nor is it possible to form an embedded question which involves successive cyclic movement through Spec-Fin:

(11) *Anna fragte mich, wann$_i$ ihnen Fritz gesagt hat, t_i werde sie t_i kommen.
Anna asked me when you Fritz said has will she come

Given the acceptability (for some) of (9), it is clear that the *Phase Impenetrability Condition* is not what blocks (10) or (11). If the non-verb-second complement clause serves as a barrier to A-bar movement in (10), both non-verb-second complement clauses should be barriers in (9). Since this conclusion is evidently false, we must suppose that the problem in (11) has to do with

something else.

A first approximation of the phenomenon is fairly simple. The initial phrase in a verb-second clause occupies Spec-FinP (Branigan, 2005). The highest intermediate trace position in a non-verb-second clause is Spec-CP. What we see in the contrast between (8) and (10) is that movement cannot raise a phrase from Spec-Fin to Spec-C. In other words, this limitation on movement in German also falls under the *Trace-Fin constraint* (7).

This pattern of constraints is not restricted to this language. In Belfast English, inversion is always possible in embedded yes-no questions. As Henry (1995) shows, inversion in such questions is allowed only if there is no overt complementiser, indicating that the verb raises to Fin and Fin need not raise to C.

(12) We couldn't establish did he meet them.

'We couldn't establish whether he met them.

Inversion is possible with embedded wh-questions for some, but not all speakers of this dialect. (The examples which follow are all taken from Henry (1995).)

(13) He didn't say why had they come.

In addition, and most clearly in contrast with other dialects of English, inversion can be triggered by successive cyclic wh-movement, in a manner reminiscent of long wh-movement in German. And the long "topicalisation" in this dialect is subject to the same TDC effect as long topicalisation in German, as shown by (14-c) (Alison Henry, personal communication).

(14) a. What did John hope would he see?
b. Who did John say did Mary claim had John feared would Bill attack?
c. *Who did John say did Mary claim that John feared would Bill attack?

In German and Belfast English embedded verb-second clauses, the complementiser is obligatorily absent. I suppose that the entire CP layer is missing in such clauses, although little turns on this assumption. The consequence is that we see the effects of the trace-Fin effect in German only with long Ā-movement, from the left edge of one clause to the left edge of another. In Yiddish, however, the complementiser is optionally present in embedded verb-second complement clauses. Yiddish therefore provides us with data in which the trace-Fin can be seen to have a more local effect. In other words, in Yiddish, we see *that*-trace effects with non-subject extraction. (The data comes from Diesing (1990).)

(15) Vos hot er nit gevolt (*az) [$_{\text{FinP}}$ *t* zoln [$_{\text{TP}}$ mir leyenen *t*]]
what has he not wanted should we read

(16) Ven hostu gezogt (*az) [$_{\text{FinP}}$ *t* hot [$_{\text{TP}}$ Max geleyent dos bukh *t* ?
when have-you said that has Max read the book

Topicalisation of the object or adjunct into Spec-FinP in (16) is possible because the head of FinP attracts its specifier with [MD]. When no *az* complementiser is present, the CP phase is missing, and the wh-phrases in (16) need not travel through Spec-C to escape into the higher clause. When CP is present, thought, the *Phase Impenetrability Condition* ensures that the object will escape only by raising to Spec-CP. But this latter movement violates the Fin-trace constraint, and the sentence is ungrammatical.

As the Yiddish data shows clearly, *that*-trace effects are not properties of nominative elements, or even of subjects of any sort. But nominative subjects, too, may fall under the trace-Fin constraint in Yiddish, as we should expect.

(17) a. *Ver hot er moyre [$_{CP}$ az [$_{FinP}$ vet kumen]]$_{?}$
who has he fear that will come

b. Ver hot er moyre vet [$_{FinP}$ kumen]$_{?}$
who has he fear will come

Once again, movement from Spec-Fin directly to Spec-C results in an ungrammatical structure: (17-a). But when movement from Spec-Fin can avoid using a Spec-C escape hatch, as in (17-b), subjects can be extracted into a higher clause.

If something prevents the subject from raising to Spec-Fin, then the *Trace-Fin constraint* will be irrelevant to subject extraction. This situation also arises in Yiddish, as Diesing's example (18) shows.

(18) ?Ver hot er moyre [$_{CP}$ az [$_{FinP}$ es vet kumen]]$_{?}$
who has he fear that it will come

In the marginal (18), the expletive *es* occupies Spec-Fin, so the subject never raises there. The extraction path of the subject will involve adjuction to FinP, followed by movement to Spec-C in the complement clause. But as nothing is extracted from Spec-Fin, the *Trace-Fin constraint* is not violated.

In the other Germanic languages, as I understand it, complementisers are normally required in embedded verb-second clauses. As such, we would expect movement from initial-position (Spec-Fin) in these languages to be uniformly impossible. Vikner (1991) shows that this prediction is accurate. Let me illustrate the pattern for embedded v/2 clauses with Danish data. In these clauses, the phrase in first position cannot be extracted via wh-movement. In this respect, Danish differs from German.

(19) a. *Hvilket æble siger de sagkundige [$_{CP}$ *t* at [$_{FinP}$ *t* smager ikke bedst]] ? (Danish)
which apple say the experts that tastes not best

b. *Welcher Apfel sagen die Experten [$_{FinP}$ *t* schmeckt am besten] (German)
which apple say the experts tastes the best

As Vikner observes, the contrast in (19) looks like a *that*-trace effect. In my terms, extraction of

the wh-phrase *hvilket æble* in the Danish (19-a) is blocked by the *Trace-Fin constraint*, because movement in the complement clause involves both the Spec-Fin and Spec-C positions.

4 The A/$\bar{A}$ distinction and the trace-Fin effect

Now that the case has been made for subsuming *that*-trace effects under the *Trace-Fin constraint*, it is time to enquire after an explanation for this constraint, repeated here.

(7) *Trace-Fin constraint:*
A phrase cannot raise from Spec-Fin to Spec-C.

The constraint governs movement between two positions in the clausal left periphery. Nothing like this effect is found with A-movement, which typically raises a DP through some series of A-positions to a final A-position where Case is valued. And it does not apply to $\bar{A}$ movement from an A-position to an $\bar{A}$ position. It is reasonable to expect that somehow the A/$\bar{A}$ distinction may be part of the deeper explanation for (19). I will argue, in fact, that the *Trace-Fin constraint* is simply an application of the general constraint which blocks "improper movement".

Let us consider more closely what status the Spec-Fin and Spec-C positions have in the A/$\bar{A}$ dichotomy. We need only consider Spec-C in embedded contexts, since root C, which is not subject to Spell-Out, cannot have a specifier. And in embedded contexts, the Spec-C position is known to enter into specific relations with the lexical category which merges with CP. (In the Government and Binding literature, this relationship was often called "proper government".) Two well-known examples from the literature will be sufficient to demonstrate the situation.

In Spanish and Catalan, "whoever" free relative clauses are subject to matching constraints which control the syntactic category of the head of the free relative Hirschbuhler and Rivero (1983). Thus, a matrix verb like Catalan *invitar* "to invite", which requires a DP complement, cannot accept a free relative clausal complement with a PP in Spec-C.

(20) *Invita amb qualsevol que t'en aniràs
invite with whomever that you will leave

Assuming that *amb qualsevol* is in Spec-C[1], the "matching effect" in such a case can be accomodated only if the matrix verb has access to the categorial properties of the wh-phrase. In short, what seems to be required is a relationship between the matrix verb and Spec-C which is similar to that found between a verb and its direct object.

A second illustration of the relationship between a lexical "governor" and Spec-C comes from Esther Torrego's examples (21) (taken from Chomsky (1986a)).

[1]Hirschbühler and Rivero, working in an earlier model, make different assumptions.

(21) a. *esta es la autora de la qué$_i$ [$_{TP}$ [$_{DP}$ varias traducciones t_i] han ganado
this is the author by whom several translations have won
premios internationales]
international awards

b. este is el autor [$_{CP}$ del que$_i$ no sabemos [$_{CP}$ [$_{DP}$ qué libros t_i] leer]
this is the author by whom not know what books to read

Torrego's data shows that wh-movement cannot normally extract a phrase from inside the subject of a sentence. If the subject is raised to Spec-C, however, extraction from within the wh-phrase is possible. Chomsky observes that the latter will be possible if the Spec-C position is "L-marked", which I understand to mean that it has a relationship with the matrix verb which is sufficiently similar to that which a verb has with its object.

So Spec-C is accessible in several respects to a higher lexical head. The same is not true (normally) for Spec-Fin, which is sheltered from the matrix context by C, and sometimes by Top, Fin, *etc.*, as well.

What do these observations imply for a theory of how the A/$\bar{\text{A}}$ distinction is realized in the clausal "left periphery"? Chomsky and Lasnik (1991) suggest that A-positions are "L-related", meaning they are specifiers or complements of lexical heads and related functional elements like T, Asp, *etc.*. Given the close relationship between Spec-C and the head Merged with CP, it might make sense to extend the denotation of L-related to include Spec-C as well.[2] Spec-Fin, in contrast, is not normally L-related.

On the other hand, it is clear that Spec-C must count as an $\bar{\text{A}}$-position with respect to reconstruction effects, just as Spec-Fin does. And this makes sense, given that Spec-C is a position formed by Merge with C, a non-lexical head.

So Spec-C seems to require a *mixed* characterization with respect to the A/$\bar{\text{A}}$ distinction, while Spec-Fin is simply an $\bar{\text{A}}$-position. A more fine-grained theory of position types is called for then, in which an intermediate "partially $\bar{\text{A}}$" type is available.[3] Spec-Fin, which is not accessible to a lexical head, will then be a fully $\bar{\text{A}}$-position, and Spec-C, which is so accessible will be partially $\bar{\text{A}}$-position.

With this three-way distinction in place, the *Trace-Fin constraint* can be taken to be a special case of the general constraint which bars improper movement. It is not my intention here to explore the axiomatic basis for this constraint.[4] The following rough formulation will be sufficient for my purposes.[5]

(22) *Improper Movement Constraint* (IMC)
A phrase cannot raise from an $\bar{\text{A}}$-position to an A position, or from a fully $\bar{\text{A}}$ position to a partially $\bar{\text{A}}$ position.

[2]Chomsky (2005) suggests that Spec-C may even count as the head of CP in some contexts.

[3]See Webelhuth (1989) and Chomsky (1995)[p. 196] for earlier proposals to this effect, for different reasons.

[4]See, among others, Mahajan (1990) and Collins (1994) for discussion of the nature of improper movement effects.

[5]Translated into "proper government" terminology, the claim I am making would be this: A phrase may raise to a properly governed position only from another properly governed position.

5 General and special cases

5.1 Deriving *that*-trace effects

Consider now the original *that*-trace contrast in (3-a)-(24-a,b).

(3-a) *What did Peter claim [$_{CP}$ that [$_{FinP}$ *t* [$_{TP}$ *t* had happened]]]$_{?}$

(4) a. What did Peter claim [$_{CP}$ that [Penny had fixed *t*]$_{?}$
b. How did Peter claim [$_{CP}$ that [Penny had fixed it *t*]$_{?}$

In (21), *what* raises from Spec-T, an A-position, to Spec-Fin, a fully $\bar{A}$-position. This operation is permitted under the IMC. But in order to escape the downstairs CP phase, *what* must then raise from Spec-Fin to Spec-C. Since Spec-Fin is fully $\bar{A}$ and Spec-C is only partially $\bar{A}$, the second movement violates the IMC, and the derivation fails.

In (22-b,c), there is no point at which the IMC is violated. Movement of the wh-phrases *what* and *how* from inside TP to Spec-C involves adjunction to FinP, but the properties of adjoined positions are not relevant to the IMC. Movement to Spec-C then counts as movement from A-position to a partially $\bar{A}$-position, which is allowed. And subsequent movement to the root Spec-Fin from Spec-C is permitted, as well.

Other contexts in which *that*-trace effects arise in English include indirect questions, which are necessarily CP complements.

(23) a. *Who did they ask if had prepared the dinner?
b. **Which printer do you know when is going on vacation?

In both cases, the embedded clause is a CP, so that extraction of the subject directly from FinP violates the *Phase Impenetrability Condition* . In (23-a), as in the simpler *that*-trace cases, movement from Spec-Fin to Spec-CP will run afoul of the IMC. In (23-b), where a greater degree of ungrammaticality is detectable, there is not even an option of satisfying the *Phase Impenetrability Condition* by using a Spec-CP escape hatch.[6]

The same account covers the *that*-trace effect in locative inversion observed by Bresnan (1994).

(24) a. *Which painting has Tom decided that should be hung on this wall before the weekend?
b. *On which wall has Tom decided that should be hung this painting?

In (24-a), the DP *which painting* is extracted from Spec-FinP via Spec-CP, violating the IMC. position where [NP] is checked. The *Trace Deletion Constraint* therefore blocks trace deletion from Spec-FinP. In (24-b), it is the PP *on which wall* which is extracted from Spec-FinP via Spec-CP, but the derivation will fail on the same grounds.

[6]The contrast between (23-a) and (23-b) seems to show that a *Phase Impenetrability Condition* violation involving movement from an A-bar position is worse than an LF crash by virtue of the *Trace Deletion Constraint*.

5.2 Que/Qui alternations

The exceptions must prove the rule, so the structures in which subject extraction can occur must now be explained. Following a long tradition, let us look to the French *que-qui* alternation for insight into one way that *that*-trace effects can be avoided. As is well known, the *qui* complementiser appears whenever subjects are successfully extracted from a finite complement clause (Kayne, 1972).

(25) Qui imaginent-ils qui/*que *t* a rit ?
who think-they that has laughed

Qui may appear only in case the subject is extracted, as can be seen from (26).

(26) *Ils imaginent qui Marie a rit.
they think that Marie has laughed

The challenge posed by these data again has two sides to it. On the one hand, we must say why subject extraction is allowed at all in sentences like (25), given the account of *that*-trace effects developed above. In addition, we would prefer to be able to say something about the contexts in which *qui* may appear.

That-trace effects arise (locally) because both C and Fin are present in the clausal left periphery, and because they each have particular properties. The properties of Fin are largely elucidated in Branigan (2005). As for C, it seems clear that one primary function is to serve as a force marker. (Hence, Rizzi's label Force for what I am calling C.) Aside from this property, C and Fin are quite similar. They are both phasal heads. Both appear to bear ϕ features, which they value if possible by checking the subject of the clause. Both are incline to lack phonetic content if they bear an overt specifier.

One salient difference is that Fin requires a specifier and C—at least declarative C—does not. This difference may itself be tied to the force marking property of C. Pesetsky (1998) suggested that the "doubly filled Comp" effect might be derived from the need for C to appear at the left edge of its clause. A slight variation of Pesetsky's proposal would be to say that *force markers* must be found at the edge of their clauses.

In this light, we may ask why CP must be present in complement clauses at all. What would be wrong with a finite complement clause which consists of FinP alone? The most obvious answer is that finite clauses must include a force marker, which is normally the role of C.

But what if Fin were to function as a force marker in place of the usual complementiser? Then FinP could function as a full embedded clause if it were not for the presence of the subject in Spec-FinP. In a Germanic language, given the EPP feature of Fin, this will be possible only if something removes the Spec-FinP phrase, to leave Fin at the left edge of its clause. As has been shown already, this is possible in German embedded verb-second complements. In most other Germanic languages, however, C must still appear in embedded clauses. Evidently, the use of Fin as a force marker is a marked option, which must be acquired on the basis of evidence available to the child. In the absence of such evidence, Fin is always taken to lack a force marker

interpretation.

French behaves much like a Germanic language in the syntax of root questions (Den Besten, 1983). In complex inversion structures like (27), it is fairly clear that a non-subject raises to Spec-FinP in the same way as in English, and that T raises to Fin to check its EPP feature.

(27) Quand sont-ils partis?
when are-they left
'When did they leave?'

French Fin must therefore have ϕ features with the EPP property, like English.

Now consider the case of French *qui*, which appears in questions only when the subject is extracted. Since subject extraction is impossible if the subject raises from Spec-FinP directly to Spec-CP (because of the *Trace Deletion Constraint*), this type of movement must not occur in (25). Instead, FinP must be a bare complement to the matrix verb in *qui*-extraction complements. The structure of (25) will then be (28). (Deleted traces are left in place to show the path of movement.)

(28) Qui$_i$ imaginent-ils [$_{\text{VP}}$ *t* [$_{\text{FinP}}$ t_i qui/*que [$_{\text{TP}}$ t_i a rit]]

In French, then, Fin may sometimes have phonetic content and appear as *qui*. With the subject absent from Spec-FinP, *qui* is at the left edge of its clause, and can be interpreted as a force marker.

Godard (1985) (cited by Rizzi (1990)) observes that (for some speakers) *qui* can appear only in the complement to epistemic verbs and verbs of saying. This environment overlaps with that in which embedded v/2 clauses are allowed in German, Dutch and the mainland Scandinavian languages. Presumably, these contexts are those in which a semantic property of the matrix verbs allows the complement clause to either do without a real complementiser (German), or to make do with a less effective one (Scandinavian). It is natural to suppose that the same semantic property allows French verbs to take a bare primary CP complement, in which *que* does not appear because the matrix verb itself selects a FinP complement.

The fact that *qui* only appears in subject-extraction contexts now makes sense. Unless the subject is extracted, *qui* cannot be interpreted as a force marker. Thus both (29-a) and (29-b) will be ungrammatical.

(29) a. *Ils imaginent que elle qui a rit.
they think that she qui *has laughed*
b. *Ils imaginent elle qui a rit.
they think she qui *has laughed*

Extraction of non-subjects will be irrelevant, of course, since non-subjects will never have any relationship with Fin in an embedded clause anyway.

More must be said about the fact that subject extraction is possible at all. Subject extraction across a *que* complementiser normally violates the IMC, since Spec-Fin is fully $\bar{\text{A}}$, and Spec-C is

only partially $\bar{A}$. But consider the context in which subject wh-movement from a *qui* clause takes place:

(30) $[_{CP}\ \alpha\ C\ [_{FinP}\ \beta\ Fin \ldots [vP\ v\ V\ [_{FinP}$ wh-phrase Fin $[_{TP}\ t\ T \ldots]]$

In (30), the Spec-Fin wh-phrase will raise either to the matrix β position, in a root question, or to the matrix α position, in an embedded question. In both cases, the IMC must be satisfied. The A/$\bar{A}$ status of Spec-Fin is therefore critical. Recall that Spec-C is normally a partially $\bar{A}$ position, because it will be accessible to the lexical head which Merges with CP. But in (30), where C is lacking, it is FinP which is Merged with the matrix V, so Spec-Fin should be partially $\bar{A}$ on the same grounds. Consequently, movement to the partially $\bar{A}$ α or to the fully $\bar{A}$ β in (30) will both be permitted under the IMC. Nothing needs to be stipulated about the properties of *qui* in this context. What is significant is simply the accessibility of FinP to a matrix lexical head.

5.3 English subject extraction

In English, subject extraction in declaratives is usually possible only when there is no *that* complementiser. Is it reasonable to extend the analysis of French *qui* to this situation?

(31) Which car does Bill insist *t* was parked in his space?

Such an extension is a trivial technical affair. In (31), for example, it is possible to maintain that the complement clause is a bare FinP, rather than a full CP. The head of the complement clause would then be a null token of Fin, which is unproblematic since Fin appears normally to lack phonetic content in English. Like *qui*, the particular Fin in (31) does not raise to C, but remains *in situ*. Like French *qui*, English *in situ* Fin must lack an EPP property for its [Tense] feature, and like *qui*, it must be interpreted as a force marker by virtue of the lack of a specifier which appears at the left edge of the clause.

Although relevant data is hard to find, there is some slight evidence that this is more than a technical analogy. Consider the data in (32).

(32) a. Penny feels (*sincerely) Paul should be given another chance.
b. Penny feels sincerely that Paul should be given another chance.
c. How many chances does Penny feel (*sincerely) Paul should be given?

As observed in Stowell (1981), in the normal case, a null complementiser must be adjacent to a matrix verb. This descriptive generalization is consistent with Bošković and Lasnik's (2003) idea that null declarative C must undergo Morphological Merger with the verb to its left. If the verb is not adjacent to C, then no Morphological Merger can take place. Notice that A-bar movement out of the complement clause has no effect on the adjacency effect with null C.

But when the subject is extracted, the adjacency effect disappears, as in (33).

(33) Who does Penny feel sincerely should be given another chance?

We may conclude that there is a significant structural difference between subject extraction clauses like (33) and clauses with the normal null declarative complementiser. Suppose now that English subject extraction patterns with French subject extraction. Then the structure of (33) will be (34):[7]

(34) Who does Penny feel sincerely [$_{\text{FinP}}$ *t* Fin [$_{\text{TP}}$ *t* should be given another chance]]

Bošković and Lasnik (2003) observe as well that Right Node Raising examples like (35) are impossible with null complementisers.

(35) a. They believed, and Mary claimed, *(that) John would murder Peter.
b. Who did they believe, and Mary claim, *(that) John would murder?

This pattern again reflects the need of a null complementiser to undergo Morphological Merger with a matrix head, which is impossible if the null complementiser is deleted in the first conjunct.

With subject extraction in the complement clause, however, no overt complementiser is required (or allowed) in parallel Right Node Raising structures.

(36) Who did they believe, and Mary claim, would murder Peter?

Again, the ability of FinP to appear as a bare complement clause under the right conditions is what explains the acceptability of (36). Both *believe* and *claim* in (36) take a FinP complement, where Fin is a legitimate force marker since it is at the left edge of its clause. And the entire structure is legitimate because Fin is not subject to special licensing conditions which are disrupted by Right Node Raising, unlike null declarative C.

So it seems that English and French differ in only one, quite superficial respect with respect to the conditions under which subject $\bar{\text{A}}$-movement will be possible. In both languages, Fin has no phonetic content when it heads the complement to an argumental C. In French, it takes the form *qui* when it appears in its base position. In (standard) English, Fin has no phonetic content even when it does not raise to incorporate into C.

For those English dialects which do permit subject extraction with an overt *that* complementiser (Sobin, 1987), we may now simply assume that Fin may be realised as *that* when it is not the complement to a higher C. The dialectal variation then reduces to a difference in the phonetic form of a single functional head (Branigan, 1996).

5.4 German long topicalisation

Consider again the derivation of (10):

[7] To be consistent with the Bošković and Lasnik model, we would assume that the null Fin is not required to undergo Morphological Merger, because that licensing condition holds only of the regular null declarative C. English Fin can stand on its own. No problem arises therefore when the matrix verb and FinP are not adjacent.

(10) *Anke$_i$ sagte sie, daß er glaube, t_i werde ihm seine Arbeit hier bezahlen.
Anke said she that he believes will him his work here pay

This sentence is ungrammatical because the topic *Anke* raises from Spec-Fin in a verb-second clause to Spec-C in a higher clause. Given the IMC, this result follows only if Spec-Fin is a fully $\bar{A}$ position, and Spec-C is partially $\bar{A}$. The latter is automatic; CP is the complement of the matrix verb *sagen* and its specifier is therefore accessible the the matrix verb. In order for Spec-Fin to count as a fully $\bar{A}$ position, though, we must assume that it is not the immediate complement of its own matrix verb. In other words, example (10) falls into place if there is a (non-phasal) Top head which accompanies the bare FinP in the bottommost clause.

(37) [$_{CP}$ C Top [$_{FinP}$ Anke$_i$ sagte [$_{TP}$ sie, [$_{CP}$ *t* daß [$_{FinP}$ er glaube, [$_{TopP}$ Top [$_{FinP}$ t_i werde [$_{TP}$ ihm seine Arbeit hier bezahlen]]]]]]]]

If we take selection by a Top head to be a precondition for Fin to take on the probe feature [MI] (which attracts the topic), then the presence of Top in this structure will be obligatory.

Compare (10) with (8).

(8)' [$_{CP}$ C Top [$_{FinP}$ in zwei wochen$_i$ glaubt-Fin Anna [$_{vP}$ t_i [$_{vP}$ …, [$_{TopP}$ Top [$_{FinP}$ t_i hat
in two weeks believes Anna has Max
Max$_j$ [$_{vP}$ t_i [$_{vP}$ t_j gesagt, [$_{TopP}$ Top [$_{FinP}$ t_i werde-Fin sie t_i kommen.]]]]]]]]
said will she come

In (37), with Top heads sheltering both of the FinP complements from a matrix verb, the Spec-Fin specifiers are all fully $\bar{A}$. Movement from each Spec-Fin to the next higher one therefore satisfies the IMC, and the sentence is grammatical.

6 The 'adjunct' effect

Culicover (1991) notes that the *that*-trace effect is weakened, and sometimes cancelled out when certain adjuncts appear to the immediate right of the complementiser.

(38) ?Which car did Terry say that just yesterday had won the Indy?

Preposed arguments do not have the same effect (Culicover, 1993). In fact, rather than improving the status of a sentence from which the subject is extracted, argument preposing makes it even worse.

(39) a. *Which car did Terry say that the Indy, had won?
b. *Which car did Terry say that to Tonya, had been sold?

The effect of preposed arguments is unsurprising. In (39-b), *to Tonya* is topicalised and adjoined to FinP, where it can be checked by the Top head to its immediate left. Therefore, the structure of

the complement clause prior to wh-movement must be (40).

(40) [$_{CP}$ that [$_{TopP}$ Top [$_{FinP}$ to Tonya [$_{FinP}$ which car Fin [$_{TP}$ *t* had be sold *t*]]]]]

Movement of *which car* from Spec-FinP to Spec-CP will violate the *Improper Movement Constraint*, since Spec-Fin is fully $\bar{A}$ and Spec-C is only partially $\bar{A}$.

In fact, many adjuncts behave like fronted arguments in this respect. Haegeman (2003) shows that adjuncts which are construed in a lower clause than the one from which the subject is extracted are unable to cancel out the *that*-trace effect.

(41) a. ?Beth said that *just yesterday* Peter thought that this car had won the Indy.
b. ?Who did Beth say that *just yesterday* thought that this car had won the Indy?

In (41-a), the adjunct *just yesterday* can marginally be construed as referring to the time of the race, rather than the time of Peter's thinking. But in (41-b), where the suject of the middle clause is extracted, the adjunct can only be construed locally, as referring to the thinking time.

Haegeman's treatment of this contrast is that adjuncts construed in a lower clause are found in the higher clause only by virtue of movement, while those construed locally are base-generated in the position where they appear. Thus, in (38), the adjunct *just yesterday* is Merged into the position immediately after *that*, while in (41-a), under the low construal reading, the adjunct is introduced initially into the bottom clause, and then raises into the left periphery of the matrix clause.

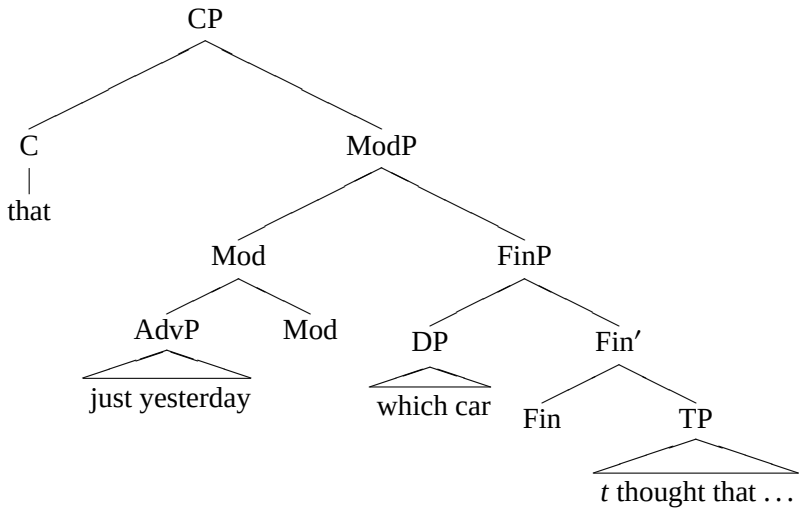
Haegeman's account, which I accept, fits naturally into the present theory. Topicalized arguments and adjuncts may raise freely to adjoin to FinP in order to be close enough to Top to allow [Topic] features to be checked. The resulting structure in both cases will be (42):

(42) [$_{CP}$ (that) [$_{TopP}$ Top [$_{FinP}$ **topic-XP** [$_{FinP}$ DP (Fin) [$_{TP}$ *t* . . . *t* . . .]]]]]

Subject extraction from Spec-FinP in (42) will inevitably run afoul of the IMC , so the *that*-trace effect shoud be found here, just as it is in clauses with no topicalisation.

The disappearance of *that*-trace effects when an appropriate adjunct is Merged directly into a position to the right of *that* is more surprising, though hardly more difficult to explain. If the adjunct is adjoined to FinP, then the structure will be equivalent to (42) in all relevant respects. Suppose, however, that some adjuncts may be adjoined to one of the non-phrasal functional heads which Rizzi proposes between C and Fin. Following Rizzi (2004), let us identify the relevant head as Mod. Then the structure of (38) prior to subject movement will be (43).

(43)



In this structure, the adjunct, which is lexical rather than function, occupies a position with respect to Spec-Fin which very much like the position a matrix verb occupies when a bare FinP is used to enable subject extraction. In other words, given the (43) structure, the Spec-Fin position may be considered partially $\bar{A}$ in nature, rather than fully $\bar{A}$. As such, the IMC will not prevent movement from Spec-Fin to Spec-C, another partially $\bar{A}$ position. [8]

[8] As Culicover observes, subjects can be extracted even when a monotone-decreasing adjunct appears, in a verb-second structure.

i Which car did Tony say that at no earlier date had been entered in the race?

He assumes that the structure in this case would be one in which the auxiliary verb raises to C, by analogy with the 'negative inversion' structure required when the subject remains within the complement clause:

ii Tony said that at no earlier date had that car been entered in the race.

Notice however that the surface string gives no evidence of T-to-C movement in the complement clause, with the subject missing. In fact, *do*-support is not possible in this configuration, as Culicover's own data shows.

iii ??Leslie is the person who I said that only in that election did run for public office.

iv Leslie is the person who I said that only in that election ran for public office.

I conclude from this that the negative phrase is simply adjoined to Mod. So this case falls together with that of the non-negative adjuncts.

The *that*-trace effect is not cancelled out entirely in the negative-inversion structures. Even though the subject can be extracted in this context, a negative phrase itself cannot be moved to a higher position from Spec-Fin.

iii *At no earlier date would Peter say that *t* had his car been driven faster.

(This parallels the Yiddish *that*-trace effect discussed already). The negative phrase cannot undergo wh-movement here because in this case it must occupy Spec-Fin, so movement to Spec-C will violated the IMC.

It follows that embedded sentences with initial locally-construed adjuncts will be structurally ambiguous, with both of the (44) structures being legitimate.

(44) a. [$_{CP}$ that [$_{Mod}$ tomorrow Mod] [$_{FinP}$ the rain Fin [$_{TP}$ *t* will begin at noon]]]
b. that [$_{FinP}$ tomorrow [$_{FinP}$ the rain Fin [$_{TP}$ *t* will begin at noon *t*]]]

6.1 *That*-trace effects in Mainland Scandinavian

The mainland Scandinavian languages offer a particularly intricate array of data for analysis of *that*-trace effects. These languages are grammatically uniform with respect to *that*-trace effects in embedded v/2 structures, but they vary considerably with non-v/2 complements. The Danish example (45) illustrates the general situation for subject extraction from embedded v/2.

(19-a) *Hvilket æble siger de sagkundige [$_{CP}$ *t* at Top [$_{FinP}$ *t* smager ikke bedst]] ?
which apple say the experts that tastes not best
(Danish)

The IMC ensures the ungrammaticality of (19-a) as follows. As *at* is present, presumably to supply a force marker for the complement clause, Spec-Fin is sheltered from the matrix verb. Lacking a lexical "governor", Spec-Fin is a fully $\bar{A}$ position. Fin requires lexical support, which it could obtain by raising to C, but the presence of a Top head blocks Fin-to-C movement. Therefore, T and the finite verb in TP must raise to Fin to provide support. (This may be a stylistic, PF phenomenon.) Movement of the subject phrase *hvilket æble* to Spec-C is necessary to satisfy the *Phase Impenetrability Condition* , but this movement violates the IMC, since Spec-C, as usual, is a partially $\bar{A}$ position.[9]

Turning now to the non-v/2 complements, the data are as follows. In standard Swedish and Danish, *that*-trace effects are found with the *at(t)* and *som* complementisers. (Platzack, 1986; Hellan and Christensen, 1986). (The Swedish data in (45-a) comes from Holmberg (1986); that in (45-b) from Platzack (1986).)

(45) a. *Vem sa du att *t* hade komit?
who said you that had arrived
b. *Vilken film kunde ingen minnas [vem (som) alla trodde [som hade
which film could no one remember who (that) everyone thought that had
regisserat?
directed

(The problem in (45-b) is not the obvious wh-island effect, because Scandinavian languages do not exhibit such effects, as shown by Engdahl (1984).)

[9]In example (19-a), the verb movement itself will not be motivated, and the word order would therefore be different, if there is no Top head present to block incorporation of Fin by C.

In Swedish, subject extraction is possible when the complementiser is omitted, as in English. In Danish, there are two ways to permit the subject to escape: the complementiser may be omitted, as in Swedish, or an expletive *der* may be inserted to fill the Spec-FinP position. The latter strategy resembles the use of Yiddish *es* already discussed. Where the complementiser is missing, I suppose that a bare FinP complement is used, just as in English and French.

In Finnish-Swedish (Holmberg, 1986) and in Norwegian, though, extraction past an overt complementiser is possible, as seen in the Norwegian topicalisation in (46) (from Hellan and Christensen (1986)).

(46) a. Petter vet jeg at skal komme.
Peter know I that will come

The dialectal variation in mainland Scandinavian can be treated along the same lines as in English. In standard Swedish, it appears, the complementiser *att* can only appear as a secondary C, with null Fin heading the complement. When Fin is not the complement of C, it may bear the set of features which allow a trace in Spec-FinP to be deleted after movement to a higher position. But extraction of the subject in (45-a) then violates the IMC because the subject raises from a fully $\bar{A}$ position in the internal domain of Fin to a weakly $\bar{A}$ position. In other dialects, however, *att* may appear as the primary complementiser in a bare primary CP complement clause, so that the (Finnish Swedish) structure in which wh-movement takes place is (47).

(47) $[_{\text{FinP}}$ sa du $[_{\text{FinP}}$ vem att $[_{\text{TP}}$ *t* hade komit]]]

When *vem* raises to the matrix clause Spec-Fin, it moves from a partially $\bar{A}$ position to a fully $\bar{A}$ position. The derivation thus succeeds.

Unlike the *att* complementiser, the *om* 'if' complementiser blocks subject extraction in standard Swedish, but not in Danish, Finnish Swedish, or Norwegian. The contrast between Swedish and Norwegian is seen in (48).

(48) a. *Vem undrade du om *t* hade komit? (Swedish)
who wondered you if had arrived
b. Petter vet jeg ikke om *t* skal komme. (Norwegian)
Peter know I not if will come

This contrast calls for a different type of cross-linguistic variation, one in which the absence of a secondary C does not play a role. The *om* complementiser can only be C—not Fin—, so the structure of the embedded clause in both (48) examples must include both an argumental C and Fin. The difference can be explained only by supposing that *om* selects a Fin with the right featural content to permit subject extraction to occur. I conclude that *om* exceptionally selects a form of Fin in which the ϕ features lack the EPP property. (This must evidently be a marked situation cross-linguistically, given the rarity of structures like these in other languages, so we would expect to find positive evidence in the linguistic environment of Danish or Norwegian children.) With this specific feature complex in place, the mechanism for subject extraction will be the same as

that for object extraction, since both subjects and objects will be attracted directly from within TP.

Extraction from an *if*-clause is disallowed in English even for non-subjects, so there is a secondary effect to explain in the Norwegian (48-b). Compare (48-b) with English (49).

(49) *Who don't you know [$_{CP}$ if [$_{FinP}$ *t* Fin [$_{TP}$ *t* will come]]]$_{?}$

The explanation for the island effect in (49) should not be that *if* cannot take a specifier, because the nature of Merge is such that a specifier should be possible if *if* has the right EPP feature. A better account would be that *if* cannot have a [wh] feature added to it, since this is a necessary step in successive cyclic movement.

Danish and Norwegian take this distinction one step further. In these languages, subject extraction is even allowed from within indirect wh-questions (Taraldsen, 1986), as illustrated by the Norwegian (50).

(50) Det er en mann som vi ikke skjønner hva sier.
that is a man that we not understand what says

Once again, we find a complementiser—the null [wh] C—with the exceptional property of selecting a Fin complement with features permitting subject extraction. Just as with the *om* complementiser, the wh-complementiser selects a Fin in which [Tense] lacks the EPP property.

Maling and Zaenan (1978) show that Icelandic is immune to *that*-trace effects, too.

(51) a. Hver sagðir þú að *t* hefði borðað þetta epli?
who said you that had eaten this apple
b. Þetta er maþurinn, sem þeir segja að *t* hafi framið glæpinn.
this is the man that they say that has committed the crime
c. Þetta sverð heldur konungurinn að *t* sé galdrasverð.
this sword thinks the king that is magic sword

Although Icelandic allows expletive *pro* in embedded questions, Maling and Zaenen show that expletives cannot be used to make subject extraction possible. Icelandic does not pattern with Yiddish in this respect. Nor does it behave like English and French, which allow a bare primary CP as a complement clause. Instead, Icelandic patterns with Norwegian, which makes use of an Fin optionally lacking in EPP features to allow subjects to escape without crashing the derivation. [10]

[10] As Icelandic Fin is affixal, it must be supported by some $\bar{X}$ head. Like Norwegian, Fin can be supported by moving to the argumental C, as in (i-a). But Icelandic has a second mechanism to provide support to Fin as well. When Fin is left in its base position, if the subject is extracted from Spec-Fin, then stylistic fronting can raise a non-finite $\bar{X}$ head to support Fin *in situ*: (i-b) (from RÃűgnvaldsson and Thráinsson (1990, p. 32)).

(i) a. Hver sagðir þú [CP að-Fin [CP *t e* [TP *t* hefði borðað þetta epli]]] ?
b. Þennan mann hélt ég [CP að [CP *t* Fin-farið [TP *t* hefði verið *t* með *t* á sjúkrahús.
this man thought I that gone had been with to hospital

7 Short wh-movement of the subject

One of the persistent problems with government-based approaches to *that*-trace effects has been that *short* wh-movement of subjects is typically possible in conditions which appear to violate the ECP. The problem is most evident with English relative clauses, but it shows up in other contexts, too. Consider the following data.

(52) a. the house (that) Jack built
b. the house (that) Jack lives in
c. the house whose roof Jack repaired
d. the house in which Jack lives

English relative clauses in which a non-subject serves as the relative pronoun allow for a range of surface realizations of C and the relative pronoun. If the relative pronoun is realised phonologically, then C must be silent, at least for most speakers. This pattern presumably represents the 'doubly filled Comp effect'. When the relative pronoun is not realised, then the complementiser may appear, but it may also be silent.

When the relative pronoun is the topmost subject of the relative clause, the data patterns differently.

(53) a. the guy *(that) built this house
b. the guy who built this house

In such cases, the complementiser is omitted only when the relative pronoun is realised overtly. Optional deletion of the complementiser is impossible.

The fact that the complementiser may appear at all has been problematic for previous approaches to *that*-trace effects, and particularly for government-based theories, simply because the *that* in (53-a) should presumably block proper goverment of a subject trace. The fact that the complementiser is obligatory is entirely inexplicable in such theories.[11]

In the model developed here, however, the presence of C provokes a *that*-trace effect only indirectly, by providing a context in which an improper movement violation may arise. And with short wh-movement, as I will show, the grammars of individual language will often either provide ways to avoid the problem, or they will find ways to repair improper movement violations.

To see how the data may be handled, we once again turn to the distribution of the French *qui* complementiser. The *qui* complementiser most frequently appears in relative clauses in which the subject is a null operator.[12]

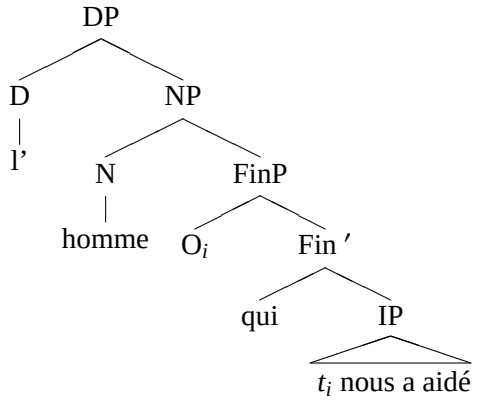
[11] For Rizzi (1990), the overt *that* in subject relatives is itself able to properly govern the subject trace, so that the ECP is satisfied, if only by stipulation. The fact that the complementiser may not be omitted remains without explanation in his account.

[12] The *qui* complementiser also appears in the complement to perception verbs, in the 'pseudo-relative' construction. Examples appear in (i).

(54) l'homme qui *t* nous a aidé.
the man us has helped

In relative clauses, *qui* must have essentially the same properties as the *qui* which appears when long wh-movement of the subject occurs. In the analysis of *qui* in complement clauses, it was established that Fin is realised as *qui* only if FinP appears without a matrix C. The same should obviously be true of *qui* in a relative clause structure, i.e., no CP is necessary in subject relative clause, probably because the D head of DP supplies the semantic content which would otherwise be brought to the table by the higher C. Relative modifiers are frequently 'smaller' than finite clauses, so that the structure (55) may be appropriate for example (54).

(55)



Relative clauses in French are always formed with A-bar movement of the relative pronoun. In (55), the A-bar movement is not driven by a [wh] feature, which can only be intruduced by C, but rather by the ϕ/EPP feature which is always present in Fin. There appears to be no need to use a [wh]-checking complementiser in order to find the right interpretation for the relative clause.

When the relative pronoun is not the subject, it still must undergo A-bar movement out of TP. Since the Spec-FinP position is unavailable—being already occupied by the subject—the only way for A-bar movement to take place is if a complementiser is Merged with FinP to provide a second A-bar landing site. With non-subject relative clauses, then, the structure will always

---

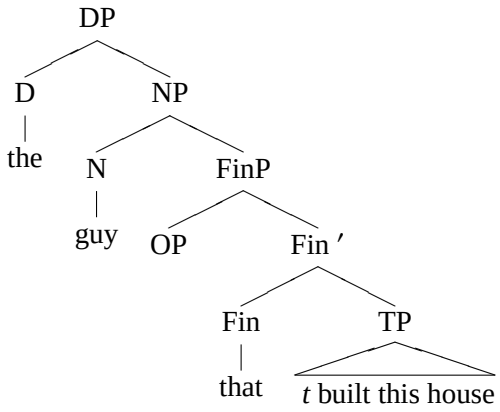
(i) a. Tout le monde a entendu Marc qui ronflait.
all the world has heard Marc qui *snored*
'Everyone heard Mark snore.'
b. Louise a vu Salomon qui courait.
Louise has seen Salomon qui *ran*
'Louise saw Salomon run.'

Cases like this also appear to involve a bare FinP as the complement. (cf. Guasti (1993) for a similar claim.) No secondary C appears, so Fin need not raise to check the [Tense] feature, and can be realised as *qui*. The questions raised by such constructions include the nature of the doubly-filled Comp effect, and the properties of perception verbs which allow them to accept 'small' complements. Nothing in the text appears to shed any light on these questions, especially as concerns the pseudo-relative constructions.

involve a full CP.

Returning now to the English data in (53), the question why *that* must not be omitted in subject relative clauses now looks quite different. If English is like French, then the structure of (53) will be (56).

(56)



The word *that* in this case must be an instance of Fin, and not a higher complementiser at all. In other words, the word *that* must have multiple uses in standard English. Sometimes it serves as a force-marking C in declarative clauses; other times, it functions as the head of a bare FinP in relative clauses. And in some dialects, *that* serves as Fin in complement clauses where FinP appears without a sheltering CP.

Notice that the absence of any *that*-trace effect is expected in structures like (56). Since the *that*-trace effect arises only when there is movement from Spec-FinP there should never be any effect when an operator just raises to Spec-FinP and stays there, and that is the situation in subject relative clauses.

This treatment of subject relatives analysis offers a principled account of one variety of so-called 'vacuous movement' effects. Chung and McCloskey (1983) observe that relative clauses formed by subject extraction are weaker extraction islands than relative clauses formed by extraction of any other type of NP. Examples (from Chung and McCloskey (1983)) appear in (57).

(57) a. That's one trick that I've known a lot of people who've been taken in by *t*.
b. Isn't that the song that Paul and Stevie were the only ones who wanted to record *t*?

Such sentences compare favorably with sentences in which the operator comes from somewhere else, as in (58).

(58) ??Isn't that the song writer that ballads were the only things that Paul would write *t* for *t*?

In indirect questions, the contrast is absent.[13]

[13] I differ from Chomsky (1986a), who finds some slight effect even here.

As Chung and McCloskey (1983) argue, this contrast is best explained if subjects and non-subjects appear in different positions. For them, the subject occupies a different position because it does not move from its TP-internal position at all. But a less *ad hoc* treatment is possible in the present model. Since subject relative clauses do not raise higher than Spec-FinP, it is possible to find an escape hatch for non-subjects in these cases. Suppose that early in the derivation, the structure of the relevant DP in (57-a) is (59):

(59) $[_{DP}$ people $[_{FinP}$ who$_i$ Fin [t_i have been taken in by which]]]

The FinP in (59) is a legitimate relative clause because it contains a relative pronoun which has undergone A-bar movement. The relative pronoun *who* does not need to raise any higher than Spec-FinP, because there is no need for it to check an interpretable [wh] feature on a higher C. In order to escape from DP, then, the wh-phrase *which* must find a way out of FinP, but there is no second CP phase to block movement. Given this structure, *which* may adjoin to FinP (as usual) and then subsequent movement out of DP may take the usual course.

In contrast, the structure of the island DP in (58) can only be (60).

(60) $[_{DP}$ the only things $[_{CP_j}$ OP that $[_{FinP}$ Paul$_i$ $[_{TP}$ t_i would write t_j for whom]]]]

Here there is no escape hatch available for the relative pronoun *whom*. Spec-CP is already occupied, and adjunction to CP seems not to be possible, so *whom* can only escape from the relative clause by violating the *Phase Impenetrability Condition* .

The pan-Scandinavian relative clause complementiser *som* illustrates a further wrinkle in the analysis of relative clauses. As shown by Taraldsen (1986), *som* is obligatory in subject relatives, but optional with non-subject relatives.

(61) a. kvinnan **som** pratar med Anders
woman.the speaks with Anders
'the woman who is speaking with Anders'

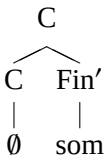
b. kvinnan **(som)** Anders pratar med
woman.the Anders speaks with
'the woman who Anders is speaking with'

In the former, it suffices to suppose that *som* is an instance of Fin. As subject relative clauses are typically bare FinP, the appearance of *som* in (61-a) follows the same pattern as we have seen in French and English.

The pre-subject position of *som* is new however. If *som* is Fin, and the subject occupies Spec-FinP, then how can this word order be derived. The explanation lies in the checking requirements of C in relative clauses like (61-b). Like declarative C in most of the verb-second Germanic languages, C in a relative clause can be assumed to attract Fin, providing morphological support for Fin in the process. The net result is that Fin must raise to C in non-subject relatives, and not in subject relatives.

The optional appearance of *som* in the C position in (61-b) may now be taken to reflect a degree of optionality in the morphological realisation of structures in which a null relative C contains Fin in relative clauses, i.e. of structures like (62):

(62)



Given such structures, it is apparently possible to realise either C or Fin, but perhaps not both. When *som* remains *in situ*, however, there is no optionality in its morphological realization.

The notorious *da/die* alternation in West Flemish relative clauses (Bennis and Haegeman, 1984) largely follows the Swedish pattern, with some interesting differences. The pattern in this language is seen in (63)–(64) (taken from Bennis and Haegeman (1984)).

(63) Wien peinst Pol da *t* Valère gezien heet?
who thinks Pol that Valère seen has

'Who does Pol think Valère has seen?'

(64) a. den vent da/*die Pol getrokken heet
the man that/who Pol painted has
'the man who Pol made a picture of'

b. den vent da/die gekommen is
the man that/who come is

In simple declarative complements, the agreeing complementiser *da* is used. In relative clauses with subject relative pronouns (or their null alternant), either *da* or the relative pronoun *die* may appear. With other types of relative clauses, *die* is unacceptable, and only the complementiser may appear.

Continuing along the line of analysis proposed for French, English, and Swedish, I suppose that the difference between subject relatives and other types involves the size of the relative clause. Subject relatives are bare FinP, and other relative clauses are normally CP. The *da* "complementiser" may appear either as Fin or as C, patterning in this respect with Swedish *som* and dialectal English *that*. What the data in (64) indicates, under this analysis, is that *die* may be pronounced only in Spec-Fin, and is unacceptable in Spec-C.[14]

[14] A similar constraint may be observed in French questions, where the atonic wh-phrase *que* may appear in Spec-Fin, but not in Spec-C.

(i) a. [$_{\text{FinP}}$ Que veulent-Fin [$_{\text{TP}}$ t-ils *e* [$_{\text{vP}}$ *e t*]]]?
what want they

b. *Je me demande [$_{\text{CP}}$ qu' C [$_{\text{FinP}}$ ils Fin [$_{\text{TP}}$ *t* veulent-T [$_{\text{vP}}$ *e t*]]]]
I wonder what they want

West Flemish displays rather more esoteric behaviour in relative clauses with long wh-movement, as in (65).

(65) a. den vent da Pol peinst da/*die Marie getrokken heet
the man that Pol thinks that/who Marie painted has
b. den vent da Pol peinst da/die gekommen is
the man that Pol thinks that/who come is

Example (65-a) is entirely predictable, since *die* cannot be pronounced in Spec-C, whether that appears at the root of the relative clause or somewhere further down. In (65-b), though, the optional appearance of *die* in the position of an intermediate trace requires commentary. The structure in this case will be (66). (I omit the various intermediate adjoined traces, as they are not pertinent here.)

(66) den vent [$_{CP}$ OP$_i$ da [$_{FinP}$ Pol Fin [$_{TP}$ *t* peinst [$_{FinP}$ die$_i$ Fin [$_{TP}$ t_i gekommen is]]]]]

Evidently, in this structure, Spell-Out is allowed to pronounce the relative pronoun in Spec-Fin even though subsequent movement has raised it to a higher position, where it cannot be pronounced. Although this is a relatively unusual pattern cross-linguistically, it is not unknown. Parallel "Spell-Out reconstruction" operations are attested in Serbian (Bošković, 2002) and in Chukchi (Bobaljik and Branigan, 2005). The interesting thing about West Flemish for my purposes is that it is possible to give a principled account of the context in which this marked operation takes place only by recognizing the different roles played by Spec-Fin and Spec-C in the syntax of relative clauses.

To sum up, *that*-trace effects are largely absent in relative clauses. This follows from the ability of the grammar to use bare FinP as a relative clause whenever the relative pronoun is the subject. As Spec-Fin is an $\bar{A}$ position, the normal movement of the subject to this position creates a structure in which an operator-variable chain can be formed, which is the *sine qua non* of relative clause formation. With non-subject relative pronouns, however, a full CP structure is normally required, with the contrasts seen above following as a direct result.

7.1 Short wh-movement in embedded questions

Unlike relative clauses, embedded questions do appear sometimes to be subject to the *that*-trace effect. Consider the Yiddish data in (67) (from Diesing (1990), for example.

(67) Ikh veys nit ver *(es) is gekumen.
I know not who is come
'I know who came.'

Without the expletive *es*, short wh-movement of the subject is impossible in Yiddish. This follows from the IMC. If the subject is raised from Spec-FinP to Spec-CP, the movement originates in a fully $\bar{A}$ position and ends in a partially $\bar{A}$ postion. But if a ϕ-bearing expletive is used to fill the Spec-FinP position, then the subject may raise directly from Spec-TP—an A position—to Spec-CP. Movement of the latter type does not violate the IMC.

Yiddish also employ adjuncts to allow short wh-movement of the subject to take place, as in (68) (from Diesing):

(68) … vi ikh veys vos bay mir tut zikh
as I know what by me does itself
'…as I know what goes on with me'

I assume that the mechanism which licenses the operation in this case is the same as we find with English long subject extraction. The presence of an adjunct adjoined to Mod will change the A/$\bar{A}$ status of Spec-Fin from fully $\bar{A}$ to partially $\bar{A}$. Movement from Spec-Fin to Spec-C in (68) will then not contravene the *Improper Movement Constraint*.

Since embedded questions are necessarily CPs, with a [+wh] C head present in all wh-questions, it makes sense that they should exhibit *that*-tree effects. The [+wh] complementiser must attract its goal wh-phrase to Spec-C, and when that wh-phrase is found in Spec-Fin, the result will always be improper movement. On the other hand, it is still true that many languages—all of the ones under discussion, in fact—allow questions to be formed by wh-movement of the subject.

The question then is what types of strategies are available in different languages to permit short wh-movement of the subject to occur in indirect questions. Obviously the Yiddish strategy is not the only one—English cannot use expletive subjects in this way, for example.

Consider (69).

(69) Bob enquired which desperado had pitched this tent.

For the English case, the obvious, familiar derivations are excluded by the *Improper Movement Constraint*. Suppose that the structure of the complement clause is (70) when the interrogative C is Merged with FinP.

(70) [$_{\text{CP}}$ C [$_{\text{FinP}}$ which desperado Fin [$_{\text{TP}}$ *t* had pitched this tent]]]

C must attract the wh-phrase. Spec-Fin is fully $\bar{A}$, and Spec-C is partially $\bar{A}$. Movement of the wh-phrase therefore violates the IMC.

In fact, the principles which give rise to the *that*-trace effect ensure that short wh-movement of the subject will always be impossible unless some loophole can be identified. This result is probably the right one, because there are languages in which even short wh-movement cannot take place without unexpected effects arising.

Taraldson's (1986) description of embedded questions in Norwegian indicates a second strategy available to some languages. In Norwegian, *som* appears obligatorily with a local subject wh-phrase (71). (The Norwegian data in (71) is taken from Taraldsen (1986).)

(71) Vi vet hvem *(som) snakker med Marit.
we know who talks with Mary

The appearance of *som* in such embedded questions is initially quite surprising, given that Norwegian is otherwise sensitive to doubly-filled Comp effects, even in cases where *som* is involved, as in the relative clause in (72).

(72) Her er mannen hvis hest (*som) vant løpet.
here is the man whose horse won the race

Recall as well that *som* in non-subject relative clauses may be omitted freely, because there is some optionality in the realisation of the C-Fin structure formed when C incorporates *som*. But *som* cannot be omitted in (71).

These peculiar properties of *som* in embedded subject questions both indicate that *som* in (71) does not appear in the C position. If *som* occupies Fin, then the absence of a doubly-filled Comp effect follows, simply because there is no overt head in C to clash with the overt wh-phrase specifier. And if *som* remains in Fin, then it must always be overt, just as it is in the subject relative clauses.

The structure of the embedded question in (71) then must be (73).

(73) $[_{CP}$ hvem $[_{C}\ \emptyset\ ]\ [_{FinP}\ t\ [_{Fin}$ som $]\ [_{TP}\ t$ snakker med Marit $]]]$

Recall that C normally attracts Fin, including *som*, and that this is why the finite verb does not have to raise to Fin in embedded clauses in verb-second languages. C must therefore have a probe feature which checks Fin, possibly a ϕ feature complex. In (73), though, *som* does not raise. In this structure, then, C must be checking the relevant feature by attracting the subject *hvem* to Spec-C instead.

This structure, in which the wh-phrase and *som* appear in different projections, is supported by the fact that *som* can be further separated from its wh-phrase by right-dislocation in Swedish (Holmberg, 1986).

(74) Jag vet vilka fotbollslag, och Peter vet vilka hästar som kommer att vinna den
I know which football teams and Peter knows which horses will win this
här veckan.
week

The right-dislocated phrase is FinP, which contains *som*, and out of which the subject wh-phrases have raised to become specifiers for CP.

It is impossible, in fact, to leave *som* behind and dislocate a bare TP (Platzack, 1986). In this respect *som* is more closely bound to TP than an argumental *att* complementiser is. (Examples are taken from Platzack (1986)).

(75) a. *Jag vet vilka fotbollslag som, och Peter vet vilka hästar som kommer att
I know which soccer team and Peter knows which horses come to
vinna den här veckan.
win this week

b. Jag tror att, men vet inte säkert om, din teori är korrekt.
I believe that, but know not for sure whether your theory is correct

So C can sometimes attract the subject from Spec-Fin without producing an ungrammatical result. How is this possible? I suspect that this is a case in which an unacceptable movement does in fact take place, but that the grammar can rescue the result by covertly undoing the effects of the (illegitimate) prior movement. In other words, even though improper movement takes place in (73), reconstruction of the moved wh-phrase to Spec-C, as in (76), produces a legitimate structure at the LF interface.

(76) Vi vet [$_{CP}$ *e* C [$_{FinP}$ hvem som [$_{TP}$ *t* snakker med Marit]]]

This sort of rescue-by-reconstruction operation has been shown to exist in other areas of the grammar. Lin (2001) shows that A-movement which violates the Coordinate Structure Constraint can be acceptable as long as it is repaired by reconstruction.

There is no reason to treat English differently from Norwegian in how it deals with short subject wh-movement. Thus, in (77) too, I suppose that the wh-phrase in Spec-C must be subject to reconstruction to Spec-Fin in order to save the derivation.

(77) Pam asked [$_{CP}$ which truck C [$_{FinP}$ *t* Fin [$_{TP}$ *t* had lost the universal]]]

Notice that reconstruction of a wh-phrase like *which truck* in (77) is semantically unproblematic, since the reconstructed position preserves the scopal properties of the higher Spec-C position. In either position, a wh-phrase will have scope over everything which remains in TP. There will therefore be no clash between the interpretation of the [+wh] C and the operator-variable chain headed by the wh-phrase. On the same grounds, we should not expect reconstruction to be effective in phrases where movement of a wh-phrase from a lower Spec-Fin to a higher Spec-C position takes place. Thus, German long movement in (78) (from Müller and Sternefeld (1993)) remains impossible.

(78) Ich weiß nicht [$_{CP}$ wen C du meinst [$_{FinP}$ *t* mag-Fin [$_{TP}$ der Fritz *t e*]]]
*I know not who-*ACC *you think likes the Fritz*
'I don't know whom you think Fritz likes.'

The derivation of (78) involves improper movement from Spec-Fin in the lowest clause to Spec-C in the inner clause. Reconstructure of *wen* would replace it in Spec-Fin, resolving the improper movement violation, but the result would be a structure in which the scope of the wh-phrase did not match the [+wh] interpretation of the middle CP.

The idea that short subject wh-movement is repaired by reconstruction suggests an explanation for the assymetries in (79).

(79) a. I wonder who *t* likes Jan and *t* impresses Sue.
b. I wonder who Jan likes *t* and Sue counts on *t*.
c. *I wonder who Jan likes *t* and *t* impresses Sue.
d. *I wonder who *t* likes Jan and Sue impresses *t*.

These data are the second half of the cases discussed by Williams (1978), who shows that subjects cannot be extracted 'across the board' together with non-subjects. Only local extraction of subjects is constrained in this manner. When subjects are extracted from an embedded clause, they may be extracted in parallel with a non-subject.

(80) a. I wonder who Jan likes *t* and Sue believes/wants *t* to be dependable.
b. ?I wonder who Jan likes *t* and Sue thinks *t* is dependable.
c. I wonder who Sue thinks *t* is dependable and Jan likes *t*.

The acceptability of ((80-c)) shows that the issue is not one of Case conflict, since *who* comes from a nominative source in one clause and an accusative source in the other. Instead, the problem has to do with the derivation of embedded questions with short wh-movement of the subject. In (79-c), for example, the wh-phrase *who* must be attracted to its Spec-CP position from an A-position (ignoring intermediate adjunction) as far as the first conjunct is concerned, and from an Spec-Fin for the second conjunct.

(81) . . . [CP who C [FinP [FinP *t* [FinP Jan likes *t*]] and [FinP *t* Fin [TP *t* impresses Sue]]]]

The structure as it stands in (81) is unacceptable because of the improper movement from Spec-Fin to Spec-C in the second conjunct. This can be repaired by reconstructing *who* into its prior position, as in (82).

(82) . . . [CP *e* C [FinP [FinP *e* [FinP Jan likes who]] and [FinP who Fin [TP *t* impresses Sue]]]]

But this structure is now illegitimate with respect to the first conjunct, which lacks an operator-variable chain headed by *who*. Both reconstruction and its absence fail, so the sentence as a whole is impossible.

8 Conclusion

The Trace-Fin effect can be recognized only within a theory of clause-structure in which subjects must normally raise to Spec-Fin. Once this is accepted, however, a lot of other facts about the special syntax of subjects fall into place, amoung them, the limitations on subject movement.

It is instructive to compare this approach with two other influential models in the literature,

Rizzi's (1990,1997) account, and a more recent proposal by Pesetsky and Torrego (2000). Consider in particular the extent to which each of these alternative approaches are naturally able to explain the limitations of successive cyclic movement in German long topicalisation, or the possibility of subject extraction from indirect questions in Norwegian.

For Rizzi, who assumes that subjects reside in Spec-T, subject extraction is possible if C/Fin is turned into a proper governor for the trace in Spec-TP, by acquiring agreement features. Leaving aside the *ad hoc* character of this notion of proper government, let us ask if this account provides a natural explanation for the two constructions in question. Consider once again the German (10).

(10) *Anke$_i$ sagte sie, daß er glaube, t_i werde ihm seine Arbeit hier bezahlen.
Anke said she that he believes will him his work here pay

Here the subject trace in the bottom clause must clearly be properly governed, in Rizzi's sense, because subjects can be extracted from this position into a higher verb-second clause. It follows that the sentence should be grammatical, contrary to fact.

In Pesetsky and Torrego's model, subject extraction is permitted if T-to-C movement does not take place, because subjects and T are in competition for being attracted by C. (Like me, Pesetsky and Torrego must suppose that movement of the finite verb to C in Germanic subject-initial verb-second clauses is different, driven perhaps by the morphology of C/Fin.) Again, since the grammaticality of subject movement is established immediately, within the clause where the subject originates, no explanation for the unacceptability of (10) is provided by their approach.

To be fair, Rizzi's approach fares better in dealing with Taraldsen's Norwegian case: (50).

(50) Det er en mann som vi ikke skjønner hva sier.
that is a man that we not understand what says

If Fin is exceptionally allowed to bear agreement features in Norwegian interrogatives, then the Spec-T trace will be properly governed in (82), generating a grammitical sentence. In effect, Rizzi's approach must require special agreement properties for Fin, where my model requires special EPP dispensation for Fin. In both cases, the marked character of the construction is matched with a marked property of Fin in the grammar.

Pesetsky and Torrego have a still harder task in accomodating sentences like (50). Since the subject is extracted, it follows that C must have attracted the subject in place of T. But in this case, it is clear that C does not attract the subject, since it attracts the interrogative pronoun *hva*. Even T-to-C movement is possible (in Pesetsky and Torrego's terms) in (50), and even that can be maintained only if the copy of T which raises to C is made invisible in an embedded question. In any case, since the subject does not raise to C, subject extraction is predicted to be impossible in such a context. And their model is constrained enough that there is no wiggle room on this point that I can detect.

So there are clear empirical advantages to the model presented here over other competitors. But more importantly, it now seems that the *that*-trace effect and its relatives can be understood, not as a special part of grammar, about which we must invent new principles, but rather as a special case

of a familiar constraint barring improper movement.

References

Bennis, H. and L. Haegeman (1984). On the status of agreement and relative clauses in West Flemish. In W. de Geest and Y. Putseys (Eds.), *Sentential Complementation*, pp. 33–53. Dordrecht: Foris.

Bobaljik, J. and P. Branigan (2005). Eccentric agreement and multiple case-checking. In A. Johns, D. Massam, and J. Ndirayagije (Eds.), *Ergativity*. In press.

Bošković, Željko. (2002). On multiple wh-fronting. *Linguistic Inquiry 33*, 351–383.

Bošković, Željko. and H. Lasnik (2003). On the distribution of null complementisers. *Linguistic Inquiry 34*(4), 527–546.

Branigan, P. (1992). *Subjects and Complementizers*. Ph. D. thesis, MIT. Distributed by MIT Working Papers in Linguistics.

Branigan, P. (1996). Treating *that*-trace variation. In J. Black and V. Motapanyane (Eds.), *Microparametric Syntax: Dialect Variation in Syntax*, pp. 25–39. John Benjamins.

Branigan, P. (2005, March). The phase theoretic basis for subject-aux inversion. Unpublished ms. Memorial University.

Bresnan, J. (1994). Locative inversion and the architecture of Universal Grammar. *Language 70*(1), 72–131.

Chomsky, N. (1986a). *Barriers*. Cambridge, Mass.: MIT Press.

Chomsky, N. (1986b). *Knowledge of Language: Its Nature, Origin and Use*. Praeger.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, Mass.: MIT Press.

Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A life in language*. Cambridge, Mass.: MIT Press.

Chomsky, N. (2005, May). On phases. Unpublished ms. M.I.T.

Chomsky, N. and H. Lasnik (1991). Principles and parameters theory. In W. S. J. Jacobs, A. van Stechow and T. Vennemann (Eds.), *Syntax: An International Handbook of Contemporary Research*. Berlin: Walter de Gruyter.

Chung, S. and J. McCloskey (1983). On the interpretation of certain island facts in GPSG. *Linguistic Inquiry 14*, 704–713.

Collins, C. (1994). Economy of derivation and the generalized proper binding condition. *Linguistic Inquiry 25*, 45–60.

Culicover, P. (1993). The adverb effect: Evidence against ECP accounts of that-t effects. *NELS 24*, 97–110.

Culicover, P. W. (1991). Topicalization, inversion, and complementizers in English. Ms., Ohio State University.

Den Besten, H. (1983). On the interaction of root transformations and lexical deletive rules. In W. Abraham (Ed.), *On the Formal Syntax of the Westgermania*, pp. 47–131. John Benjamins.

Diesing, M. (1990). Verb movement and the subject position in Yiddish. *Natural Language and Linguistic Theory 8*, 41–79.

Engdahl, E. (1984). *The Syntax and Semantics of Constituent Questions with Special Reference to Swedish*. Dordrecht: Reidel.

Godard, D. (1985). Propositions relatives, relations anaphoriques et prédication. Thèse d'Etat, Université de Paris 7.

Guasti, T. (1993). *Causative and Perception Verbs*. Turin: Rosenberg and Selier.

Haegeman, L. (2003). Notes on long adverbial fronting in English and the left periphery. *Linguistic Inquiry 34*(4).

Haider, H. (1993). ECP-Etüden: Anmerkungen zur Extraktion aus eingebetteten Verb-Zweit-Satzen. *Linguistische Berichte*, 185–203.

Hellan, L. and K. K. Christensen (Eds.) (1986). *Topics in Scandinavian Syntax*, Dordrecht. Reidel.

Henry, A. (1995). *Belfast English and standard English*. Oxford University Press.

Hirschbuhler, P. and M.-L. Rivero (1983). Non-matching concealed questions in Catalan and Spanish and the Projection Principle. *The Linguistic Review 2*, 331–363.

Holmberg, A. (1986). *Word Order and Syntactic Features*. Ph. D. thesis, University of Stockholm.

Kayne, R. S. (1972). French relative 'que'. In F. Hensey and M. Luján (Eds.), *Current Studies in Romance Linguistics*, pp. 255–299. Washington: Georgetown University Press.

Lin, V. (2001). A way to undo A-movement. In K. Megerdoomian and L. Bar-El (Eds.), *Proceedings of WCCFL 20*, Sommerville, MA, pp. 358–371. Cascadilla Press.

Mahajan, A. (1990). *The A/A-bar distinction and movement theory*. Ph. D. thesis, M.I.T.

Maling, J. and A. Zaenan (1978). The nonuniversality of a surface filter. *Linguistic Inquiry 9*(3), 475–498.

Müller, G. and W. Sternefeld (1993). Improper movement and unambiguous binding. *Linguistic Inquiry 24*, 461–507.

Pesetsky, D. (1994). Some long-lost relatives of Burzio's generalization. Paper presented at the conference on Burzio's Generalization, Holland.

Pesetsky, D. (1998). Optimality principles of sentence pronounciation. In P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis, and D. Pesetsky (Eds.), *Is the Best Good Enough? Optimality and Competition in Syntax*. Cambridge, MA: MIT Press.

Pesetsky, D. and E. Torrego (2000). T-to-C movement: causes and consequences. In M. Kenstowicz (Ed.), *Ken Hale, A Life in Language*. Cambridge, Mass.: MIT Press.

Platzack, C. (1986). COMP, INFL, and Germanic word order. In L. Hellan and K. K. Christensen (Eds.), *Topics in Scandinavian Syntax*, Studies in Natural Language and Linguistic Theory, Dordrecht, pp. 185–234. Reidel.

Rizzi, L. (1990). *Relativized Minimality*. Cambridge: MIT Press.

Rizzi, L. (1997). The fine structure of the left periphery. In L. Haegeman (Ed.), *Elements of Grammar*. Dordrecht: Kluwer.

Rizzi, L. (2004). Locality and the left periphery. In A. Belletti (Ed.), *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3*, pp. 223–251. Oxford University Press.

RÃűgnvaldsson, E. and H. Thráinsson (1990). On Icelandic word order once more. In J. Maling and A. Zaenen (Eds.), *Modern Icelandic Syntax*, Number 24 in Syntax and Semantics, pp. 3–40. Academic Press.

Sobin, N. (1987). The variable status of COMP–trace phenomena. *Natural Language and Linguistic Theory 5*, 33–60.

Staudacher, P. (1990). Long movement from verb-second-complements in German. In G. Grewendorf and W. Sternefeld (Eds.), *Scrambling and Barriers*, pp. 319–339. Amsterdam: Benjamins.

Stowell, T. (1981). *Origins of Phrase Structure*. Ph. D. thesis, MIT.

Taraldsen, T. (1986). *Som* and the binding theory. In L. Hellan and K. K. Christensen (Eds.), *Topics in Scandinavian Syntax*, Dordrecht, pp. 149–184. D. Reidel.

Vikner, S. (1991). *Verb Movement and the Licensing of NP-Positions in the Germanic Languages*. Ph. D. thesis, Université de Genève.

Webelhuth, G. (1989). *Syntactic saturation phenomena and the modern Germanic languages*. Ph. D. thesis, University of Massachusetts, Amherst.

Williams, E. (1978). Across-the-board extraction. *Linguistic Inquiry 9*, 31–42.