THE SYNTAX OF CLAUSES[1]

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1. Introduction

Pesetsky and Torrego 2000 (henceforth: PT) present a novel minimalist analysis of the syntax of clauses, primarily in relation to present-day English. This paper presents a brief outline of key ideas in their paper, discusses theoretical and descriptive shortcomings of their account, and presents an alternative analysis which captures their intuitions and insights while avoiding some of the pitfalls of their work. Sections 2-5 provide a brief outline of relevant aspects of PT's analysis; sections 6-8 highlight specific problems in their analysis, and section 9 suggests an alternative which is consistent with many (though not all) of the assumptions PT make. Section 10 highlights other potential problems with PT's paper to be explored in future research.

2. Wh-questions

PT posit that in root wh-questions such as that in (1) below:

(1)   Where has Mary gone?

the head C of CP carries an uninterpretable EPP tense-feature [uT] which drives movement of the auxiliary *has* to C, and an uninterpretable EPP wh-feature [uWh] which drives movement of *where* to spec-CP; *has* carries an interpretable tense feature and *where* carries an interpretable wh-feature. Under their analysis, (1) has the structure shown in simplified form in (2) below at the point where C merges with its TP complement [2].

(2)   [CP [C uT, uWh] [TP Mary [T has] gone where]]

Given the assumption that EPP-features can only be deleted via movement, the [uT] feature of C will trigger movement of the present tense auxiliary *has* from T to C[3] (thereby erasing the uninterpretable [uT] feature on C), and the [uWh] feature of C will trigger movement of *where* to spec-CP (thereby deleting the uninterpretable [uWh] feature on C). The structure derived after both movement operations have applied is therefore (3) below (strikethrough indicating material to be deleted at the end of the relevant phase, and traces being shown in a smaller typeface):

(3)   [CP Where [C has ~~uT~~, ~~uWh~~] [TP Mary [T ~~has~~] gone ~~where~~]]

Since both uninterpretable EPP-features of C have been deleted, the structure converges at LF.

PT note the observation by Koopman (1983) that in questions in which the wh-expression is the subject of the interrogative clause, T-to-C movement (and hence *do*-support) is barred: cf.

(4)(a)   Who bought the book?
     (b)   *Who did buy the book [*unless *did* is focused]

They present evidence that the wh-subject raises to spec-CP in wh-subject questions like (4), from the distribution of expressions like *the hell* which attach to wh-phrases. They note that *the hell* can only attach to a wh-moved expression in spec-CP, not to an in situ expression[4]: cf.

(5)(a)   *What the hell* did Sue give to who?
   (b)   *What did Sue give to *who the hell*?

And they further note that wh-subjects (like *who* in (4a) above) can be modified by *the hell*: cf.

(6)   *Who the hell* bought the book?

From this they conclude that wh-subjects like *who* in (4a) move to spec-CP. Under their analysis, movement of the wh-subject *who* to spec-CP in (4a) is driven by the [*uWh*] EPP-feature of C.

However, if we assume (as PT do) that a root interrogative C always contains both a [*uWh*] and a [*uT*] feature, this will mean that (4a) has the structure (7) below at the point where C is merged with its TP complement:

(7)   [CP [C *uT, uWh*] [TP who [T ø] bought the book]]

Movement of *who* to spec-CP will erase the [*uWh*] EPP-feature of C: but how is the [*uT*] feature of C erased?

PT argue that *who* erases not only the [*uWh*] feature of C but also its [*uT*] feature. More precisely, they claim that subjects of tensed clauses carry an uninterpretable *tense* feature [*uT*]. They argue that the uninterpretable nominative case feature of finite subjects is anomalous within the framework of Chomsky (1998, 1999), and propose to replace it by an uninterpretable *tense* feature. Uninterpretable features are canonically erased via agreement with corresponding interpretable features (e.g. the uninterpretable person/number features of T are erased via agreement with a subject carrying interpretable person/number features): however, the fact that the uninterpretable nominative case feature of the subject of a finite clause is erased by a T carrying an interpretable tense feature suggests that nominative case should be reanalysed as an uninterpretable tense feature – thereby leading to a symmetrical theory of feature erasure in which an uninterpretable feature [*uF*] can only be erased via an agreement relation with a corresponding interpretable feature [*F*]. Given PT's assumptions, *who* in (7) will contain not only an interpretable wh-feature (by virtue of its interrogative operator status), but also an uninterpretable tense feature (by virtue of being the subject of a tensed clause). Hence, movement of *who* to spec-CP will erase both of the uninterpretable EPP-features carried by C, so deriving the structure (8) below:

(8)   [CP Who [C ~~uT~~, ~~uWh~~] [TP [~~who~~] [T ø T] bought the book]]

The alternative possibility of using *do*-support (i.e. merging *do* in T and raising it to C) to erase the [*uT*] feature of C in (7), and then moving *who* to spec-CP to erase the [*uWh*] feature of C is ruled out by economy considerations as being more costly than simply moving *who* to spec-CP – thereby accounting for the ungrammaticality of (4b).

3. Wh-exclamatives and wh-interpretation
PT extend their analysis of root wh-questions to root wh-exclamatives such as:

(9)   What a silly book Mary has bought!

They suggest that (like root wh-questions) these too are CPs headed by a C which has uninterpretable tense and wh-features. Given this assumption, (9) will have the structure (10) below at the point where C merges with its TP complement:

(10)   [CP [C *uWh, uT*] [TP Mary [T has] bought what a silly book]]

If the [*uWh*] feature of C attracts *what a silly book* and its [*uT*] feature attracts the tensed subject *Mary*, we derive (11) below:

(11)   [CP What a silly book Mary [C ~~uWh~~, ~~uT~~] [TP ~~Mary~~ [T has] bought ~~what a~~
         ~~silly book~~]]

And (11) is the structure associated with (9).

However, an apparent problem posed by their analysis is that there is another (equally economical) way of erasing the [*uT*] EPP-feature of C – namely by preposing the tensed auxiliary *has* (rather than the tensed subject *Mary*), so deriving:

(12)   [CP What a silly book [C has ~~uWh~~, ~~uT~~] [TP Mary [T ~~has~~] bought ~~what a~~
         ~~silly book~~]]

Following Chomsky (1995, p.296) PT maintain that feature-attraction is subject to a locality constraint to the effect that a head H which attracts a feature F attracts the *closest* constituent carrying F. They posit that in a structure of the form

X... [$_{YP}$ SPEC Y...] where X c-commands YP, both Y (= head-YP) and spec-YP are equally close to X[5].

This means that the [*uT*] feature of C in (10) can attract either T (= *has*) or spec-TP (= *Mary*). If C attracts *Mary*, we derive the grammatical sentence (9) *What a silly book Mary has bought!* But if C attracts *has* we derive the ungrammatical sentence **What a silly book has Mary bought!* It would therefore seem that the syntactic component of PT's grammar *overgenerates* (i.e. generates a class of structures which are ill-formed).

Moreover, the converse problem arises with interrogatives; after all, in a structure such as (13) below (repeated from (2) above):

(13)   [CP [C *uT, uWh*] [TP Mary [T has] gone where]]

the [*uT*] feature of C could attract the tensed subject *Mary* rather than the tensed auxiliary *have*, so deriving:

(14)   [CP Where Mary [C ~~uT~~, ~~uWh~~] [TP ~~Mary~~ [T has] gone ~~where~~]]

But once again, the resulting sentence **Where Mary has gone?* is ungrammatical.

The nature of the problem in both cases is the following: if all finite root wh-clauses are projections of a C carrying a [*uT*] EPP-feature, we should expect that C can freely attract either a tensed auxiliary or a tensed subject; in other words, we should expect auxiliary inversion to be optional in root wh-interrogatives and wh-exclamatives alike. But this is not the case. Instead (on PT's assumptions) C attracts a tensed auxiliary in root wh-questions and a tensed subject in root wh-exclamatives. How can this be accounted for?

PT argue that the unwanted derivations are ruled out by principles of interpretation which map syntactic into semantic representations. More specifically, they posit an interpretive principle which can be paraphrased informally as follows:

(15)   **Wh-Interpretation Principle/WHIP**[6]
         A root CP with a wh-specifier is interpreted as
                (i) exclamative if it also has a non-wh specifier
                (ii) interrogative otherwise

Consider how **WHIP** handles the set of structures in (16a/b/c/d) below (repeated from (3/14/11/12) above):

(16)(a)   [CP Where [C has ~~uT~~, ~~uWh~~] [TP Mary [T ~~has~~] gone ~~where~~]]

    (b)   [CP Where Mary [C ~~uT~~, ~~uWh~~] [TP ~~Mary~~ [T has] gone ~~where~~]]

    (c)   [CP What a silly book Mary [C ~~uWh~~, ~~uT~~] [TP ~~Mary~~ [T has] bought ~~what a silly book~~]]

    (d)   [CP What a silly book [C has ~~uWh~~, ~~uT~~] [TP Mary [T ~~has~~] bought ~~what a silly book~~]]

Since CP in (16a) has a wh-specifier but no other specifier, it is correctly interpreted as interrogative by (15ii). Since CP in (16b) has both a wh-specifier and a non-wh specifier, it is interpreted as exclamative by (15i): if it is a lexical property of *where* that it cannot have an exclamative interpretation, even the possibility of an exclamative interpretation for (16b) will be ruled out, leaving (16b) as an uninterpretable structure. Since CP in (16c) has both a wh-specifier and a non-wh specifier, it is correctly interpreted as exclamative by (15i). Since CP in (16d) has a wh-specifier but no other specifier, it is interpreted as interrogative by (15ii); but if it is a lexical property of *what* that it cannot have an interrogative interpretation when it modifies a singular indefinite expression like *a silly book*, even the possibility of an interrogative interpretation will be ruled out, leaving (16d) as an uninterpretable structure. So, overall **WHIP** correctly specifies which of the structures in (16) are interpretable (and what interpretation they have) and which are not.

Moreover, as PT note, **WHIP** correctly predicts that wh-subject structures like (17) below are uninterpretable:

(17)   *What a silly person just called me on the phone!

Given PT's assumptions, (17) will have the structure (18) at the point where C merges with its TP complement:

(18)   [CP [C uWh, uT] [TP what a silly person [T ø] just called me on the phone]]

The most economical way of erasing both the [uWh] and the [uT] features on C is to move the tensed wh-

expression *what a silly person* (which is tensed by virtue of being the subject of a tensed clause) into spec-CP as in (19) below:

(19)   [CP What a silly person [C *uWh*, *uT*] [TP ~~what a silly person~~ [T ø] just
         called me on the phone]]

Since the CP in (19) has a wh-specifier but no other specifier, (19) will be assigned an interrogative interpretation in accordance with (15ii). However, since it is a lexical property of *what* that it cannot have an interrogative interpretation when it modifies a singular indefinite expression like *a silly person*, the possibility of an interrogative interpretation is ruled out, leaving the resulting sentence (17) **What a silly person just called me on the phone* uninterpretable.

4. Optional complementisers and the *that-trace* effect

PT present an interesting analysis of the seeming optionality of complementisers in complement clauses like those in (20) below:

(20)(a)   Mary thinks [Sue will buy the book]
    (b)   Mary thinks [that Sue will buy the book]

They follow Chomsky (1998, 1999) in positing that complement clauses like those bracketed in (20) are CPs. They further posit that C in such clauses has an uninterpretable tense feature [*uT*] with the EPP-property. Hence, at the point where the embedded C is merged with its TP complement, (20a/b) will have the simplified structure (21) below:

(21)   [CP [C *uT*] [TP Sue [T will] buy the book]]

There are two (equally economical) ways of erasing the uninterpretable [*uT*] feature of C. One is by raising the tensed subject *Sue* to spec-CP, so deriving (22) below:

(22)   [CP Sue [C *uT*] [TP ~~Sue~~ [T will] buy the book]]

The other is by moving the tensed auxiliary *will* to C. However, PT posit that when T raises to C in embedded declarative clauses, the preposed auxiliary is spelled out as *that*, and the trace copy it leaves behind is not erased, so that T-to-C raising produces the derived structure (23) below (the subscripts used by PT indicating that the first occurrence of *will* is spelled out as *that*):

(23)   [CP [C that$_j$ *uT*] [TP Sue [T will$_j$] buy the book]]

On this view, *that* is not in fact a complementiser, but rather is a *double* of a preposed auxiliary in a declarative complement clause: hence, for succinctness, we can refer to the relevant phenomenon as *that-doubling*. Since *will* and *Sue* are equally close to C, T-to-C movement and spec/TP-to-spec/CP movement are equally economical – hence the fact that both types of bracketed complement clause in (20) are equally grammatical.

A particular advantage which PT claim for their analysis is that the so-called *that-trace* effect can be attributed to general economy requirements rather than to an *ad hoc* surface structure constraint (as in Perlmutter 1971) or to a local (ECP) binding requirement on surface traces (as in Kayne 1980 or Rizzi 1990). To see this, consider how they account for the contrast below:

(24)(a)   What did John say *Mary will buy*?
   (b)   What did John say *that Mary will buy*?

(25)(a)   Who did John say *will buy the book*?
   (b)   *Who did John say *that will buy the book*?

Given the assumptions PT make, each of the italicised complement clauses in (24/25) will be a CP headed by a C which carries two EPP-features – a [*uT*] feature which attracts a tensed expression, and a [*uWh*] feature which attracts a
wh-expression (so allowing wh-movement to apply in a successive cyclic fashion). At the stage where the embedded C is merged with its TP complement, (24a/b) will have the simplified structure (26) below:

(26)   [CP [C *uT, uWh*] [TP Mary [T will] buy what]]

The [*uWh*] EPP-feature of C will attract (and trigger movement of) *what*; its [*uT*] feature will attract either the tensed auxiliary *will* (which undergoes *that*-doubling) so deriving (27a) below, or the tensed subject *Mary* so deriving (27b):

(27)(a)   [CP what [C that~j~ *uT̶, u̶W̶h̶*] [TP Mary [T will~j~] buy w̶h̶a̶t̶]]

   (b)   [CP what Mary [C *u̶T̶, u̶W̶h̶*] [TP M̶a̶r̶y̶ [T will] buy w̶h̶a̶t̶]]

Subsequent merger and movement operations will derive (24b) *What did John say that Mary will buy* from (27a) and (24b) *What did John say Mary will buy?* from (27a).

Now consider the derivation of (25a/b). At the point where the embedded C is merged with its TP complement, both will have the structure (28) below:

(28)   [CP [C *uT, uWh*] [TP who [T will] buy the book]]

Since *who* carries an interpretable wh-feature and an uninterpretable tense feature, the [*uT, uWh*] EPP-features of C can be erased by moving *who* to spec-CP, so deriving:

(29)   [CP who [C *u̶T̶, u̶W̶h̶*] [TP w̶h̶o̶ [T will] buy the book]]

Subsequent merger and movement operations will derive the structure associated with (25a) *Who did John say will buy the book?* However, an alternative way of erasing the EPP-features of C in (28) might seem to be for *who* to move to spec-CP in order to erase the [*uWh*] feature of C and for the tensed auxiliary *will* to move to C (being doubled as *that*) in order to erase the [*uT*] feature of C, so deriving:

(30)   [CP who [C that~j~ *u̶T̶, u̶W̶h̶*] [TP w̶h̶o̶ [T will~j~] buy the book]]

Subsequent merger and movement operations will derive the structure associated with (25b) **Who did John say that will buy the book?* But the resulting structure is ungrammatical. Why? PT's answer is that moving *who* on its own (as in (29) above) is more economical than moving both *who* and *will* (as in (30) above), so that the *that-trace* effect in (25b) is simply an artefact of more general economy considerations.

5. Wh+that structures

PT extend their analysis to offer an account of the syntax of *wh+that* structures such as the following (found in Belfast English: see Henry 1995, p.107):

(31)   They didn't know *which model that* we had discussed

They note that such structures are ungrammatical when the wh-word is the subject of the *that* clause, as in (32) below:

(32)   *I wonder *which author that* wrote this book

Under their analysis, the wh-clause in (31) will have the structure (33) below at the stage of derivation where C merges with its TP complement:
(33)   [CP [C *uT*, *uWh*] [TP we [T had] discussed which model]]

The [*uWh*] EPP-feature of C attracts *which model* to move to spec-CP; the [*uT*] feature can attract either the subject *we* (ultimately deriving *They didn't know which model we had discussed*) or the past tense auxiliary *had*. In the latter case, the auxiliary moved to C can either be spelled out as *had* (deriving *They didn't know which model had we discussed*) or as *that* (thereby deriving (31) *They didn't know which model that we had discussed*).

However, a different situation arises in (32). At the stage of derivation where C merges with its TP complement, we have the structure (34) below:

(34)   [CP [C *uT*, *uWh*] [TP which author [T ø] wrote this book]]

Here, *which author* carries both a wh-feature and an uninterpretable tense feature (by virtue of being the subject of a tensed T); hence the most economical way of erasing both the [*uT*] and the [*uWh*] EPP-features of C is to move *which author* into spec-CP as in (35) below:

(35)   [CP which author [C *uT*, *uWh*] [TP which author [T ø] wrote this book]]

The alternative possibility of moving *which author* to spec-CP to erase the [*uWh*] feature of C and using *do*-support (i.e. merging *do* in T and raising it to C, where it can be spelled out as either *did* or as *that*) is less economical and therefore ruled out – thereby accounting for the ungrammaticality of *I wonder which author did write this book* (with *did* unfocused) and of (32) *I wonder which author that wrote this book.

In footnote 42, PT note that 'Much the same facts were observed by Keyser (1975) in Middle English relative clauses. Nominative *who* (an innovation in the middle period) was never followed by *that*, while non-nominative *whom* often was.'

6. Illicit use of the WHIP
One particular aspect of PT's analysis which seems to me to be problematic concerns the illicit (as I shall argue) use they make of the **Wh-Interpretation Principle/WHIP** (15). Such a principle seems questionable from both a descriptive and a theoretical stance. At a descriptive level, questions arise about its observational adequacy in that (e.g.) contrary to what **WHIP** would lead us to expect, wh-subject structures like those in (36) below are interpreted as exclamatives:

(36)(a)   What a lot of people get drunk at parties!
    (b)   What a lot of alcohol gets drunk at parties!

(c)   What a lot of weirdos attend Minimalism workshops!
(d)   How few people understand Minimalism!
(e)   How many students fall asleep in syntax classes!

Moreover, unlike the **INT Principle** posited in Chomsky (1999) under which an expression moved to spec-vP via Object Shift is assigned a specific interpretation **INT** (e.g. as definite), **WHIP** clearly cannot be universal. We can see this by looking at the syntax of wh-exclamatives in Elizabethan English/EE, as illustrated by the following examples taken from various plays by Shakespeare[7]:

(37)(a)   How have they baffled thee! (Olivia, *Twelfth Night*, V.i)
   (b)   How hath he been baited! (Princess, *Love's Labour's Lost*, V.ii)
   (c)   How bright and goodly shines the moon! (Petruchio, *Taming of the
             Shrew*, IV.v)
   (d)   How sound is she asleep! (Nurse, *Romeo and Juliet*, IV.v)

(38)(a)   How my bones ache! (Nurse, *Romeo and Juliet*, II.v)
   (b)   How oddly thou repliest! (Juliet, *Romeo and Juliet*, II.v)
   (c)   How I love thee! How I dote on thee! (Titania, *Midsummer Night's
             Dream*, 4.i)
   (d)   How well my comfort is reviv'd by this! (Romeo, *Romeo and Juliet*,
             III.iii)

As these examples illustrate, wh-exclamatives in EE involved obligatory wh-movement but optional T-to-C movement. What would seem to be the most natural way of accounting for the optionality of T-to-C movement in EE exclamatives within PT's framework is to suppose that C in such structures contains uninterpretable [*uT*, *uWh*] EPP-features, so that (37a) has the structure (39) below at the point where C merges with it TP complement:

(39)   [CP [C *uT*, *uWh*] [TP they [T have] baffled thee how]]

The [*uWh*] feature of C will attract *how*, and the [*uT*] feature of C will attract either the tensed auxiliary *have* (deriving (40a) below) or the tensed subject *they* (deriving (40b) below)[8]:

(40)(a)   [CP How [C have ~~uT~~, ~~uWh~~] [TP they [T ~~have~~] baffled thee ~~how~~]]

   (b)   [CP How they [C ~~uT~~, ~~uWh~~] [TP ~~they~~ [F have] baffled thee ~~how~~]]

By contrast, root wh-questions in Elizabethan English require obligatory movement of a finite auxiliary or verb to C, as illustrated in (41) below:

(41)(a)   What dost thou say? (Othello, *Othello*, III.iii)
   (b)   What sayst thou? (Olivia, *Twelfth Night*, III.iv)
   (c)   Why do you look on me? Why look you so upon me? (Rosalind, *As You
             Like It*, III.v)

It therefore seems clear that the version of the **Wh-Interpretation Principle/ WHIP** given in (15) above cannot have operated in Shakespearean English in the same form as in present-day English, since otherwise we would wrongly expect structures like (40a) to be interpreted as interrogative only. Rather, it seems as if **WHIP** must have had the amended form (42) below (the amendment being italicised):

(42)   **Wh-Interpretation Principle for Elizabethan English/WHIPEE**
        A root CP with a wh-specifier is interpreted as
            (i) exclamative if it also has a non-wh specifier
            (ii) interrogative *or exclamative* otherwise

Arguably, (42ii) is redundant since it in effect says that there are no structural constraints on how a root wh-CP with a non-wh specifier is interpreted; it is added here for clarity of exposition. It would then follow that a structure like (40a) would correctly be predicted by (42ii) to be ambiguous between an interrogative or exclamative interpretation, and that a structure like (40b) would be correctly predicted to be interpretable only as an exclamative[9].

What the discussion here illustrates is that WHIP cannot be a universal interpretive principle. Indeed, at a theoretical level, it could be argued that far from being a *principle*, **WHIP** is simply an ad hoc *LF-filter* which filters out overgenerated LF-representations in much the same way as the ad hoc surface filters posited in Chomsky and Lasnik (1977) filtered out overgenerated surface structures; and resorting to filters of any kind could be argued to reduce the computational efficiency of the grammar in the sense of Frampton and Guttmann (1999)[10]. In the next section, we explore the possibility of developing an alternative *filter-free* account of the syntax of root wh-clauses.

7. Abolishing the WHIP

An alternative filter-free (WHIP-less) account would be the following. Let's suppose that the head T of TP in finite clauses contains not only *tense* features but also *mood* features (differentiating e.g. between forms which are in the *indicative*/*subjunctive*/ *imperative* mood)[11]. Let's further suppose that C has an uninterpretable EPP mood feature [uM] (but no [uT] feature) in root clause questions in present-day (and Elizabethan) English, so that C attracts a constituent carrying a mood feature[12]. If T carries a mood feature but subjects do not, it follows that the constituent attracted to C will be T, not the subject: we can thereby account for the obligatoriness of auxiliary inversion in present-day English questions. Under this account, a sentence such as *Where has Mary gone?* would have the structure (43) below at the point where C is merged with its TP complement:

(43)   [CP [C *uM*, *uWh*] [TP Mary [T has] gone where]]

The [uWh] EPP-feature of C would attract the wh-feature of *where*, and the [uM] EPP-feature of C would attract the mood feature of *has*, so deriving (44) below:

(44)   [CP Where [C ~~uM~~, ~~uWh~~ has] [TP Mary [T ~~has~~] gone ~~where~~]]

By contrast, if C carries neither a [uT] nor a [uM] feature in present-day English exclamatives, there will be no auxiliary inversion or movement of the subject to spec-CP. An exclamative such as (9) *What a silly book Mary has bought!* will have the structure (45) below at the point where C merges with its TP complement:

(45)   [CP [C *uWh*] [TP Mary [T has] bought what a silly book]]

Since the only EPP-feature carried by C is a [uWh] feature (not a tense or mood feature), only the wh-phrase *what a silly book* will be preposed, not the auxiliary *has* or the subject *Mary*, so deriving:

(46)   [CP What a silly book [C ~~uWh~~] [TP Mary [T has] bought ~~what a silly book~~]]

Conversely, however, if a root C carries a [*uT*] feature in Elizabethan exclamatives, there will either be T-to-C movement or movement of the subject to spec-CP – as in (40) above[13].

The account sketched here offers the advantage over PT's analysis of entirely dispensing with patently *ad hoc* interpretive filters like **WHIP** and **WHIPEE** – at the cost of positing a set of mood features which are independently motivated by morphological and syntactic differences between indicative, subjunctive and imperative verb forms[14].

8. Another look at wh+that structures

As noted in §5, an interesting prediction made by PT's analysis is that we do not find *wh+that* structures in which the wh-word is the subject of the *that* clause. However, the generality of this conclusion is called into question by examples such as the following (from Radford 1988, p.500):

(47)(a)   It'll probably be evident from the field *which of the players that* are
            feeling the heat most (Jimmy Hill, BBC1 TV)
    (b)   Jeg forfalte Jan *hvem som* var kommet (Norwegian)
            I asked Jan *who that* had come

Moreover, PT's claim that Middle English relative clauses allowed *wh+that* structures only where the wh-word was not the subject of the relative clause seems to be questionable. In order to verify their claim, I checked the occurrence of relative clauses in the Chaucer's *Troilus and Criseyde* (in the edition edited by Brewer and Brewer 1969). By far the most frequently use relative pronoun was *which*[15]: in 13 of the relative clauses containing *which* followed by *that*, *which* was the subject of the relative *that* clause, in 2 it was the direct object of a transitive verb, and a further 2 it was a prepositional object (with the preposition being pied-piped along with *which*). The relevant examples are given below (with a reference to the book in question in Roman numerals and to the line in question in Arabic numerals):

(48) *which* as the subject of the relative clause
    (a)   every peril *which that* is to drede (I.84)
    (b)   his doughter, *which that* was in gret penaunce (I.94)
    (c)   This lady, *which that* alday herd at ere Hire fadres shame... (I.106)
    (d)   every wight (= person) *which that* to Rome went... (II.36)
    (e)   he *which that* is my lord so deere (II.330)
    (f)   Criseyde, *which that* herde hym in this wise... (II.386)
    (g)   Criseyde, *which that* well nigh starf (= died) for feere... (II.449)
    (h)   Criseyde, *which that* koude as much good As half a world... (III.638)
    (i)   Criseyde, *which that* al this wonder herde (III.799)
    (j)   For his love, *which that* us bothe made... (II.500)
    (k)   ...save only Ector, *which that* is the beste (II.740)
    (l)   He *which that* nothing undertaketh Nothing n'acheveth (II.808)
    (m)   I love oon *which that* is most ententif (= eager) To serven well (II.838)

(49) *which* as the object of a transitive verb
- (a)   every word *which that* she of hire herde... (II.899)
- (b)   every tere *which that* Criseyde asterte (= shed)... (III.1070)

(50) *which* as the object of a pied-piped preposition
- (a)   swich a people...*thorugh which that* Troie most ben fordo (I.74)
- (h)   a mirror...*in which that* ye me se youre face a-morwe (II.404)

From the examples given above, there seems little doubt that *which* is a relative pronoun since (when used as the object of a preposition) it pied-pipes a preposition along with it under wh-movement. The examples suggest that far from never occurring as the subject of a relative *that*-clause, this was by far the most frequent use of *which* in Chaucer's *which that* clauses.

Under PT's analysis, the relative clause in (48a) would have the simplified structure (51) below at the point where C merges with its TP complement:

(51)   [CP [C *uT*, *uWh*] [TP which [T is] to drede]]

In order to generate *which that is to drede*, the [*uT*] feature of C would have to attract *is* to move to C (where it would eventually be spelled out as *that*), and the [*uWh*] feature of C attract *which* to move to spec-CP, so deriving:

(52)   [CP which [C *uT̶*, *u̶W̶h̶* that] [TP w̶h̶i̶c̶h̶ [T is] to drede]]

But the problem posed by (52) is that such a derivation is ruled out by the Economy Condition by virtue of the fact that there is a more economical derivation available whereby movement of the tensed wh-pronoun *which* alone to spec-CP can erase both the [*uT*] and the [*uWh*] features on C, as in (53) below:

(53)   [CP which [C *uT̶*, *u̶W̶h̶*] [TP w̶h̶i̶c̶h̶ [T is] to drede]]

Hence, (53) is the sole expected outcome from (51). However, while (53) would have been grammatical for Chaucer, what remains unaccounted for is the fact that *which that is to drede* is also grammatical. It would seem that a rather different set of assumptions are going to have to be made from those made by PT.

For example, a more traditional analysis would be to suppose that relative *that* is a complementiser directly merged in C which carries a [*uWh*] EPP-feature (but no [*uT*] feature) and so attracts a (relative) wh-pronoun to move to spec-CP. On this view, the relative clause in (48a) would have the structure (54) below at the point where C merges with its TP complement:

(54)   [CP [C *uWh* that] [TP which [T is] to drede]]

Movement of *which* to spec-CP would then derive:

(55)   [CP which [C *u̶W̶h̶* that] [TP w̶h̶i̶c̶h̶ [T is] to drede]]

and (55) would be the structure of the relative clause in (48a)[16].

Of course, an analysis such as (55) amounts to simply *abandoning* the key PT claim that the complementiser *that* moves to C rather than being directly generated in C. In the next section, I explore the

possibility of developing an alternative analysis which would retain the idea that *that* moves to C while abandoning the idea that *that* is a copy of a moved auxiliary.

9. An alternative analysis

Having outlined some of the problems posed by PT's analysis, I now turn to outline an alternative analysis of clause structure which incorporates some of PT's insights while avoiding the need to resort to *that-doubling*. In broad terms, I shall make the set of assumptions in (56) below (which resemble those made by PT in spirit but differ in important descriptive details):

(56)(i) Clauses have a CP/FP/TP structure in which F is a head carrying an interpretable finiteness feature [*F*][17]

(ii) C carries an uninterpretable finiteness feature [*uF*] in finite clauses

(iii) The subject of a finite clause carries an uninterpretable finiteness feature [*uF*]

(iv) Items like *that/for* are finiteness markers which contain an interpretable finiteness feature [*F*] and originate in F

(v) Finiteness markers like *that/for* are spelled out overtly if moved, but have a null spellout if they remain in situ

The assumption that between CP and TP there is an additional functional projection FP is clearly far from new; for example Belletti (1990) posits an AgrS head above TP, and Rizzi (1997) posits a Finiteness head below CP. In order to illustrate how (56) is intended to work, below I look at the derivation of a number of the sentences discussed earlier.

Consider first how we might derive the *that*-clause in (20b) *Mary thinks that Sue will buy the book*. Given the assumptions in (56), this will have the following structure at the point where C is first-merged with its FP complement (if spec-FP is the canonical position for finite subjects[18]):

(57) [CP [C *uF*] [FP Sue [F that] [TP [T will] buy the book]]]

The [*uF*] EPP-feature on C will attract the closest finite constituent to C: given (56), *that* carries an interpretable finiteness feature, and *Sue* an uninterpretable finiteness feature; both are equally close to C, so that C can attract either of them. If *that* moves to C (thereby erasing the [*uF*] feature on C), we derive:

(58) [CP [C that ~~uF~~] [FP Sue [F ~~that~~] [TP [T will] buy the book]]]

The finiteness marker *that* is overtly spelled out in accordance with (56v). By contrast, if the finite subject *Sue* moves to spec-CP (erasing [*uF*] on C) we derive:

(59) [CP Sue [C ~~uF~~] [FP ~~Sue~~ [F ø] [TP [T will] buy the book]]]

The finiteness marker in (59) is then given a null spellout in accordance with (56v)[19].

One aspect of the above analysis which might at first sight seem *ad hoc* is the condition in (56v) that complementisers are given a null spellout unless they undergo movement. However, (56v) arguably follows from a more general economy condition on PF-representations to the effect that material is overtly spelled out only where necessary. If a null head cannot serve as the antecedent of a trace[20], it follows that if a

complementiser moves, it must be spelled out overtly. There are potential parallels here with *do*-support, in that T has a null spellout in declaratives like *They like syntax* (where there is no T-movement) but is overtly spelled out as *do* when T moves to C in interrogatives like *Do they like syntax?*[21] The analysis outlined above also offers the advantage of obviating the need to posit two distinct declarative clause complementisers, one realised as *that* and the other as ø: instead, ø is analysed as a null allomorph of *that*.

The FP analysis outlined above can be extended from finite complement clauses like those bracketed in (20) above to infinitive complements like those bracketed in (60) below:

(60)(a) I would prefer [for Mary to buy the book]
    (b) I would prefer [Mary to buy the book]

If infinitival *to* is a nonfinite T constituent and the complementiser *for* in (60a) and its null allomorph in (60b) are nonfinite F constituents, the bracketed clauses in (60) will have the structure (61) below at the point where the embedded C is merged with its TP complement:

(61) [CP [C uF] [FP Mary [F for] [TP [T to] buy the book]]]

For carries an interpretable finiteness feature indicating that it is nonfinite; C has an uninterpretable (non) finiteness feature, as does *Mary* (by virtue of being the subject of a nonfinite clause). Since *for* and *Mary* are equally close to C, either can be attracted by C. If *for* raises to C (thereby erasing the [uF] feature on C), the result will be (62) below:

(62) [CP [C for ~~uF~~] [FP Mary [F ~~for~~] [TP [T to] buy the book]]]

The moved nonfiniteness marker will be overtly spelled out as *for* in accordance with (56v). By contrast, if *Mary* moves to spec-CP (erasing the [uF] feature on C), we derive:

(63) [CP Mary [C ~~uF~~] [FP ~~Mary~~ [F ø] [TP [T to] buy the book]]]

and the nonfiniteness marker (by virtue of remaining in situ in F) is given a null spellout in accordance with (56v)[22]. The nonfiniteness feature on the subject *Mary* will be spelled out as accusative case by default if we assume that nominals are spelled out as nominative forms if finite, genitive forms in relevant (e.g. possessive) contexts, and accusative forms otherwise (including if nonfinite)[23].

The FP analysis outlined above avoids the pitfalls of PT's *that-doubling* analysis while capturing some of the core intuitions and insights underlying their analysis. For example, we can account for the *that-trace* effect in sentences such as (64) below (repeated from (25) above):

(64)(a)   Who did John say *will buy the book*?
    (b)   *Who did John say *that will buy the book*?

If the embedded C carries both a [uF] and a [uWh] feature (the latter being required to license successive-cyclic wh-movement), the embedded clause will have the simplified structure (65) below at the stage of derivation where C is merged with its TP complement:

(65) [CP [C uF, uWh] [FP who [F that] [TP [T will] buy the book]]]

The wh-subject *who* contains both an interpretable wh-feature and an uninterpretable finiteness feature; the finiteness marker *that* contains an interpretable finiteness feature. There are two ways of erasing the uninterpretable [*uF*, *uWh*] features on C. One is by moving *who* on its own to spec-CP, so erasing both the [*uF*] and [*uWh*] EPP-features of C and deriving (66) below (in which the in-situ finiteness marker has a null spellout (rather than being spelled out as *that*) in accordance with (56v) above):

(66)   [CP who [C ~~uF~~, ~~uWh~~] [FP ~~who~~ [F ø] [TP [T will] buy the book]]]

Subsequent merger and movement operations will eventually derive the structure associated with (64a) *Who did John say will buy the book?* and – as expected – this sentence is grammatical.

However, an alternative possibility is moving *that* to C in order to erase the [*uF*] feature on C and moving *who* to spec-CP in order to erase the [*uWh*] feature on C, so deriving (67) below (in which the finiteness marker *that* is given an overt spellout in accordance with (56v) above):

(67)   [CP who [C that ~~uF~~, ~~uWh~~] [FP ~~who~~ [F ~~that~~] [TP [T will] buy the book]]]

Subsequent merger and movement operations will eventually derive the structure associated with (64b) **Who did John say that will buy the book?* However, the resulting sentence is ungrammatical because the derivation in (66) is more economical than that in (67), since (66) involves only movement of *who* to spec-CP, whereas (67) also involves F-to-C movement. The overall conclusion is that (as in PT's own analysis) the *that-trace* effect is a direct consequence of economy considerations, and does not require any additional *ad hoc* apparatus[24].

10. Potential pitfalls or fatal flaws?

Having discussed in some detail three potential problems posed by PT's analysis (relating to their account of *wh-interpretation*, *wh+that* structures and *that-doubling*), and having suggested an alternative analysis within the spirit (though not the letter) of their proposals in section 9, in this final section I briefly comment on some further apparent problems, leaving for future research the question of determining whether these are potential pitfalls or fatal flaws. One problem touched on briefly in footnote 5 relates to their inadequate formal definition of *closeness*. A further problem relates to their analysis of *nominative* case as an uninterpretable tense feature, which raises the question of how nominative subjects in the Portuguese inflected infinitive structures described by Raposo (1987) are to be accounted for. Their assumption that the wh-subject moves to spec-TP but the auxiliary remains in T in sentences like *Who is telling the truth?* raises questions about how we account for the possibility of *is* cliticising onto *who* in *Who's telling the truth?* if cliticisation requires string-adjacency and there is a null C intervening between *who* (in spec-CP) and *is* (in T). Their claim that the subject is in spec-CP (rather than in spec-TP) in exclamatives raises the question of how we account for the pre-subject position of *sometimes* in sentences like *How many of my lectures on Minimalism sometimes none of the students seem to understand!* if *sometimes* is a TP-adverb (as it appears to be in sentences like *I have the feeling that sometimes none of the students understand my lectures*). Moreover, PT's analysis of wh-movement and T-to-C movement (while purporting to use the technology of Chomsky 1998) raises the question of what uninterpretable features a moved wh-phrase or moved auxiliary carry in order to be *active*. I leave the question of whether these are apparent or real imperfections for future research.

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[2] Labelled bracketings are simplified by showing only those categories, traces and features most relevant to the discussion at hand, and by not showing intermediate projections. Features are italicised: features containing a prefixed *u* are uninterpretable, others are interpretable; in general, only the EPP-features of C are shown.

[3] PT rule out the possibility of [*uT*] on C triggering second-merge of TP with C by a constraint against *mutual merger* to the effect that X cannot second-merge with Y if Y first-merged with X.

[4] A similar argument might be formulated in relation to *wh+ever* expressions on the basis of contrasts such as:
   (i)   Whatever did he say to you?
   (ii) *He said whatever to you?
   (iii) Whatever happened to Idi Amin?

[5] The precise definition of *closeness* which they propose is problematic in a number of respects for technical reasons which I will not go into here. For present purposes, it is sufficient to assume that the head and specifier of a subordinate projection are equally close to a superordinate (c-commanding) head, setting aside the issue of how closeness is to be formally defined (though a natural candidate would seem to be a relation based on *m-command*).

[6] The term and acronym used here are my own; PT do not give any specific name to the principle they invoke.

[7] Claudia Felser points out to me that similar facts obtains for present-day Modern Standard German, so it would seem that WHIP cannot hold for German either (thereby further undermining any hope of positing that it is universal).

[8] It may be that the optionality of T-to-C movement in structures in which a focused constituent moves to spec-CP in Shakespearean English can be handed in much the same way as the optionality of movement to C in exclamatives.

[9]   An interesting consequence of (42) is that it predicts that Shakespearean English allows wh-subject exclamatives such as those below:
(i)   What a number of men eat Timon! (Apemanthus, *Timon of Athens*, I.ii)
(ii)   What an unkind hour is guilty of this lamentable shame (Friar Laurence, *Romeo and Juliet*, V.iii)

By contrast, the wh-interpretation principle (15) would rule out wh-subject exclamatives like (50) in present-day English.

[10]   Attempting to maintain that (15i/42i) is universal whereas (15ii/42ii) is parameterised does nothing to solve the overgeneration problem or change the essentially stipulative character of the postulated principles – principles which are furthermore specific to root clauses (and not applicable to complement clauses).

[11] In fact, the key point of the analysis outlined below is that T should carry two distinct types of feature, one of which is shared by its subject and the other of which is not. For the logic of the argument to go through, it could equally well be the case (e.g.) that T carries *finiteness* and *tense* features, and that its subject carries an uninterpretable finiteness (rather than tense) feature. See §9 for an analysis along these lines.

[12] In this connection, note that Roberts (1998) posits that inversion in root-clause questions in English involves C attracting a T which carries an interrogative mood feature.

[13] An alternative account of Elizabathan exclamatives is to posit that C carries an obligatory [*uWh*] feature and an optional [*uM*] or [*uT*] feature – but I shall not explore these possibilities further here.

[14] Among the syntactic differences between indicative/subjunctive/imperative verb-forms are those illustrated below:
   (i)   I insisted [that he *was not* allowed to return]
   (ii)   *I insisted [that he *be not* allowed to return] (cf. ...*not be allowed to return*)
   (iii)   *Be not* afraid! (cf. *Don't be afraid!*)

[15] PT's footnote refers specifically to *who*, though the point they make would be expected to generalise to other relative pronouns which can be used as subjects. The following two examples of *who that* structures occur in the text, both involving *who* used as a subject free relative pronoun (paraphraseable as 'he who') followed by *that*:
   (i)   Who that hath an hed of verre, Fro caste of stones war hym in the were (II.868)
   (ii)   And who that giltif is, al quyt goth he (III.1019)

[16] Since present-day English does not allow *wh+that* relatives, we might suppose that in present-day English the relative complementiser *that* can only attract a *null* wh-operator, whereas conversely a null relative complementiser can attract either an overt or covert wh-operator. This would provide one way of accounting for the Multiply Filled COMP filter of Chomsky and Lasnik (1977) – at least, in respect of relative clauses.

[17] It is not crucial to my proposal that the feature F be a finiteness feature rather than e.g. a *mood* feature.

[18] In the same way as spec-AgrSP was the canonical subject position in Agr-based accounts of clause structure.

[19] As Zeljka Paunovic points out, a question that remains to be answered in relation to (58/59) is how the uninterpretable finiteness feature on *Sue* is erased. One possibility is that it is marked for deletion by F, though the [*uF*] feature on *Sue* remains active until the end of the CP phase, and hence it can be attracted by the [*uF*] EPP feature of C; another is that it is deleted by C – though this requires in the case of (58) that the [*uF*] feature of C can attract *that* and also erase the [*uF*] feature on *Sue*. Difficult questions arise, but I will not pursue them here. An analogous problem arises in respect of *Mary* in (63) and *who* in (67).

[20] More precisely, a null *minimal projection* cannot undergo movement and hence cannot serve as the antecedent of a trace. Null operators (by virtue of their status as maximal projections) are therefore exempt from this requirement.

[21] In negatives like *They don't like syntax*, it may be that *do* is inserted to serve as a host for *n't*. An alternative possibility is that *do* originates below

the negative particle (perhaps in T) and moves into a superordinate head position (perhaps to F), with NEGP positioned between F and T.

[22] The grammaticality of sentences like *I want the boys definitely for to be there* in Belfast English (See Henry 1995, p.97) suggests that *for* does not raise to C (since *for* cannot cross *definitely*) but that the infinitive subject *the boys* does raise to some position above *for*. It may be that *to* can cliticise onto *for* in such cases, preventing *for* from being deleted (if clitic *to* requires an overt host). If NEGP is positioned between F and T, *to* must move across (or through) NEG in sentences like *I would prefer them for to not go*.

[23] I see no reason to adopt the suggestion made by PT (fn. 65) that 'we treat the subject of these infinitives as nominative'. The fact that *Mary* cannot passivise when moved to spec-CP (as we see from the ungrammaticality of **Mary would be preferred to buy the book*) can be attributed to improper movement of *Mary* from spec-CP to
spec-TP – i.e. from an A-bar position to an A-position.

[24] Although offering some of the advantages of PT's analysis, the revised analysis in section 9 also brings with it some of the disadvantages of their analysis. For example, it is not obvious how Chaucerian *wh-subject+that* structures like those in (48) are to be handled within the revised analysis; perhaps *that* remains (and can be spelled out) in situ in Chaucer – but this is clearly a speculative claim and alternatives clearly need to be explored.