

# What is *that*?\*

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This paper develops an account of the correlation between optionality of complementizer *that* and the possibility of extraction from the complement clause to a bridge verb. This is accomplished by exploiting the possibility, left open in Minimalism, of both LF insertion of phonetically silent material and PF insertion of semantically vacuous material. It is argued that bridge verbs may take bare TP complements, whereas non-bridge verbs must take CP complements. Since optional *that* only arises postsyntactically, it is expected to have no effects on the overt syntax or on LF. Various additional data, from intonational phrasing, topicalization, scope freezing, and distributor *each* interpretation, are adduced to argue that when *that* optionally introduces a complement clause it is in fact a bare TP.

*Keywords:* *wh*-movement, deletion, complementizer, projection, scope

## 1. Theoretical background

In this paper I explore the possibility, left open by the standard minimalist architecture of Chomsky (1995) but not ordinarily pursued, that lexical insertion of phonological material with no semantic features can take place postsyntactically. Specifically, I propose that English *that* can be inserted in PF, where it demarcates the beginning of an embedded clause that is not a CP. Since *that* is introduced on the PF side of the grammar it does not project, hence from the perspective of any syntactic operations the clause can only be treated as a TP, not a CP (taking TP, for the sake of explicitness, to be the projection below CP). I argue that such PF insertion of *that* provides an approach to bridge verbs in English that has certain advantages over alternatives. Although attempts to extend the account to other languages raise problems, I feel, to paraphrase Chomsky (1957: 5), that only “by pushing a precise but inadequate formulation to an unacceptable conclusion” can we “gain a deeper understanding of the linguistic data.”

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\* This paper is dedicated to the memory of Ann Baker, who posed the question “What is *that*?” to me many times during the six years she served as my administrative secretary and I was chair of the Department of Linguistics. My answers then were I hope more succinct than this lengthy reply. (She also often asked a much harder question, “Where is *that*?”, which is a problem I do not do proper justice to here.) An earlier version of this paper appeared as Franks (2000b) and subsequent versions were presented in 2002 at universities in Warsaw, Poznań and Wrocław, as well as at the Zentrum für Allgemeine Sprachwissenschaft in Berlin. I am grateful to the helpful comments of these audiences, as well to Roman Bailey, Željko Bošković, Rachel Thyre, and anonymous reviewers for *Syntaxis* and *IU Working Papers in Linguistics*.

## 1.1 LF Lexical Insertion

Minimalism makes use of an array of lexical items chosen from the Lexicon and drawn upon in constructing any given sentence. Items from this array or “Numeration” are accessed by the operations of “Select” and “Merge,” which select and merge items from the Numeration at the root of the tree. Merge thus has the effect of extending the tree; see Bobaljik and Brown (1997) as well as fn. 7 below for some discussion of this “Extension Condition.”<sup>1</sup> One unresolved issue concerns the question of when access to the Numeration can occur. A standard view has been that Select and Merge are restricted to the syntax proper so that, once Spell-Out takes place, phonological and semantic features are channeled into their respective interpretive components, PF and LF, and further lexical insertion is impossible. One overarching consideration here is Chomsky’s “Principle of Full Interpretation,” which precludes introducing material with phonological content at LF or material with semantic content at PF, either of which would cause the derivation to crash. This perspective raises however an interesting possibility: what if one attempted to Merge material that did *not* contain uninterpretable features? So far as I can tell, nothing necessarily prohibits the insertion of phonologically silent material in LF or semantically vacuous material in PF.

The former possibility has received some attention in the literature. Chomsky (1995: 232) considers the possibility that Select can take place in LF, but not in PF:

“Select is inoperative in the phonological component: no items can be selected from the numeration in the computation from Spell-Out to PF. The operation Select is available to the covert component, however ... but if an item with phonological features is selected, the derivation will crash at LF.”

In other words, elements can be inserted in LF which have no phonological content but the opposite is not true: items with phonological content which have no semantic value cannot be inserted in PF. Later, however, Chomsky (1995: 293-294) argues that there can be no access to the Numeration even in LF, in order to prevent such utterances as:

(1) \*Sam heard what? (without the echo interpretation)

In cases like this, he argues, if access to the Numeration were allowed in LF, then one could conceivably insert a phonologically null [+wh] C at the root. This would create a target for *what* (or at least its strong [+wh] feature) to move to, resulting in an acceptable sentence.<sup>2</sup>

Although Chomsky’s argument credibly applies for English,<sup>3</sup> there is evidence from other languages that LF Merge may indeed take place. Bošković (1998, 2000) indeed makes

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<sup>1</sup> As observed by Bošković and Lasnik (1999), there is considerable empirical overlap between the Extension Condition and the proposal in Chomsky (1995) that strong features must be eliminated before the next head up is merged into the structure. Following Lasnik (1999), who attributes the term to Juan Uriagereka (p.c.), I refer to this as the “virus” theory of strong feature checking.

<sup>2</sup> Ž. Bošković (p.c.) reminds me that this scenario only bans LF insertion of elements with strong features.

<sup>3</sup> There are however considerable conceptual problems, including the fact that, as Lasnik (1999) notes, nothing in the system developed in Chomsky (1995: ch. 4) actually rules (1) out if no [+wh] C is inserted in LF either.

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this proposal for spoken French, where sentences equivalent to English (1) are perfectly acceptable:

- (2) David a fait quoi?  
David has done what  
'What did David do?'

Bošković argues quite convincingly that these *wh*-in-situ structures are acceptable because a phonologically null [+wh] C can be merged at the root in LF and the [+wh] feature of *quoi* can then be checked off there.<sup>4</sup>

Another credible instance of LF insertion of silent material is the phenomenon of “diary drop” described in Haegeman (1990) and Rizzi (1994). In this construction a pronominal subject can be missing even in non-null subject languages, such as English and French, as in the following examples cited by Rizzi (1994: 156):<sup>5</sup>

- (3) a. \_\_\_ was so stupid!  
b. \_\_\_ can't find the letter that I need.  
c. \_\_\_ saw her at the party.

Rizzi notes that diary drop only applies at the root, hence the items in (4) are not grammatical:

- (4) a. \*How stupid \_\_\_ was!  
b. \*I can't find the letter that \_\_\_ need.  
c. \*She saw \_\_\_ at the party.

I take the diary drop construction to involve insertion of a null subject *pro* in LF. Since Merge is constrained by the Extension Condition, (3) but not (4) is possible: the latter would

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<sup>4</sup> Bošković's analysis explains why *wh*-in-situ in French cannot occur in embedded and overt complementizer questions. See however Rooryck and Cheng (2000) for an alternative account.

<sup>5</sup> My intuitions are that diary drop in English only applies with first person subjects; I use examples with *have* as auxiliary to avoid the “bare TP” question interpretation in (ii), which favors second person but is not the same construction:

- (i) a. \_\_\_ have exhausted myself working in the garden again.  
b. ?\* \_\_\_ have exhausted yourself working in the garden again.  
c. ?\* \_\_\_ has exhausted himself/herself working in the garden again.  
d. \_\_\_ exhausted ourselves working in the garden again.  
e. ?\* \_\_\_ have exhausted yourselves working in the garden again.  
f. ?\* \_\_\_ have exhausted themselves working in the garden again.
- (ii) a. (Have you) been working late again?  
b. (Do you) want something to eat?

Rizzi however offers some French examples in the third person, and an anonymous *IUWPL* reviewer finds (ib-c, e-f) “generally fine”. Clearly, if diary drop involves merging *pro* in LF, then this is a matter of what strategies a particular grammar can make use of to identify the content of that *pro* at LF.

involve merging *pro* in a way that does not extend the tree.<sup>6</sup> The French *wh*-in-situ construction in (2) and the English diary drop construction in (3) thus provide empirical evidence that Select and Merge (as well as Move) can take place in LF.<sup>7</sup>

Bošković's analysis of French is in keeping with certain claims about phrase structure which I will also assume in this paper. Following his "Minimal Structure Principle" (MSP) based on Law (1991), as well as proposals by a diverse list of syntacticians including Speas, Radford, Grimshaw, Doherty, Safir, and Chomsky, and finding its origins in Pesetsky's (1982) theory of selection, Bošković (1996, 1997) argues that only phrase structure which is independently required is projected. The particular derivation of the MSP put forward in Bošković (1997: 37-39) and which I adopt here for the sake of concreteness and theoretical elegance, is encapsulated as follows:<sup>8</sup>

- (5) Only phrase structure motivated by the Numeration is projected.
  - a. The Numeration contains lexical elements only.
  - b. Functional categories are selected from the Lexicon as needed.
  - c. Access to the Lexicon is a Last Resort operation.

In this paper I will be concerned with the claim in (5c) in particular.

The ideas in (5) represent an important departure from Chomsky's classic view of the Numeration as containing all the lexical material that will eventually be used in constructing any particular sentence. Chomsky (1998) explicitly bars access to the Lexicon at multiple points in the derivation.<sup>9</sup> Under both accounts the Numeration serves as the reference set for the purpose of calculating economy considerations, but the system in (5) permits differences in nonessential functional category material. For Bošković, most direct access to the Lexicon is driven by features on substantive elements which need to be checked. This is also the case when a [+wh] C is introduced in LF to handle French (2), which has the character of a Last

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<sup>6</sup> As Rizzi (1994) points out, early null subjects in the acquisition of English behave similarly.

<sup>7</sup> Bošković notes that Merge in LF is constrained by the Extension Condition (although Move in LF does not), in effect preventing a phonologically null C from being inserted in an embedded clause. However, for the proposal in this paper to be viable, it is crucial that introduction of material in PF not be required to extend the tree. This is expected, since the Extension Condition pertains to syntax, not PF. I argue that the process is not syntactic "merger" of a new C°, but rather a purely morphological operation which takes place as a consequence of Spell-Out and so is not subject to the Extension Condition. This holds even if the Extension Condition is rejected *per se* in favor of a more discriminating requirement. Bošković and Lasnik (1999) do just this, arguing that Extension Condition effects reduce to the conception of feature strength in Chomsky (1995). Acyclic insertion of a head with a strong feature will cause the derivation to cancel in both overt and covert syntax, assuming the virus theory. Normal LF movement, which checks weak features, causes no such problem, nor does (overt) head-to-head movement, although neither respect the Extension Requirement. Thus, even if a C° node were being created in the morphological component, this would introduce no strong features, hence it could take place acyclically.

<sup>8</sup> Bošković's (1997: 25) actual statement of the MSP went as follows: "Provided that lexical requirements of relevant elements are satisfied, if two representations have the same lexical structure and serve the same function, then the representation that has fewer projections is to be chosen as the syntactic representation serving that function."

<sup>9</sup> He writes: "If the derivation accesses the lexicon at every point, it must carry along this huge beast, rather like cars that have to replenish fuel supply constantly. Derivations that map LA to expressions require lexical access only once, and thus require operative complexity in a way that might well matter for optimal design."

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Resort operation: if this C were not selected, then the derivation would crash, hence—although it would be more economical not to access the Lexicon—in this instance failure to introduce a [+wh] C leads to nonconvergence at LF. The analysis of *pro* insertion in LF in the diary drop construction may be different. If taken to be a functional category D, as suggested to me by Bošković (p.c.), then it would not have to be present in the numeration either. If it were however present in the Numeration all along, then it would have no choice but to undergo Select and Merge but could, I claim be postponed until LF. In sum, it is reasonable to allow Merge to take place in the LF component so long as this has no impact on PF.

### 1.2. PF Lexical Insertion

I consequently ask whether items can also be inserted in PF, again so long as they have no impact on LF. Chomsky (1995: 294), in attempting to rule out LF-insertion of phonologically null elements with strong features, adopts an economy principle to the effect that “enters the numeration only if it has an effect on output.” He adds that “with regard to the PF level, *effect* can be defined in terms of literal identity: two outputs are the same if they are identical in phonetic form, and is selected only if it changes the phonetic form.” According to this view, two Numerations count as distinct if they contain any phonetically different material and thus cannot be compared as a single reference set, even if there are no LF differences associated with this phonetically different material.

This view is troubling for conceptual and empirical reasons. On the one hand, not only does it involve “look-ahead,” but it exploits phonetic properties of words to police syntactic operations. While it is sensible to imagine the conceptual-intensional interface as a motivating force in the Numeration, it is hardly likely that considerations from the acoustic-perceptual interface come into play. On the other hand, it makes bizarre predictions whenever two phonetically distinct versions of some word compete for what looks like the same slot. The most trivial example of this might involve alternative pronunciations of a word with identical morphosyntactic features, i.e., free variation at the phonetic, phonological, or morphological levels; surely none of these kinds of choices can be relevant to calculating economy in the *syntactic* derivation.<sup>10</sup> However, Bošković’s system, unlike Chomsky’s, appears to allow for comparison of sentences containing different forms of the same lexical item, provided that both are convergent. These differences are properties of the lexical item itself. A more complex example might involve situations where two distinct noun cases or verb forms are possible in the same context, with no nonstylistic difference in meaning (*John and me/I left; If John was/were leaving...*). Here there may be distinct features on associated functional categories or not, depending on how such syntactic free variation is formalized. Since the resolution of these problems goes well beyond this paper and some of the issues they raise disappear under more recent instantiations of minimalism, I put them aside here and turn to the matter of PF-insertion.<sup>11</sup>

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<sup>10</sup> Specific examples are examined in Franks (2000b).

<sup>11</sup> The very idea of global economy, which drove a lot of the argumentation, no longer seems viable. Instead, steps in the derivation are evaluated at a local level; cf. Collins (1997).

Pleonastic elements are the most obvious candidates for PF-insertion, since they (by definition, although characterizations of specific elements as completely devoid of semantics may well be wrong) entirely lack LF properties. A relatively uncontroversial example of a pleonastic element is *of*, inserted, following the analysis of Chomsky (1981: 49-51), for the sole purpose of checking objective case on the complement of a [+N] element, i.e., a noun or adjective, as in (6):

- (6) a. destruction *of* the city
- b. proud *of* our accomplishments

This kind of *of* is an empty preposition, devoid of semantic content, and as such has no impact on LF. The question thus arises of whether this *of* is inserted in PF. A second candidate for PF insertion is the semantically vacuous *do* of *do*-support, the sole purpose of which seems to be to provide an overt morphological host for stranded tense and agreement information. One might assimilate pleonastic *of* in (6) to this paradigm, if this is taken not as an objective case assigner *per se* but rather as a genitive case marker.

Expletives constitute another possibility. The sentences in (7) and (8) differ in terms of presence or absence of an expletive subject:

- (7) a. It strikes me as unlikely [that Elisabeth will enjoy the movie].
- b. [That Elisabeth will enjoy the movie] strikes me as unlikely.
- c. \*It [that Elisabeth will enjoy the movie] strikes me as unlikely.
- (8) a. There were [thirteen men] seated at the table.
- b. [Thirteen men] were seated at the table.
- c. \*There [thirteen men] were seated at the table.

Note that *it* in (7) or *there* in (8) are only possible when required (whenever the associate, in square brackets, fails to occupy subject position), hence the ungrammaticality of the (c) examples. Under Chomsky's view, these items enter the Numeration, since whether or not they are present has an effect on the PF representation.<sup>12</sup> This means that pairs of convergent sentences, as in (7a, b) and (8a, b), cannot be compared for economy purposes. Under Bošković's view of lexical access as a Last Resort operation, (7) and (8) should probably be regarded somewhat differently: whether or not *it* or *there* is selected is not a matter of what enters the Numeration in the first place, but rather of whether they are needed to make the sentence converge. If the associated phrases are in subject position, then *it* and *there* will not be selected from the Lexicon, and if not, then they will be. Once again, the question arises of whether expletive *of* and *there* are inserted in PF.

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<sup>12</sup> The idea that expletives are in the Numeration also plays a crucial role in Chomsky's (1998) argument that the derivation proceeds by constructing "phases", such as CP, from subset lexical arrays, in order to prevent the availability of a matrix clause expletive from blocking Move in a lower clause, assuming as he did in that work "Merge over Move". While this particular assumption has been much challenged in subsequent work (cf., e.g., Bošković 2002: 187-189 and references therein), I retain Chomsky's general idea in order to allow TPs that are not dominated by additional functional material to count as phases.

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Under the view that they serve a feature-checking function, the answer would be negative, so that *of*, *do*, *it* and *there* would have to be merged in the syntax. However, one could certainly argue that they do not serve such a function, so that the DPs *the city* and *our accomplishments* receive inherent case, tense and agreement feature licensing does not depend on *do*, and the filled subject position requirement which *it* and *there* satisfy is not couched in terms of (“EPP” or “D”) features. Fleshed out accounts would of course require a variety of assumptions about the architecture of the grammar and special Distributed Morphology machinery in order to force realization of *of*, *do*, *it* and *there*. For example, *of* may well be created by morphological fission of (unrealizable) case features, borne by the genitive DP, since English lacks a morphological genitive. As such, it is probably best conceived of as part of the syntax-morphology interface. Similarly, insertion of contentless *do*, *it* or *there* could be a Last Resort operation required before entering the PF side of the grammar, again, a merger forced by interface conditions of some kind.<sup>13</sup> But for the sake of discussion, let us put these possibilities aside and concede that, even in Bošković’s system, lexical access for the purposes of merging these expletives might still be ordinary syntactic merger, i.e., before Spell-Out. Thus, the various instances of lexical insertion considered up to this point arguably involve strictly syntactic operations.<sup>14</sup>

In Section 1, I have considered the possibilities that, in addition to accessing the Lexicon at the beginning of the derivation in creating the Numeration, lexical insertion may take place in LF to merge certain contentful but silent elements and lexical insertion may take place as a last step before entering PF to merge certain contentless but overt elements. But can the Lexicon also be accessed on the PF side of the grammar? While Chomsky (1995) categorically rules out PF lexical-insertion, I see no conceptual reason why this should be excluded by the theory of grammar in principle. In the remainder of this paper I thus explore PF lexical-insertion, examining what strikes me as the most credible example of an item with phonetic but not semantic content: the English “complementizer” *that*. This element is semantically vacuous, so can potentially be inserted in PF without violating the Principle of Full Interpretation, and it does not seem to be involved in any feature-checking relations. It is thus a good candidate for PF insertion. However, if inserted only postsyntactically, *that* should not be able to interact with syntactic processes, since it is not present in the syntactic part of the derivation. In what follows I will argue that this is indeed the case, although certain factors obscure the disassociation between *that* and syntactic operations which should see it but apparently do not. Specifically, *that* is only inserted in PF after bridge verbs, such as *think*, *say* or *hope*, which I will claim can take bare TP complements, whereas after non-bridge verbs, such as *quip*, *whisper* or *murmur*, which must take full CP complements, *that* is syntactically active. My primary argument for this contrast will be the correlation in any given complement clause between the possibility of absent *that* and the potential for extraction of a *wh*-phrase from out of the embedded clause.

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<sup>13</sup> Bošković (p.c.) points out that an approach which introduces *it* and *there* on the PF side of the grammar would also have the advantage of deducing the fact that expletives do not move. This is evidenced by the observation in Bošković (2002: 192-204) that their putative movement never causes a locality violation.

<sup>14</sup> Emonds (1985: 176-191) also develops a theory that makes use of late lexical insertion. Since this insertion is “post-transformational” in that it necessarily applies after at least some transformations have taken place, it too is a syntactic rather than PF operation. Emonds’ post-transformational lexical insertion is restricted to closed class lexical items and certain purely grammatical verbs, nouns and adjectives.

## 2. Some traditional approaches to bridge verbs

In this section I introduce the relevant facts about bridge and non-bridge verbs in English. There are generally acknowledged to be two classes of verbs taking clausal complements; cf., e.g., Chomsky (1977). The former, as in (9a), are called “bridge” verbs, the latter, as in (9b) are “non-bridge” verbs.<sup>15</sup>

- (9) a. Billy said that he saw a ghost.  
b. Billy quipped that he saw a ghost.

As observed at least as far back as Erteschik (1973), these two verb classes contrast in terms of whether or not they permit extraction from their complements. This is shown in (10).<sup>16</sup>

- (10) a. What did Billy say that he saw?  
b. ?\*What did Billy quip that he saw?

Example (10a) illustrates the bridge verb phenomenon—metaphorically speaking, verbs of this class form a “bridge” across which the *wh*-phrase can escape from the embedded clause to the matrix clause. The standard assumption is that both types of verb take CP complements, as in (11), but that somehow the CP after bridge verbs can be ignored by *wh*-movement.

- (11) a. What<sub>i</sub> did Billy say [<sub>CP</sub> that [<sub>TP</sub> he saw *t*<sub>i</sub>]]?  
b. ?\*What<sub>i</sub> did Billy quip [<sub>CP</sub> that [<sub>TP</sub> he saw *t*<sub>i</sub>]]?

In (11a), the presence of *that* has no effect on the movement of the *wh*-phrase out of the complement clause.

Interestingly, it is precisely in the bridge verb context (9a) that the complementizer *that* is optional:

- (12) Billy said he saw a ghost.

Whether *that* is present, as in (9a), or absent, as in (12), has no nonstylistic effect on interpretation. This is not especially surprising since, although *that* has phonetic content, it is semantically vacuous. Furthermore, unlike other comparable pleonastic elements such as *of*, *do*, *it* and *there*, *that* serves no discernible purpose in the syntax, it is formally vacuous as well. It is thus technically not a pleonastic element: pleonastics such as *of*, *do*, *it* and *there* are

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<sup>15</sup> Non-bridge verbs are typically verbs that express “manner of speech”. Doherty (1993: 57) provides sample sentences with the following verbs: *grieve*, *reflect*, *gloat*, *scream*, *squeal*, *whistle* and *chuckle*. For further examples, see Doherty (1993) and references therein.

<sup>16</sup> The same contrast holds of LF *wh*-movement:

- (i) Who said that Billy saw what?  
(ii) ?\*Who quipped that Billy saw what?

This is expected under my account.

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presumably forced by purely grammatical considerations, but *that* in (12) is apparently optional, implying that its appearance is orthogonal to formal criteria. Its role is simply that of what traditional grammar calls a “subordinating conjunction”.

Notice however that *that* seems to be just as semantically vacuous after the non-bridge verb in (9b) as it is after the bridge verb in (9a).<sup>17</sup> One might therefore expect the same range of possibilities in both contexts, but for some reason *that* is required in (9b). Compare (13) with (12):

(13) \*Billy quipped he saw a ghost.

The complementizer *that*, although optionally present after bridge verbs, is obligatory after non-bridge verbs; (13) is only acceptable as reported speech (quoted direct discourse). This declarative pattern is moreover preserved in interrogative sentences as well:

(14) a. What did Billy say he saw?  
b. \*What did Billy quip he saw?

The judgments are the same: *that* is optional after *say* but required after *quip*. However, whereas in the former case removing *that*, instead of causing (11a) to degrade, has absolutely no effect, in the latter case removing *that*, instead of improving (11b), makes it even worse. It is, in short, as if *that* were irrelevant to the derivation of the bridge verb sentences (10a) and (14a). On the other hand, for the non-bridge verb sentences *that* is always required, so that (14b) has more the status of (13) than (10b).<sup>18</sup> It thus seems we must treat the negative

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<sup>17</sup> Bošković (p.c.) comments that my view that *that* is semantically empty is somewhat contentious, since C has been claimed to encode illocutionary force. This objection could however be handled by the assumption in Bošković (1997) that “declarative force is the default specification.” In my system, this means that, everything else being equal, a bare TP will be interpreted as a TP, as required. On the other hand, Bošković adds, factive C has been argued to have semantic content, serving to bind an event position in the complement clause or to introduce an operator. While this fits squarely with my analysis, he notes the “potential problem” that “there are some pure propositional verbs (which should be bridge) which require *that*, e.g., *conjecture*”; see also Hegarty (1991) for some extraction puzzles related to this verb class. My hunch here is that *think* (bridge) vs. *conjecture* (non-bridge) reflects the same distinction as *say* (bridge) vs. *quip* (non-bridge) does, with the crucial difference being not clause type *per se*, but the added dimension of manner. More generally, as pointed out to me by R. Bailey (p.c.), the analysis proposed here fails to explain how the contrast between bridge and non-bridge behavior in English can be derived from verbal semantics. Bailey notes, moreover, that “the class of non-bridge verbs in English is so small that supposing them to be the only verbs to take CPs in finite embedded complement clauses reduces to the supposition that most verbs in English simply do not take CPs.” If anything, then, *all* English verbs will be bridge verbs, i.e., bare TPs, unless there is some compelling reason to embed them in larger functional structure. As discussed in Section 3.4, however, in many other languages CP must be the unmarked option, since there it is the class of *bridge* verbs that is so highly restricted. Of course, this still necessitates a mechanism for introducing *that* on the PF side of the grammar in English, as proposed in this paper.

<sup>18</sup> Example (14b) is noticeably worse than (13). There are two reasons for this effect, providing (13) with an alternative analysis but making this analysis unavailable for (14b). First, (13) is less egregious because it is acceptable as reported speech, as in (i):

(i) Billy quipped, “He saw a ghost.”

effects of extracting a *wh*-phrase and not pronouncing *that* as technically independent and possibly cumulative, although judgments are subtle.

The traditional Government and Binding account of the optionality of *that*, following Chomsky (1981: 243-248), involved “free deletion in COMP,” which means that *that* can be deleted so long as no other conditions are violated. So, for example, (15b-d) are all acceptable noun phrases:

- (15) a. \*the house which that Jane built  
 b. the house ~~which~~ that Jane built  
 c. the house which ~~that~~ Jane built  
 d. the house ~~which that~~ Jane built

The reason (15a) is bad was because of the Doubly-Filled COMP Filter, which rules out having more than one element in COMP—in current terms,  $C^\circ$  and [Spec, CP] cannot both be filled with overt material. Assuming free deletion in COMP, what presumably goes wrong in (13) and (14b) would be that the empty category left behind by deleting *that* is not “properly governed” for purposes of the Empty Category Principle, although in (12) and (14a) it is. The relevant structures are as follows:

- (16) Billy said/\*quipped [<sub>CP</sub> *t* [<sub>TP</sub> he saw a ghost]].  
 (17) What<sub>i</sub> did Billy say/\*quip [<sub>CP</sub> *t<sub>i</sub>* *e* [<sub>TP</sub> he saw *t<sub>i</sub>*]]?

In GB terms, this would mean *say* somehow governs across CP, whereas *quip* does not.

I see a number of problems with this idea, regardless of how it is implemented. As stated, it is merely a stipulation about COMP, hence is not actually related to the fact that *that* is semantically vacuous. If anything, this property should be relevant at LF, not PF, and this is indeed what Lasnik and Saito (1984, 1992) argue—even when pronounced, *that* is deleted in LF.<sup>19</sup> This follows from the notion that the complementizer *that* can be deleted

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Second, the only way to derive (14b) would be to extract *what* from inside reported speech, which is impossible, because (under any account) reported speech is an impenetrable, seamless unit.

<sup>19</sup>They do this to explain why adjunct traces pattern like direct objects rather than subjects in not showing the *that*-trace effect. While their analysis will not carry over to my present proposals, it is worth noting that *that*-deletion in LF does not seem to discriminate between bridge and non-bridge verbs. That is, it always applies in (i), saving (ib) but having no effect on (ia), since argument traces according to Lasnik and Saito must be properly governed in the overt syntax.

- (i) a. \*Who did you propose that \_\_\_ should visit us next week?  
 b. When did you propose that Violet should visit us \_\_\_?  
 c. Who did you propose that Violet should visit \_\_\_ next week?

Although extraction is as always degraded after non-bridge verbs, it is in my opinion (but see Hegarty 1991 for some differences) no worse for adjuncts, as in (iib), than for complements, as in (iic).

- (ii) a. \*Who did you whisper that \_\_\_ should visit us next week?  
 b. ?\*When did you whisper that Violet should visit us \_\_\_?  
 c. ?\*Who did you whisper that Violet should visit \_\_\_ next week?

## What is *that*?

without semantic effect—its presence or absence has no bearing on the interpretation of the sentence. Given the Principle of Full Interpretation, we should in fact expect that *that* must be deleted in LF, since it is not interpretable at this level. On the other hand, this should have no impact on its PF properties. Furthermore, the assumption that traces after *say* satisfy the ECP whereas those after *quip* do not reduces to a stipulation about these particular verbs.<sup>20</sup> But if *that* is never present at LF, and if the ECP is a matter of LF, then there should be no reason to discriminate verb classes in this regard.<sup>21</sup> In short, the conceptually necessary absence of *that* at LF must be independent of its PF optionality after bridge verbs. Clearly, the complement structures in (16) and (17) must somehow be discriminated.

One way of implementing this idea within GB was to posit a rule of S'-deletion (CP deletion in present terms). Chomsky (1981: 66) proposed this a marked rule of English, which applied after certain verbs so that they could govern inside their complement clauses. By allowing exceptional government, S'-deletion had two essential effects: licensing of case in Exceptional Case Marking (ECM) contexts, such as (18), and (as we saw above) circumventing Subjacency after bridge verbs.

- (18) a. David believes [*her* to have taken the candy].  
b. Everyone saw [*him* leaving the theater].  
c. Elisabeth considers [*them* not worth the paper they are printed on].

If S'-deletion is construed as a syntactic process which literally removes S', then this operation necessarily precedes objective case assignment/checking in (18); see Franks (1983) for some discussion. Similarly, if elimination of S' is necessary to void Subjacency in examples where extraction takes place out of complements to bridge verbs, then it must also precede *wh*-movement.<sup>22</sup> However, as we have seen in examples such as (10a), *that* can still be present in PF, even when *wh*-movement has occurred. This is highly problematic, since once S' is identified with CP, we would not expect C° *that* to survive deletion of its CP projection. The S'-/CP-deletion mechanism of GB thus leaves the post-deletion structure of the clause unclear.

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Relative judgments are thus the same for bridge and non-bridge verbs.

<sup>20</sup> One tempting possibility for formulating the relevant difference might be constructed on the basis of Bošković and Lasnik's (2003) reduction of the GB effect to a "PF-affix" property of the morpheme *that*, as discussed in Section 3.2 below. Assume, in keeping with their semantics, that non-bridge verbs have an extra "manner" layer, roughly as follows:

- (i) [ [ V [manner] CP ]

Thus, for example, *murmur* or *conjecture* would be analyzed as lexically complex versions of *say* or *think*. This obligatory intervening manner material would block PF affixation of *that*, resulting in Bošković and Lasnik's system in an obligatory overt *that*. It is not immediately obvious, however, how such a structure could also prevent *wh*-movement out of CP (as my analysis does).

<sup>21</sup> Aoun et al. (1987), however, argue that the ECP really has two aspects: antecedent government, which must be met at LF, and head government, which must be met at PF. Although for them the status of an empty category in C° is a matter of head government, this once again boils down to a stipulation about different classes of verbs.

<sup>22</sup> If, as argued by Lasnik and Saito (1991), Object Shift is overt in English, then both of these are claims about the timing of S'-deletion involve movement.

An alternative implementation of S'-deletion within the GB paradigm, also proposed in Chomsky (1981: 303), was to change S' to S by an optional rule. In more current terms, this would mean changing CP to TP. The CP-to-TP rule would feed processes sensitive to government and islandhood, i.e., case marking and *wh*-extraction. The complementizer *that*—presumably in T°—could be optionally deleted in PF, since its trace would now meet the ECP, assuming this to be a matter of head government in PF, as noted in fn. 21. This approach would still encounter problems within the GB Subjacency framework, since it would need TP *not* to be a bounding node in English (movement still crosses two TPs), just CP. However, this then lets in non-bridge verbs as well:<sup>23</sup>

(19) ?\*What<sub>i</sub> did [<sub>TP</sub> Billy quip [<sub>CP (TP)</sub> *t*<sub>i</sub> that [<sub>TP</sub> he saw *t*<sub>i</sub> ]]]?

One solution might be to make what counts as a bounding node context sensitive, as suggested in the approach developed in Chomsky (1981: 305) and which foreshadows Chomsky's (1986) "barriers" system. However, given the dated nature of the GB model I do not pursue this idea here.

Accounts of bridge verbs that seek to manipulate S'/CP in the course of the derivation are thus technically highly problematic, even within GB. Moreover, in a minimalist approach, where structure is built from the bottom up by successive applications of Merge at the root, at best such modification would have to be postsyntactic.<sup>24</sup> At worst, it could not even exist, with restructuring understood simply to be a choice between different complement types, so that, instead of a "CP-to-TP rule", there would just be TP-iteration. Treating *that* as T° rather than C° could exploit the T-to-C movement analysis of Pesetsky and Torrego (2001); this proposal however raises its own set of problems, so I do not explore it here. In sum, the questions we should be asking is what sense there is to positing *that* after bridge verbs at all, since this element (i) has no semantic effect on the sentence, (ii) fails to disrupt *wh*-movement and (iii) is only optionally pronounced. In other words, *that* is semantically and syntactically inert; *it is only active in PF*. Empirically, then, *that* has neither LF nor syntactic motivation, although it clearly plays some role in PF. Its sole *raison d'être* in the syntax is theory internal, along lines something like this: since complement clauses are CPs and phrases have heads, *that* must be a C°.

### 3. An alternative analysis

In this section I develop a PF-insertion account of *that* after bridge verbs. This proposal, although it straightforwardly correlates the optionality of *that* with the possibility of extraction out of bridge verb complements, will entail a number of problems of analysis for other constructions.

<sup>23</sup> It also lets in "one fell swoop" *wh*-movement, as in the standard *wh*-island violation in (i):

(i) \*who<sub>i</sub> do [<sub>TP</sub> you wonder [<sub>CP (TP)</sub> why [<sub>TP</sub> Mary loves *t*<sub>i</sub> ]]]

<sup>24</sup> Distributed Morphology mechanisms, as in Halle and Marantz (1993), could conceivably manipulate the features of CP, but even if this were invoked, it would be too late to mitigate restrictions on syntactic movement.

### 3.1. Complement clauses with and without *that*

There is good reason to believe that a complement clause without *that*, i.e., after a bridge verb, such as *think*, is in fact not a full CP. This is indicated in (20), using TP:

- (20) a. Billy thought [TP he saw a ghost].  
 b. [CP what<sub>i</sub> did [TP Billy think [TP he saw t<sub>i</sub>]]]?

As a TP, the absence of complementizer *that* in (20a) and the availability of unimpeded *wh*-extraction in (20b) would be unsurprising. There is, as noted above in conjunction with the Minimal Structure Principle expressed in (5), a relatively large body of literature arguing that this kind of reduced structure is correct; the reader is referred to Doherty (1997) for a persuasive summary of the relevant arguments.<sup>25</sup>

Similarly, there is good reason to believe that a complement clause with *that* after a non-bridge verb, such as *quip*, really is a full CP. This is indicated in (21):

- (21) a. Billy quipped [CP \*(that) [TP he saw a ghost]].  
 b. \*[CP what<sub>i</sub> did [TP Billy quip [CP (that) [TP he saw t<sub>i</sub>]]]]?

This standard complement structure explains the obligatoriness of *that* in (21a) and the impossibility of *wh*-extraction in (21b), under fairly reasonable sets of assumptions about the licensing of phrase structure and how Subjacency should be implemented. First, I suppose that *that* is required in order that the CP have some content, otherwise both head and specifier position would be empty. Roughly following ideas about licensing of phrase structure in Speas (1994), a completely contentless phrase cannot exist. In the absence of any semantic (LF) content, as is presumably the case for a declarative CP, there must instead be some phonological (PF) content.<sup>26</sup> If not motivated by either LF or PF considerations, there would be no reason to posit a CP in the syntax.<sup>27</sup> Next, under the Subjacency model we would need both TP and CP to be bounding nodes, in order to block movement in (21) through the intermediate SpecCP. Unfortunately, if TP has bounding node status, then direct *wh*-movement in the hypothesized bare TP structure in (20b) would also be prevented, necessitating instead a more fine-grained account of bounding nodes.

Essentially, in order to make such an analysis work, what we want to do is to rule out COMP-to-COMP movement as an option in general. In this way, we would force direct long distance extraction in (21b), thus formally differentiating “one fell swoop” movement in

<sup>25</sup> Bošković (1995: section 2, 1997: section 2.3.2) also advocates the bare-TP analysis. He refers to Bowers (1987), Hegarty (1991), Law (1991), Li (1990) and Webelhuth (1992) for additional evidence for this analysis.

<sup>26</sup> For (15d) there are two options: either there is a null operator in SpecCP of the relative clause or, following Bošković (1997: 25-29), these are bare TP relative clauses, with the null operator adjoined to TP.

<sup>27</sup> An (2004) takes a very different approach to achieve this effect, exploiting Selkirk’s (1984) Strict Layer Hypothesis of intonational phrasing. An argues that in order for a clause to be parsed as a separate Intonational Phrase, either SpecCP or C° must be filled. I thank Ž. Bošković (p.c.) for drawing my attention to An’s work, whose stance on the relationship between syntactic and prosodic phrasing is similar to what I put forward in connection with examples (26)-(28) below.

grammatical (20b) from that of ungrammatical (21b). There are various ways of implementing this insight to take advantage of the proposed TP vs. CP complement analysis, but the basic idea would be that movement from COMP-to-COMP (i.e., SpecCP-to-SpecCP) is generally impossible.<sup>28</sup> Although my claims in this paper are independent of the exact formulation, it is surely possible to express this in minimalist terms. It seems to me that COMP-to-COMP movement is inherently problematic for feature driven movement, since it is unmotivated.<sup>29</sup> That is, movement to an intermediate SpecCP, which does not itself check off any features (of the *wh*-phrase, assuming Move, or of the target, assuming Attract), should not exist.<sup>30</sup> So I am simply proposing that it in fact does not.<sup>31</sup> In the absence of this intermediate landing site, all we need assume to exploit the CP vs. TP difference posited above is that a [+wh] C° attracts the closest *wh*-element down the tree, but that a CP always constitutes an opaque domain.<sup>32</sup> While I leave open the reason for this opacity, it is possible that a resolution may be found in terms of the phase theory of Chomsky (1998).<sup>33</sup> So let us reject the traditional “escape hatch” conception of (intermediate) SpecCP and see what implications this has for bridge verbs and for the status of *that*.

### 3.2. The proposal

Granted that bridge verbs can take complement clauses that do not project all the way up to CP and that non-bridge verbs take full CP complements, and granted that the contrast in extractability is somehow derivative of this difference, the fundamental question nonetheless remains of how to analyze bridge verbs when they take complement clauses introduced by *that*. The standard assumption—and the one which I take issue with in this paper—has always been that these too are CPs. I will propose that they are actually TPs instead, at least in the syntax. Movement over CP (and DP), but not TP, causes a weak Subjacency violation.<sup>34</sup> This explains why *that* is syntactically inert after bridge verbs—it is

<sup>28</sup> For discussion of a possible implementation within the barriers system of Chomsky (1986), see Franks (2000b).

<sup>29</sup> There is, however, a promising way of motivating successive cyclic movement that is not feature driven, at least not in the standard minimalist sense. Instead of claiming that intermediate movement necessarily result in some kind of feature valuation, as Chomsky does, Franks and Lavine (to appear) argue that it applies “agnostically,” i.e., solely to keep an unvalued feature syntactically active. By moving to the left-edge of the CP phase, the *wh*-phrase remains visible to any [+wh] C° that might subsequently be merged. See also Bošković (2004) for related ideas.

<sup>30</sup> By the same token, (non-scope related) VP-adjunction, as required by the barriers model, should also not exist, since there is no non-local reason to make this move.

<sup>31</sup> Boeckx (2003) similarly argues against successive cyclic *wh*-movement, explaining apparent intermediate movement/reconstruction effects in terms of Agree applied to the periphery of phases; cf. Chomsky (1998). So-called “successive cyclic movement” is thus a matter of chain formation. Here I put intermediate effects aside, acknowledging the significant problems they may cause for my analysis. It may be possible to make Boeckx’s ideas compatible with the general proposal in this paper, but the mechanism of chain formation would require considerable adjustment.

<sup>32</sup> We probably also want DP to be an opaque domain, with apparent movement out of DPs really involving a maximal projection smaller than DP, just as in the CP case examined in this paper.

<sup>33</sup> We would not want to prevent movement out of all phases, however, taking as Chomsky and others do *vP* to be a phase.

<sup>34</sup> We can see that CP and DP must be bounding nodes by the following contrast, adapted from Haegeman (1994: 463):

- (i) \*the man [<sub>CP</sub> who [<sub>TP</sub> John made [<sub>DP</sub> the claim [<sub>CP</sub> that [<sub>TP</sub> he will invite *t* ]]]]]

## What is *that*?

simply not there. Syntactically, (9a), repeated as (22a), has the structure in (22b), not (22c), and in this respect resembles (20), without *that*, rather than (21), with *that*, despite the fact that this sentence is pronounced with a *that*.

- (22) a. Billy thought that he saw a ghost.  
b. right structure: Billy thought (that) [TP he saw a ghost].  
c. wrong structure: Billy thought [CP that [TP he saw a ghost]].

I suggest that the structures in (22) are related to the ECM phenomenon in (18). English for some reason allows the option of a clause projecting to less than a full CP. In the case of ECM, where the complement clause is non-finite, we can safely posit a TP, headed by infinitival *to*. In the case of bridge verbs, my claim is that this is also a bare TP, just one with agreement features that go along with being [+finite].<sup>35</sup>

There is no debate about the assumption that non-bridge verbs always take CP complements. What this proposal entails is that bridge verbs take bare TP complements. It seems to me that the categorial status of the complement clause, i.e., c-selection, should depend on the verb's s-selectional semantic properties. In this case, the Minimal Structure Principle will dictate that propositions are TPs unless required to be larger. Simple complement clauses are thus TPs, everything else being equal. Embedded questions, as in (23a), must on the other hand be CPs, since there needs to be a CP projection in which to locate the WH operator. Non-L-marked clauses are CPs, as in (23b), because, following Bošković (1997), empty T° (his I°) must be governed, hence when TP is not a complement an overt C° is required.<sup>36</sup> Complements to non-bridge verbs, as in (23c), must also be analyzed as CPs:

- (23) a. I wonder [CP what [TP you are doing]].  
b. [CP That [TP you are always late]] bothers me.  
c. Sue whispered [CP that [TP she knew the answer]].

What reason could there be for (23c)? Presumably, there is some semantic difference in the type of complements of bridge and non-bridge verbs. This conclusion strikes me as all but

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- (ii) ?\*the man [CP who [TP John wondered [CP when [TP he will invite *t* ]]]]  
(iii) the man [CP who [TP John claims (that) [TP he will invite *t* ]]]

In (i), rejecting COMP-to-COMP movement and assuming, following Aoun et al. (1987) and Bošković (1997) among others, that nouns do not govern, *who* crosses two bounding nodes, CP and DP. In (ii), on the other hand, only CP is crossed and in (iii), assuming that the complement clause is a TP, with *that* introduced postsyntactically, none are.

<sup>35</sup> Alternatively, a finite TP clause could actually be an AgrP, that is, some projection larger than that required to accommodate ECM verb complements but not quite large enough to be a full CP. Nothing much in this paper hinges on whether it is treated as a kind of TP or a distinct projection and, if the latter, its precise label.

<sup>36</sup> An anonymous *IUWPL* reviewer points out that Bošković's government account cannot be exploited under minimalism. This is one reason why Bošković and Lasnik (2003) develop their PF-affix approach. In my system we will need somehow to restrict the distribution of bare TPs to complement clauses. Since this involves selection, it is possible that T° (or features thereof) raises for licensing. Within CP, this means it moves to C°, in the spirit of Pesetsky and Torrego (2001), but for bare TP complements this means it moves to V°. This raising will be blocked whenever TP is *not* a complement, as required.

inevitable, given the fact that the class of canonical bridge verbs is relatively consistent across languages. Let us suppose that there is some kind of factive operator with non-bridge verb complements, and that this operator must be merged into SpecCP.<sup>37</sup> In order to circumvent the prohibition against contentless projections, a pleonastic head *that* appears in C°.

The next question is where the *that* comes from after bridge verbs, as in (22a). If the syntactic structure is as indicated in (22b), then *that* must be inserted postsyntactically, on the PF side of the grammar. A somewhat similar suggestion was made by Lasnik and Uriagereka (1988: 97), who proposed that *that* is inserted at S-structure in a structure such as (24), obliterating the intermediate trace:

(24) [CP Who [TP you think [CP *t* [TP John saw *t* ]]]]?

Their account differs however from my PF-insertion one in that, for them, C° is present all along. They thus make the standard assumption that COMP-to-COMP movement can void Subjacency effects, but have no explanation for why this is possible only after certain verbs or why these are precisely those verbs for which *that* is optional.<sup>38</sup> For me, on the other hand, it is crucial that *that* be able to be introduced into the structure *after* the syntax, so that it not interact with movement.

How can we instantiate PF-insertion of *that*? One way involves extending the notion of Merge to PF, so that, concomitant to the possibility of LF lexical insertion discussed in Section 1.1 above, literal PF lexical insertion is also possible. Here are some technical speculations about how such a process might work. First, the Lexicon must be accessible on the PF side of the grammar as well. The element *that* is not part of the initial Numeration, but rather is drawn from the Lexicon, in accordance with (5), when needed. One might imagine a two pass approach to lexical insertion, following the system in Franks (1986, 1995) as well as Halle and Marantz's general framework of Distributed Morphology, adapted to minimalism. Syntactic structures are built up through successive applications of Select and Merge to lexical items in the Numeration, but these items are *words*, i.e., bundles of morphosyntactic and semantic features, and not phonological feature complexes. The process of inserting literal *wordforms*, i.e., phonological feature structures, takes place postsyntactically, after the operation of all syntactic and morphological rules; cf. also Zwart (1997). The latter apply in the morphological component that mediates between the syntax and the phonology proper. It is in this morphological component that the node is created into which the wordform *that* after bridge verbs is inserted. Note that after non-bridge verbs there already is an empty C°, so in both instances *that* is inserted into the same slot, the difference being whether that slot has a syntactic or morphological provenance.

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<sup>37</sup> But see fn. 17 for problems and alternatives to this method of forcing the complement clause in (23c) to be a CP.

<sup>38</sup> Bošković and Lasnik (1999) make a similar proposal that the French complementizer *que* can be inserted acyclically, although for them too it is always inserted in the syntax. In this context, they argue against the Extension Condition as a principle of UG; see also fn. 1 above.

## What is *that*?

Under the view that *that* is inserted into a C° created in the morphology, we can think of this as an optional Distributed Morphology rule of “TP Fission.” This rule would apply, to fission off from TP features that are comparable to those of a [-wh] C°, i.e., *that*.<sup>39</sup> TP Fission must of course be prevented from applying to infinitival TP complements. This will follow, I believe, from a more carefully articulated analysis, in which fission of *that* requires a [+finite] TP, just as C° cannot dominate *that* in true infinitival CPs. In this system, the [+finite] (and/or [+agreement]) features of TP fission off, in the morphological component, to create a new C° node, into which *that* is inserted. Since *that* is optional in these contexts, I assume that the morphological rule of fission is optional as well.<sup>40</sup>

A new node would be created as part of the interface with the morphological component. This kind of discrepancy between morphology and syntax is not uncommon. For example, purely functional PPs such as *to the women* in (25) are created, similarly through fission, in mapping the “dative” DP, which is the output of the syntax, into an appropriate morphological representation. Hence, for the purposes of binding (25a) or negative polarity licensing (25b), it counts as a DP and not a PP; cf. Yadroff and Franks (2001) for discussion.

- (25) a. I spoke to the women about each other.  
b. I spoke to no student about any of the papers.

Notice that, if this sort of approach is correct, creation of new nodes in (the mapping to) the morphology disregards the Extension Condition. This is a desirable result, since under accounts that derive extension and cyclicity from the nature of Agree and feature checking, it would not be expected to pertain to the PF side of the grammar; see the discussion in fn. 1, as well as Richards (2004). In this way, from the perspective of the syntax *per se*, complements to bridge verbs are able to be bare TPs in the syntax (and LF), although in their morphological structure, they are larger.<sup>41</sup> Complements to non-bridge verbs, on the other hand, are always CPs, hence *that* is obligatory and A'-movement is degraded.

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<sup>39</sup> *That* is a “light” or minimal functional head, and it plays a similar role in the grammars of other languages. For example, as discussed in Franks and Bański (1999), in Polish *że* ‘that’ is inserted in empty functional head positions to support phonologically dependent auxiliary clitic elements.

<sup>40</sup> It could alternatively be obligatory, with the locus of optionality pertaining instead to whether or not C° is mapped into *that*. This would in effect mean C° has a zero allomorph, which is close both to the traditional “null complementizer” approach and to that of Bošković and Lasnik (2003).

<sup>41</sup> An interesting question which I do not explore here is why TP Fission does generally apply, to create examples such as (ii) from (i):

- (i) Who<sub>i</sub> do you believe *t<sub>i</sub>* likes Natasha?  
(ii) ?\*Who<sub>i</sub> do you believe that *t<sub>i</sub>* likes Natasha?

For speakers who exhibit the “*that*-trace” effect, the morphological rule of TP Fission cannot apply when SpecTP is empty. One possibility is that a TP with an empty Spec is pruned down in the morphology to something smaller than TP, preventing the fission rule from applying. Another might capitalize on the function of interpolated *that*, which serves to facilitate parsing by separating the main clause verb from following material with which it could (but does not) form a constituent. This is arguably never necessary when the verb is itself followed by a finite verb, as in (i). This functional view of what motivates *that* insertion has the advantage of flexibility, in that in some dialects *that*-insertion is extended even to TPs beginning with finite verbs, producing (ii). Judgments, in fact, are far more friable than is usually acknowledged. This variation, examined in Sobin (1987), seems to me to favor the kind of PF side *that* insertion approach advocated here.

One might alternatively imagine there is no literal  $C^\circ$  node created in the morphology, hence no CP projected. Rather, *that* is simply inserted to demarcate the beginning of a TP complement clause, but without introducing additional syntactic structure. Under what conditions is it inserted? It seems to me that there is a clear, if subtle, intonational contrast between clauses in which *that* fills  $C^\circ$  of a true syntactic CP and those in which, according to the present analysis, it comes into existence only on the PF side of the grammar. To my ear, in the former, CP cases, the only place for an intonational break (indicated by “#”) is before *that*, rather than after it; (26) repeats relevant examples presented in this paper, (27) provides some with additional structures, discussed by Bošković and Lasnik (2003):

- (26) a. It strikes me as unlikely # that (\*#) Elisabeth will enjoy the movie. [= (7a)]  
 b. # That (\*#)Elisabeth will enjoy the movie] strikes me as unlikely. [= (7b)]  
 c. Billy quipped # that (\*#) he saw a ghost. [= (9b)]
- (27) a. It seemed at that time # that (\*#) David had left. [their (4a)]  
 b. What the students believe is # that (\*#) they will pass the exam. [their (4b)]  
 c. They suspected and we believed # that (\*#) Peter will visit the hospital.  
 [their (4c)]  
 d. Mary believed that Peter finished school and Bill # that (\*#) Peter got a  
 job. [their (4d)]

Moreover, having a break before *that* is highly preferred to pronouncing these sentences as a single Utterance, in the sense of Selkirk (1984), or some intermediate phrase, if such exists.<sup>42</sup> Essentially, the entire complement CP is an intonational unit, of which the complementizer *that* must then also be a part. This seems a natural consequence of most models for mapping syntactic phrase structure into prosodic structure;<sup>43</sup> here, I will assume a phase-based approach to Spell-Out, so that a new CP means a new Intonational Phrase; cf. also An (2004) for some recent and related ideas that exploit the correspondence between CP and the Intonational Phrase.<sup>44</sup> Now contrast this with the examples in (28), where *that* is optional: it

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Bošković and Lasnik (2003: 536) make the arcane proposal that there are two null Cs, one which is a PF affix and lacks EPP features and one which is not an affix but has EPP features. According to them, in subject extraction cases it is the latter one that occurs, giving rise to the contrast in (iii) versus (iv):

- (iii) ?Who<sub>i</sub> do you believe sincerely  $t_i$  likes Natasha? [their (15)]  
 (iv) \*What<sub>i</sub> do you believe sincerely Natasha likes  $t_i$ ? [their (16)]

<sup>42</sup> Omission of “#” should correlate with omissibility of *that*; my feeling is that, of these sentences, (26) marginally has both properties.

<sup>43</sup> As aptly put by Chung (2003: 547-548), summarizing the relevant literature: “the effects of syntax on phonology are mediated by prosodic structure, a hierarchical representation of prosodic constituents *that is calculated from syntactic structure but not isomorphic to it*” (my emphasis).

<sup>44</sup> This correspondence can also be exploited to gain some interesting insights into the syntax of what is traditionally described as “Right Node Raising” (RNR), as in (i):

- (i) John believes and Mary claims [ that Peter will get a job].

## What is *that*?

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Abels (2003) argues that the two competing accounts in the literature of RNR are both in principle viable. That is, the CP at the right edge can either move there through some kind of Across-the-Board (ATB) movement or the sentence could result through backwards PF ellipsis (PFE) of the missing material. Although according to him, PF ellipsis is the normal way to derive RNR and the ATB analysis is only invoked when “driven by interpretive needs”, the intonational facts suggest otherwise. Putting aside the details of his discussion, it seems to me that intonation can be used not only to discriminate between the two analyses but also to show when each has applied. In particular, the PFE derivation requires that there be an intonational break preceding the preserved phrase at the right edge (“#” in the ellipsis site is also highly desirable but I think not absolutely necessary). Thus, the final clause in (i) can but need not be set off as a distinct Intonational Phrase. This depends on whether it is a CP or a TP:

- (ii) John believes and Mary claims [<sub>CP</sub> that Peter will get a job].
- (iii) John believes # and Mary claims # (that) [<sub>TP</sub> Peter will get a job].

My claim is thus that the special intonation is optional because the ellipsis and ATB analyses are, contra Abels, actually *both* available, so that (ii) and (iii) really have the following rough structures, employing ATB and PFE, respectively:

- (ii)' John believes *t*<sub>CP</sub> and Mary claims *t*<sub>CP</sub> [<sub>CP</sub> that Peter will get a job].
- (iii)' John believes [<sub>TP</sub> ~~that Peter will get a job~~] # and Mary claims # (that) [<sub>TP</sub> Peter will get a job].

If this is correct, then whenever movement is for some reason impossible, so that the only possible derivation is the ellipsis one, we would expect an intonational break to necessarily appear. Abels (2003: 116-139) argues persuasively that anti-locality prevents a TP complement to C° from moving, so that (iv) with ATB is not a possible derivation:

- (iv) \*John believes [<sub>CP</sub> that *t*<sub>TP</sub> ] and Mary claims [<sub>CP</sub> that *t*<sub>TP</sub> ] [<sub>TP</sub> Peter will get a job].

Thus, only the PFE derivation is possible with a stranded *that* in the first clause, forcing as predicted required intonational breaks:

- (v) John believes [<sub>CP</sub> that [<sub>TP</sub> ~~Peter will get a job~~]] # and Mary claims [<sub>CP</sub> that # [<sub>TP</sub> Peter will get a job]].

The judgments here are striking, given the general awkwardness of an intonational break after *that*. With bridge verbs, it is possible although dispreferred, as in (28a), but with non-bridge verbs, as in (26c), it is completely infelicitous. Nonetheless, with RNR for non-bridge verbs it is required:

- (vi) John whispered [<sub>CP</sub> that [<sub>TP</sub> ~~Peter will get a job~~]] # and Mary shouted [<sub>CP</sub> that # [<sub>TP</sub> Peter will get a job]].
- (vii) John believed [<sub>CP</sub> that [<sub>TP</sub> ~~Peter will get a job~~]] # but Mary only conjectured [<sub>CP</sub> that # [<sub>TP</sub> Peter will get a job]].

Note that coordination of bridge and non-bridge, as in (vii), provides an additional argument that the CP option must be available for bridge verbs as well.

Abels (2003: 125-126) draws attention to two conflicting arguments: one the one hand, advocates of the PFE analysis point out the RNR is island insensitive, as in (viii), but on the other the ATB movement is sometimes required for proper interpretation, as in (ix):

- (viii) John sold before Mary had seen [many diamonds from South Africa]. [his (127a)]
- (ix) John sang and Mary beat the drums [at equal volumes]. [his (128a)]

Note in this regard that *before Mary had seen* is necessarily flanked by “#” in (viii) whereas *and Mary beat the drums* in (ix) is not. Abels observes that, as predicted, forcing both PFE and ATB results in ungrammaticality:

seems to me, first, that both before and after *that* are natural places for an intonational break (although before much preferred) and, second, that pronunciation of the entire sentence as a single Intonational Phrase is perfectly normal:

- (28) a. Billy said (#) that (#) he saw a ghost. [= (9a)]  
 b. It seemed (#) that (#) David had left. [based on (27a)]  
 c. The students believe (#) that (#) they will pass the exam. [based on (27b)]

Crucially, the way these Utterances are parsed intonationally does not depend on the presence or absence of *that*. This observation supports my idea that the complement clauses are bare TPs in the syntax, with *that* inserted postsyntactically. I take these bare TPs to be phases, in the sense that they represent the extended functional projection of their clause and so are shunted off to PF and LF as such. While in Chomsky's system CP but not TP is treated as a phase, it seems necessary to me to regard TPs that do not project any higher functional material also as phases,<sup>45</sup> somewhat analogous to the way a root clause counts as the default binding domain in languages like Chinese or Japanese. Hence, these complement clauses constitute distinct Intonational Phrases at some point in the derivation before *that* has been introduced. Assuming Multiple Spell-Out, the matrix part of the sentence is constructed subsequently, and then the problem becomes putting them together. Insertion of *that* is presumably a way to highlight the embedded clause as a separate unit, to demarcate the break between the main clause and its complement. Prosodic restructuring subsequently

- (x) John sang after Mary beat the drums [at equal volumes]. [his (131)]

Given all this, we should also expect *that* to be impossible when ATB forced by semantic considerations. In my judgment this is correct:

- (xi) a. \*John believed [<sub>CP</sub> that [<sub>TP</sub> e]] and Mary claimed [<sub>CP</sub> that [<sub>TP</sub> e]] [<sub>TP</sub> each other's pictures would be on sale].  
 b. \*John believed [<sub>CP</sub> that [<sub>TP</sub> ~~each other's pictures would be on sale~~]] and Mary claimed [<sub>CP</sub> that [<sub>TP</sub> each other's pictures would be on sale]].

The ATB derivation in (xia) is ill-formed because of anti-locality and the PFE derivation in (xib) is bad because the elided material is uninterpretable. However, if for the first conjunct we use TP instead, the ATB analysis should be viable, but not the PFE one:

- (xi)' a. John believed [<sub>TP</sub> e] and Mary claimed [<sub>TP</sub> e] (that) [<sub>TP</sub> each other's pictures would be on sale].  
 b. \*John believed [<sub>TP</sub> ~~each other's pictures would be on sale~~] and Mary claimed (that) [<sub>TP</sub> each other's pictures would be on sale].

The unavailability of the PFE derivation implies that *and Mary claimed* should not constitute an independent Intonational Phrase:

- (xii) John believed (?\*#) and Mary claimed (?\*#) (that) each other's pictures would be on sale.

Note, finally, that whether or not *that* introduces the final clause is irrelevant to the judgments, as expected under a PF *that*-insertion model.

<sup>45</sup> If a phase represents the structure built by exhausting a complete subset Numeration, as mentioned in fn. 12, it seems reasonable if not inevitable that a maximal TP and a CP should be equivalent for interface mapping purposes.

## What is *that*?

occurs: *that* is preferably parsed as the left-edge of the following Intonational Phrase but can also be parsed as the right-edge of the preceding one, and it can serve to “glue” the two Intonational Phrases together. While this sort of approach, which exploits Selkirk’s (1986) conception of prosodic structure as no longer gaining access to syntactic structure, has considerable conceptual appeal, it leaves many details vague. Also unexplained is the fact noted above that *that*-insertion is sensitive to the morphosyntactic features of the adjacent TP, which seems more likely to be understood in terms of a C° node.

Under either scenario, one would need to pose the same crucial question as asked by Bošković and Lasnik (2003: 541): “under what circumstances are finite IPs lacking the CP system permitted?” Contrary to the stance taken in this paper, they argue that all clauses with *that* are CPs and that most clauses without *that* are too, just with a null C°. For them, the null complementizer is a PF affix, and it is the principles of PF affixation (more precisely, morphological merger in the sense of Halle and Marantz 1993), which determine the distribution of *that*-less clauses. Curiously, on the basis of the Minimal Structure Principle system discussed in Section 1.1 above, Bošković (1996, 1997: 29-37) argues convincingly that finite declarative complement clauses without *that* are indeed bare IPs (equivalent to TP in the analysis proposed here), not CPs headed by a null C° (as in the 2003 article).<sup>46</sup> The difference in approaches boils down to minimalism’s rejection of government and the ECP, since this was essentially what licensed empty I° in Bošković’s earlier account. Since Bošković and Lasnik (2003) do not want to invoke government, they develop the alternative, actually more traditional, “null C°” analysis, but seek to characterize it in terms that only require reference to PF-side Distributed Morphology properties. I am not compelled by their argumentation, since I believe Bošković’s original MSP analysis was both more conceptually insightful and more empirically viable than the null C° one, which strikes me as baroque in its detail.<sup>47</sup> Moreover, I do not see why PF-side factors could not in principle also

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<sup>46</sup> Even there, Bošković and Lasnik (2003: 540-542) nonetheless concede that *that*-less clauses in double object constructions, such as (i), must still be bare IPs:

- (i) Kevin persuaded Roger his hamburgers were worth trying. [their 23a)]

The facts here are consistent with the analysis in this paper, since, as Bošković and Lasnik note, extraction is fine:

- (ii) What did Kevin persuade Roger he should try? [their 27a)]

<sup>47</sup> There are, nonetheless, apparent CPs which lack *that*. English relative clauses, such as (15d), repeated as (i), constitute an obvious example.

- (i) the house Jane built

**Z.** Bošković (p.c.) claims that in the Bošković and Lasnik (2003) system this is expected, since the lack of an Intonational Phrase boundary means that null C° is able to merge in PF with the higher verb. I do not see this, since accessibility of the verb is actually irrelevant to omissibility of *that*:

- (ii) The house Jane built, #although made of brick,# was unstable.

It is however similarly unclear how the analysis developed in this paper relates to relative clauses, since TP fission in the morphological component would fail to explain why these are strong islands for extraction. On the other hand, resurrecting optional deletion of *that* in relative clauses would contradict the spirit of the

characterize null  $T^\circ$ /bare TP, in keeping with the approach to *that* outlined here. In brief, updating Bošković's original analysis, overt *to* of infinitival TP complements does not need to be "licensed", but empty  $T^\circ$  of finite TP complements does. Overt *that* serves this purpose but does not itself need to be licensed. The open issue is then how to license empty  $T^\circ$  when there is no *that*. Do we want the matrix verb to do it, as in Bošković (1996, 1997) or do we want a null complementizer to, as in Bošković and Lasnik (2003)? Either way, be they CPs or TPs, we are left with the question of characterizing the distribution of *that*-less clauses, and it seems to me that the range of solutions and problems engendered by these solutions is going to turn out to be comparable under either approach,<sup>48</sup> but that the bare TP approach, since it does not project unnecessary structure, is much more in keeping with the spirit of minimalism. Unfortunately, it is beyond the scope of this paper to address the issue of the distribution of null  $T^\circ$ /bare TP in English properly or to explore a fuller comparison of the two accounts, and so I leave these ventures for future research.

### 3.3 Some implications: topicalization and scope

I have argued that the English *wh*-extraction facts, coupled with the optionality of *that*, warrant an analysis of bridge-verb complements as bare TPs, with *that* optionally inserted in the morphological component.<sup>49</sup> The question arises of whether this is the necessary analysis for all bridge verb complements, or whether the MSP forces all finite declarative clauses to be TPs. In this section I will argue that bridge verbs admit both CP and TP options. Conceptually, there are a number of reasons why this seems to me unavoidable. First of all, note that the element *that* must also be regarded as a complementizer in its own right, since it heads a CP in non-bridge (i.e., obligatory *that*) contexts. Hence, it exists in the Lexicon as a  $C^\circ$  head and *could* be selected, either for the initial Numeration or by subsequent access of the Lexicon, depending on one's view of how access of functional categories works and the extent to which Subcategorization is reducible to "Canonical Structural Realization".<sup>50</sup>

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insertion analysis for bridge verb clauses. One possible approach might be to follow Bošković (1997: 25-29) in taking such relative clauses to be bare TPs, with a null operator adjoined to TP; cf. fn. 26. A similarly problematic case is given in (iii):

(iii) It was so rainy (that) I had to bring my umbrella.

Here again *that* is optional, suggesting a bare TP, but extraction is strongly ungrammatical:

(iv) \*What<sub>i</sub> was it so rainy (that) you had to bring  $t_i$ ?

If assimilated to the relative clause case, (iii) must also have a null operator adjoined to the purpose clause. In (iv), the intervening operator would block A'-chain formation between *what* and its trace.

<sup>48</sup> Possibly, the relationship between matrix V and null C in the Bošković and Lasnik system could be recast in terms of null T in my CP-less system, entailing the same kinds of issues as discussed in their paper.

<sup>49</sup> An anonymous *IUWPL* reviewer draws attention to the "fundamental question" of whether "the presence of an operator in SpecCP provide[s] us with a possible explanation of the fact that complements to non-bridge verbs are islands." Indeed, the extraction facts as well as the various scope and other facts discussed in this section could derive from the blocking effect of the operator in SpecCP, leaving the traditional "escape hatch" account available whenever SpecCP is empty. The question still remains of why *that* is obligatory when SpecCP contains an empty operator, since it is impossible if anything overt is in SpecCP and optional in precisely those contexts where I argue that there is no justification to project a CP at all.

<sup>50</sup> This entails a somewhat different implementation of the MSP than in (5).

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Second, allowing for bare TP complements lets in what we need, but requiring them where possible, rather than letting the choice be determined by independent factors, involves an unnecessary stipulation. I will argue that, if one regards structures as being built from the bottom up in the minimalist fashion, through successive applications of merge, constrained by feature checking and s-selection, rather than from the top down, with feature assignment and Subcategorization, a natural account of the possibilities emerges.

Consider, for example, claims made by Doherty (1997). He argues that complement clauses without *that* are TPs (as claimed here), but that clauses with *that* are CPs (whereas for me only those with obligatory *that* necessarily are). However, embedded topicalization, albeit slightly marginal for many speakers, becomes completely unacceptable in the absence of a complementizer, as shown in (29).

- (29) a. ?I hope that this book you will read.  
b. \*I hope this book you will read.

The generalization seems to be that embedded topicalization forces the presence of a CP. The same is true with base-generated adjuncts to TP:

- (30) Julia thinks \*(that) in all likelihood David will invite Elisabeth.

The reason is presumably because adjunction to an argument is impossible, hence the TP must be embedded in a CP, which is why *that* in (29) and (30) is obligatory. This prohibition against adjunction to an argument is given in Chomsky (1986: 6) and is similarly invoked by Bošković (1996).<sup>51</sup> For present purposes, I take the problem with adjunction to an argument to be that it disrupts theta-role assignment. This effect can be seen in the following structures for (29) and (30), respectively:

- (31) a. I hope [<sub>CP</sub> that [<sub>TP</sub> this book [<sub>TP</sub> you will read *t* ]]].  
b. \*I hope [<sub>TP</sub> this book [<sub>TP</sub> you will read *t* ]].
- (32) a. Julia thinks [<sub>CP</sub> that [<sub>TP</sub> in all likelihood [<sub>TP</sub> David will invite Elisabeth]]].  
b. \*Julia thinks [<sub>TP</sub> in all likelihood [<sub>TP</sub> David will invite Elisabeth]].

Crucially, the (a) examples cannot be generated as bare TP complements with *that* inserted on the PF side of the grammar, since the adjoined topic would block theta-role assignment to the complement clause. Thus, syntactic merger of C° *that* is required at the point where the structures in (33) have been built up, since merger of the matrix verb *hope* or *thinks* would crash in that the verb's theta role could not be discharged.

- (33) a. [<sub>TP</sub> This book [<sub>TP</sub> you will read *t* ]].  
b. [<sub>TP</sub> In all likelihood [<sub>TP</sub> David will invite Elisabeth]].

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<sup>51</sup>Doherty (1997: 201) makes use a similar restriction (although formulated in terms of semantic selection). Bošković (1996) shows that in ASL the sign for FEEL takes a CP, so that embedded topicalization is allowed but it is an island for *wh*-extraction, whereas THINK takes an IP, so that embedded topicalization is impossible but *wh*-extraction is permitted.

An important aspect of this account for the system advocated here is that it is incompatible with the very existence of a *that*-less CP, because if this were available one might expect a structure such as in (34) to be viable:

- (34) a. \*I hope [<sub>CP</sub> [<sub>TP</sub> this book [<sub>TP</sub> you will read *t* ]]].  
b. \*Julia thinks [<sub>CP</sub> [<sub>TP</sub> in all likelihood [<sub>TP</sub> David will invite Elisabeth]]].

In order to rule these examples out, we cannot allow the option of a *that*-less CP, since the CP would then protect the TP from being an argument. Thus, a syntactic C<sup>o</sup>, realized as *that*, is merged when this is the only alternative step at the relevant point in the derivation. When merged, it cannot be left silent, but rather *must* be morphologically instantiated.

Note further that embedded topicalization blocks *wh*-movement, whether or not *that* is present, as in (35):

- (35) a. Who do you hope John will give this book to?  
b. Who do you hope that John will give this book to?  
c. \*Who do you hope this book John will give to?  
d. \*Who do you hope that this book John will give to?

The same judgments hold for attempted LF extraction of a *wh*-in-situ; cf. fn. 16. In my system, but not Doherty's, (35b) and (35d) have different syntactic structures: the former is a TP complement, with *that* introduced postsyntactically, whereas the latter must be a CP, since topicalization forces the CP option. This explains the sharp contrast in extractability of the *wh*-phrase.

With preposed negatives, as in (36), *that* is also obligatory, implying a CP:

- (36) Karen said \*(that) never before had she been so exhausted.

The precise analysis depends on where the negative adjunct *never before* is situated. Presumably it fills the specifier position of some phrase FP above TP, assuming the subject *she* to be in SpecTP and the auxiliary *had* to raise to occupy the head position F<sup>o</sup> of that phrase. For some reason, FP (unlike TP) is not a valid complement clause (although it is a perfectly fine independent clause), hence projection of a full CP is necessitated.<sup>52</sup> Although the mechanics that force (36) remain obscure, I repeat my introductory caveat: the paper makes a radical but explicit proposal, which then forces specific analyses that might otherwise seem unlikely. Only by pushing these analyses can we gain a deeper understanding of the data.

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<sup>52</sup> And, as in examples (26) and (27) above, the intonational break precedes but cannot follow the complementizer *that*.

## What is *that*?

Another place where *that* seems to be obligatory and where “#” is concomitantly required is when the complement clause is separated from the verb by material in the matrix clause, as in (37):<sup>53</sup>

- (37) a. I thought just now # \*(that) I saw Karen.  
b. ?\*Who did you think just now that you saw?  
c. Who did you think (that) you saw?

By hypothesis, *that* is required here because the complement clause must be a CP, not a TP, so that *that* is a true complementizer in (37a). What forces this? As stated earlier, in the GB system of Bošković (1997) empty I° must be governed, but the presence of *just now* in (37) seems to disrupt government from the verb.<sup>54</sup> Hence, a C° must be present to achieve this and, as just demonstrated, when SpecCP is empty, C° must be overt. Obligatory *that*, as in (37a), implies a CP, whereas optional *that*, as in (37c), implies a TP, with *that*-insertion on the PF-side of grammar. Finally, (37b) is degraded because the complement clause is forced to be a CP, which under my account does not tolerate extraction.

I turn now to some scopal matters that may be related to these distinctions. Lasnik and Saito (1991), citing Postal (1974), point out that whereas in (38a) it is possible for *few students* to have wide (matrix) scope, with the reading in (39a), or narrow (embedded) scope, with the reading in (39b), (38b) only has the wide scope reading in (39a).

- (38) a. The DA proved (that) few students were spies.  
b. The DA proved few students to be spies.
- (39) a. There were few students who the DA proved to be spies.  
b. The DA proved it to be correct that few students were spies.

The reason for this, according to Lasnik and Saito, is that *few students* undergoes overt A-movement to matrix SpecAgrOP for case checking purposes in (38b), so that it is necessarily interpreted in the main clause. In (38a), on the other hand, in the overt syntax *few students* remains in the lower TP. Relevant structures are given in (40); I switch here to the AgrP-TP system to reflect their assumptions about accusative case licensing:

- (40) a. The DA proved [<sub>AgrSP</sub> few students were spies].  
b. The DA [<sub>VP</sub> proved<sub>i</sub> [<sub>AgrOP</sub> few students<sub>j</sub> [<sub>VP</sub> e<sub>i</sub> [<sub>TP</sub> e<sub>j</sub> to be spies]]]].

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<sup>53</sup> As noted by Doherty (1997: 210), there are some exceptions, where main clause elements can intervene even in the absence of *that*. Judgments seem to vary.

- (i) a. I think in general ?(that) people tend to like him.  
b. They said last year ??(that) the economy would be better by now.  
c. It seems to me ?(that) she's on the right track.

See also Bošković and Lasnik (2003).

<sup>54</sup> In the “null C” system of Bošković and Lasnik (2003), the intervening adjunct disrupts the ability of null C to affix to V in PF.

At this point, to obtain the possibility of wide scope, we could either contend that the domain of scope is CP, not TP/AgrSP, and since by hypothesis there is no CP in (38a), either scope is possible, or we could contend that Quantifier Raising can apply in LF to place *few students* in the main clause.<sup>55</sup>

It does not however seem to me that the accessibility of the wide scope reading is completely oblivious to the presence of *that*. The preferred readings of (38a) with or without *that* are not completely identical. I feel that the narrow scope reading is somewhat stronger and that the wide scope reading slightly less accessible when *that* is present. If correct, one might imagine that *that*, in (38a) and elsewhere, could either be the true C° type (forcing narrow scope) or the TP with PF *that*-insertion type (leading to either narrow or wide scope), whereas without *that*, only the latter structure is available.

Consider now examples exclusively with *that*, contrasting bridge and non-bridge verbs, as in (41).

- (41) a. The DA said (that) few students were spies.  
b. The DA murmured \*(that) few students were spies.

Here we perceive a strong contrast: *few students* is frozen in its narrow scope interpretation with *murmured* but not with *said*. This follows from my claim that (41b) necessarily involves a CP complement, whereas (41a) can be a TP.

If this story is on the right track, we would expect that in languages where *that* is obligatorily a C° head there should be no extraction from embedded clauses and the wide scope reading should be impossible. While I have not conducted a comprehensive survey, this seems to be correct for Slavic. Consider Polish (42), where only narrow scope for *kilku studentów* ‘a few students’ is possible:

- (42) On udowodnił że kilku studentów jest szpiegami.  
‘He proved that few students were spies.’

The difference in scope possibilities between Polish (42) and its English translation is striking. The only relevant factor, it seems to me, is the obligatory nature of Polish *że* versus English *that* in these sentences. And as expected, extraction is impossible in the Polish, corroborating the conclusion that the *że* phrase is necessarily a CP:

- (43) \*Co on udowodnił że ci studenci ukradli t?  
‘What did he prove that those students stole?’

Interestingly, it is however possible to introduce the wide scope reading by scrambling the quantifier to the matrix clause. Consider Russian (44a), where the scope of *malo studentov* ‘few students’ remains, as in Polish, within the embedded clause: “The professor proved the fact that few students were cheating”. If, on the other hand, *malo*

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<sup>55</sup> For an analysis of Quantifier Raising in terms of Object Shift (to SpecAgrOP), see Hornstein (1999).

What is *that*?

*studentov* scrambles to outside its CP, as in (44b), then it can have wide scope: “For few students was the professor able to prove that they were cheating.”

- (44) a. Professor dokazal čto malo studentov spisyvali.  
‘The professor proved (the fact) that few students were cheating.’  
b. Professor malo studentov dokazal čto spisyvali.  
‘(Only for) few students was the professor able to prove that they were cheating.’

By way of summation, if we combine these observations about topicalization and scope, we would expect the former to freeze the latter as narrow only. That this prediction is borne out is demonstrated by (45):

- (45) The DA proved [<sub>CP</sub> that [<sub>TP</sub> the exam [<sub>TP</sub> few students had cheated on *t* ]]]

Topicalizing *the exam* forces the clause to be embedded in a CP, hence *that* is obligatory and *few students* cannot scope out of its clause.

Finally, consider some facts about reciprocal *each*. Lebeaux (1983) observes that there are both wide and narrow possibilities for *each* in examples such as (46):

- (46) David and Elisabeth said that they liked each other.  
  
(47) a. Each of David and Elisabeth said that they liked the other one.  
b. David and Elisabeth each said that they like each other.

Curiously, with a non-bridge verb the former reading disappears:

- (48) David and Elisabeth whispered that they liked each other.

The sentence in (48) can only mean that what was whispered was something like “We like each other”; it is not consistent with the wide-scope reading. This is because, according to my account of complementation, whereas (46) may involve a bare TP, (48) requires a CP. Similarly, when there is *wh* material, as in (49), the distributor *each* can only have the lower, narrow scope reading:

- (49) David and Elisabeth asked whether/why they liked each other.

To my ear, this also holds if CP is otherwise forced, as in (50):

- (50) a. David and Elisabeth said to Karen that they liked each other.  
b. David and Elisabeth said just now that they liked each other.

The paradigm in (51) versus (52) is similar:

- (51) a. John and Mary don’t know (that) [<sub>TP</sub> they can find each other].  
b. ?Who don’t John and Mary know (that) [<sub>TP</sub> they can find]?

- (52) a. John and Mary don't know [<sub>CP</sub> where/if [<sub>TP</sub> they can find each other]].  
 b. \*Who don't John and Mary know [<sub>CP</sub> where/if [<sub>TP</sub> they can find]]?

### 3.4. Extending the account to other languages?

This unorthodox analysis of English *that* raises a variety of typological questions, some of which I address in this section. Essentially, while it seems to work for English, the issue of how the analysis might be extended to other languages remains quite problematic, hence my reservations at the outset. I have suggested that it may work for Slavic, where complement clauses are always CPs and extraction is generally ungrammatical, as in Polish (34). There are however specific contexts where extraction is acceptable, such as after *żeby* 'in order', as in Polish (53):

- (53) Co Janek chce, *żeby* Maria kupiła?  
 'What does Janek want Maria to buy?'

To handle this, I would need to treat *żeby*-clauses as smaller than full CPs; perhaps in such constructions there is a MoodP dominating AgrSP.

Nonetheless, a major question which must be left for future research concerns cross-linguistic variation. While the system which assumes bare TP complements and treats *that* as sometimes resulting from fission in the morphological component can be made to work for English, it remains to be seen whether similar mechanisms are appropriate for a broader range of languages. In general, this is problematic since in many languages embedded complementizers are obligatory, hence the option of a bare TP complement does not seem to exist. I suggested earlier that this correlates with the typologically exotic nature of English ECM, another bare TP construction. While it is unclear why English is special in allowing relatively large but "smaller than CP" complement clauses, coming to grips with this issue of variation is a general concern. Unfortunately, even if the factors that legitimize (nonfinite and finite) bare TP complements were understood, this would not really accommodate the contrast between bridge and non-bridge verbs.

Bošković (1997) argues it is likely that all complement clauses in French are full CPs.<sup>56</sup> Yet French exhibits an extraction contrast between bridge and non-bridge verbs similar to that described for English, as shown in (54):

- (54) a. Qui<sub>i</sub> dis-tu [que [<sub>TP</sub> Pierre a vu t<sub>i</sub> ]]  
 'Who are you saying that Pierre saw?'  
 b. \*Qui<sub>i</sub> cries-tu [<sub>CP</sub> que [<sub>TP</sub> Pierre a vu t<sub>i</sub> ]]

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<sup>56</sup> German presents a different range of problems. Overall, as in English, the class of verbs for which the possibility of *wh*-movement out of complement clauses exists corresponds to the class of verbs which can take complement clauses without a complementizer, although there are some discrepancies. More significantly, *wh*-movement out of V2 complement clauses is sometimes possible; cf. Vikner (1995). This is problematic if V2 necessarily indicates the presence of CP, assuming V2 to be I-to-C movement; see however Zwart (1997) for arguments that some V2 clauses are TPs. Needless to say, extending the analysis proposed here to a broader range of languages is beyond the scope of this paper.

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‘Who are you shouting that Pierre saw?’

If so, we ought to conclude that *dis* ‘say’ in (54a) has a bare TP complement, but that TP fission in French is obligatory, since *que* is. Adapting proposals in Pesetsky (1998), we might force this by requiring that, for French, the first pronounced word in an embedded clause must be a function word related to the main verb of that embedded clause.<sup>57</sup> Since even a consideration of closely related Indo-European languages raises serious questions, it is obvious that much comparative work will need to be done in order to see whether the account put forward in this paper for English is going to be more generally viable.

### 4. Conclusion

In this paper, I have explored the possibility of access to the Select operation by inserting the semantically contentless complementizer *that* in the PF component. Specifically, I have suggested the following:

- in English, bridge verbs may c-select (bare) TP or (*that*) CP complements.<sup>58</sup>
- certain verbs necessarily select CP complements.
- *wh*-movement is felicitous over TP but degraded over CP.
- C° can be created postsyntactically, through morphological fission from TP
- *that* is inserted in the PF component

The most important outcome of this discussion is the idea that minimalist theory should countenance PF-insertion of semantically vacuous elements, alongside LF insertion of phonetically silent elements. Interestingly, whereas the latter conforms to the Extension Condition, the former does not—it can apply in embedded contexts. The explanation for this is that all wordform insertion takes place on the PF side of the grammar, and the rule that introduces *that* at the beginning of a syntactic TP is really one of morphological fission, creating a new node with morphosyntactic features appropriate to the complementizer. Since no strong features are introduced, the position of *that* can be created acyclically. The postsyntactic account of *that* insertion thus explains the correlation in English between the possibility of *wh*-movement out of a complement clause and the optionality of *that* introducing it. However, whether this insight can survive the scrutiny of cross-linguistic investigation remains to be seen.

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<sup>57</sup> Obviously, this raises the issue of what motivates TP fission in general. As noted, one possibility is that its purpose is to provide an element to demarcate the beginning of an embedded finite clause, in this way facilitating the mapping between syntactic and morphological structure. Alternatively, I have suggested that the role of *that* could be to facilitate the mapping between syntactic and prosodic structure. Either way, I take such interfaces between components to be policed by Optimality Theoretic desiderata, as implied by Pesetsky (1998) and as further developed in Franks (2000a).

<sup>58</sup> As argued, their s-selectional properties canonically realize the complement clause as a TP, but this does not preclude the possibility of the clause being instantiated as a CP, when forced to by independent considerations.

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