

Exfoliation: towards a derivational theory of clause size

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Abstract

Across the languages of the world, we repeatedly find that the extraction of the subject of an embedded clause correlates with a reduction in the size of that clause. This generalization suggests a novel unification of two questions that are not generally considered to represent parts of the same puzzle:

1. Why do non-finite clauses exist in the first place, and why do the properties of subject position in nonfinite clauses differ so often from their counterparts in finite clauses?
2. What accounts for the obligatory absence in so many languages of the normal declarative complementizer when the subject is \bar{A} -extracted — so-called "complementizer-trace effects"?

Common accounts of the special properties of the subject position of non-finite clauses take for granted the fact that such clauses exist in the first place, viewing this as a consequence of free lexical choice — and attribute the special properties of their subjects to deficiencies related to case, agreement or tense. Such accounts put nonfiniteness in the explanatory driver's seat and view the special properties of the subjects of nonfinite clauses as derivative.

I argue for the opposite logic: that nonfinite clauses start out full and finite, and are rendered non-finite as a by-product of subject extraction — which triggers a rule of *Exfoliation* that peels away outer layers of the clause so the subject ends up occupying its edge. This proposal is essentially a 21st-century revival of an idea from the earliest days of generative grammar: that infinitival clauses are derivationally created from clauses that start their lives full and finite, as a consequence (not a cause) of processes such as raising and control.

On this view, complementizer-trace effects are just the consequence of a shallower application of Exfoliation that leaves tense and agreement untouched, but peels away the CP layer, and perhaps some others — once again, in order to place the subject at the edge of the clause, so that it can be extracted. Though infinitivization is usually studied in the context of A-movement and complementizer-trace effects in the context of \bar{A} -movement, instances of \bar{A} -movement-triggered infinitivization and A-movement-triggered complementizer-trace effects are also found.

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Reader's note concerning this draft

This draft is incomplete and insufficient in a few ways that I hope to remedy, at least partially, in later versions. These include:

(Most of the bullet points included in earlier versions have been deleted, since I have filled in those gaps.)

- The present manuscript ignores **restructuring**. A simple addendum might permit smaller-than-CP clauses so long as they are phasal (permitting vP complementation, for example), but **Wurmbrand's recent work** on restructuring cross-linguistically makes it clear that this is insufficient. This needs revision.
- The document is largely silent about the interaction of Exfoliation with semantic interpretation. In some cases, Exfoliation appears to bleed interpretive possibilities, and in others it does not. Discussion left for a later version.
- A few remarks about ACC-ING gerunds in English will be added (somewhere after the discussion of *for*-infinitives).

The section on control is unlikely to be significantly expanded in later versions of this work, though it is very obviously insufficient. But the short section on variation in the syntax of control clearly needs to be developed further, and will be.

Revisions so far

version 1.1 2019-02-09: does not include any of the necessary additions mentioned above, but adds a few short notes concerning possible mapping of my proposed structure for the clause onto categories proposed by Rizzi and others in the cartographic literature (Rizzi 1997); a few typos fixed.

version 1.3 2019-02-23: added subsection 3.2.5 about what happens to specifiers of CP when CP undergoes Exfoliation — ultimately this might motivate a rewording of the Exfoliation rule itself in a later version, and should also be expanded in the context of the promised fuller discussion of Müller's work.

version 1.4 2019-03-02: typo corrections, small additions to the hyperraising section.

version 1.5 2019-03-16: discussion of Müller's "structure removal" proposals added in several places, including speculative discussion of passive as vP exfoliation in final section — adapting Müller's proposals into the framework developed here.

version 1.6 2019-03-24: footnotes about Heavy NP Shift added, trees fixed.

version 1.7 2019-04-09: footnote 28 about derivational timing and nominative objects added, other small fixes.

1 Introduction

As linguists, we should be puzzled and surprised by the menagerie of clause types and sizes found in so many languages of the world — for example, the variety of italicized English clauses in (1):

- (1) a. Mary thinks *that Sue speaks French well*.
- b. Mary would prefer *for Sue to speak French well*.
- c. Mary considers *Sue to speak French well*.
- d. Mary remembers *Sue speaking French well*.

There are of course names for the many variants that we find: finite clause, infinitival clause, gerund, etc. But a name is not an explanation, nor does a taxonomy of clause types tell us why there are so many clause types in the first place — or indeed why there is more than just one.

Reconsideration of this question is not only timely but overdue, because of an odd property of the history of generative treatments of clause type that appears to have gone unnoticed. For more than four decades, the standard approach to clause-type distinctions has had a crucial property that I will call *lexicalist*. In a lexicalist account of clause-type distinctions, the repertoire of lexical items and the rules for syntactic structure-building are assumed to be rich enough to permit the direct generation of the various clause types found in a given language. In such an approach, the choice to build a finite or infinitival clause, for example, is not different in kind from the choice between two different nouns or prepositions. Once the lexical items to be used in a given derivation have been chosen and a particular clause type has been built, this choice then interacts with other factors relevant to further syntactic structure building, permitting certain structures and excluding others.

A lexicalist approach to clause-type differentiation commits us to a particular logic for explaining phenomena that correlate with clause type. The theory of nominal licensing developed in the context of Government-Binding Theory and its descendants offers a good illustration, in the domain of the finite/non-finite distinction. The overall theory presumes that the lexicon makes available a repertoire of items that can be used to build either a finite or a non-finite clause. The choice between these is free, but has immediate implications for the status of that clause's subcomponents — especially its subject. If a finite clause has been built, the subject is case-licensed by the T or Infl of the clause, and (unless it needs to undergo \bar{A} -movement or cliticization) requires nothing further. If an infinitival clause has been built, however, its subject is not licensed within the infinitive, and must rely on some other element for case-licensing — which may mandate further operations such as raising of the embedded subject into a higher clause. These raising operations, in turn, are restricted (by a general “last resort” property of movement) to situations in which the absence of a local licenser for the subject renders the raising mandatory. Consequently, when the subject faces no licensing problem, as is the case in a finite clause, raising is blocked. Lexical choice occupies the “driver's seat” in proposals such as these. One particular choice of lexical items has yielded a finite or a non-finite clause, the rest of the syntax is obliged to deal with the consequences of its decision as best it can.

But it is not inevitable that all clause-type distinctions should be a matter of random lexical choice, nor is it inevitable that lexical choice should occupy the driver's seat in explaining correlations between phenomena such as raising and finiteness. And indeed, the lexicalist approach to clause-type differentiation is not the only approach that has been explored in generative grammar, nor was it the first. In the first decade and a half of generative syntax, most work that made reference to clause type adopted a very different approach, which I will call *derivationalist*, pioneered by Lees (1963) and Rosenbaum (1965, 1967), among others. In these derivationalist approaches, the differentiation of clauses into subtypes such

as finite and non-finite was not explained as a consequence of lexical choice, but rather as a by-product of other syntactic operations. In early derivationalist work, the correlation between raising of an embedded subject and clausal non-finiteness, for example, did not result from an already-built infinitival clause forcing the movement to take place. Instead the non-finiteness of the source clause in raising constructions was treated as a *consequence* of the raising operation — the infinitivization of an initially full finite clause as an obligatory by-product of the movement. A similar logic governed early accounts of the correlation of non-finiteness with control in English and many other languages. Like subject raising, the operation that yielded a controlled subject (“Equi-NP Deletion”) in early derivationalist theories had infinitivization as a by-product. Even English *for*-infinitives could be derived from finite counterparts in this research tradition by a transformational rule that inserted *for-to*, with the infinitivization of the clause as a by-product of that process.

At the beginning of the 1970s, however, the field abruptly and overwhelmingly abandoned derivationalist approaches in favor of a lexicalist alternative. This happened for very good reasons: a set of forceful arguments advanced for the lexicalist approach by Kiparsky and Kiparsky (1971) and by Bresnan (1972) (henceforth **K&K/B**). These arguments rested on two key observations. The first concerned selection:

(2) *Clause-type differentiation and selection*: Different predicates select for different clause types.

This observation had a compelling implication in the context of the model of syntax that K&K/B presupposed, the so-called Standard Theory of Chomsky (1965). In this model, both the choice of lexical items and basic structure building (the work done by External Merge in more modern approaches) took place in a *Base Component* that derivationally preceded the *Transformational Component* within which movement and deletion rules applied. Because movement was assumed to leave nothing behind in the source position (neither traces nor copies formed part of the theory), the selectional requirements of a lexical item had to be enforced at the interface between the Base Component and the Transformational Component, the level of *Deep Structure* — as a matter of logic. For this reason, it followed inevitably from (2) that the clause types in question must already be differentiated in the Base Component, and could not be a by-product of transformations such as Raising.

The second key observation concerned interactions with semantics:

(3) *Clause-type differentiation and semantics*: The choice of clause-type has semantic implications.

In the model assumed by K&K/B, Deep Structure also provided the input to semantic interpretation: the so-called *Katz-Postal Hypothesis* (Katz and Postal 1964). This assumption too was a matter of some logical necessity, since deletion and traceless movement could eliminate material that was obviously relevant to semantics. With the Katz-Postal hypothesis as background, the observation in (3) provided a second strong argument in favor of the differentiation of clause-types in the base component, eliminating any possibility that clause-type differentiation could be a by-product of movement operations (or any other process that took place later than Deep Structure). As Kiparsky & Kiparsky (p.172) put it, “the error [of previous approaches] is that different types of complements (*that*-clauses, gerunds, infinitives) have all been assumed to have the same deep structure, and hence to be semantically equivalent” — their “hence” justified by the architecture of the syntactic model assumed as backdrop.

Since K&K/B’s reasoning was absolutely watertight in the context of a then-standard model of syntax, the widespread immediate acceptance of their results should come as no surprise. Twenty-first century readers of this narrative may already have noticed, however, that the properties of the Standard Theory model most crucial to K&K/B’s arguments were prominently and fatally challenged in the years immediately following their work. The development of “trace theory” in the 1970s removed the argument that

selection and semantic interpretation were properties of Deep Structure (as does the later reconceptualization of trace-leaving movement as Internal Merge). The discovery that Internal and External Merge are interspersed (Lebeaux 1990, 1991; Chomsky 1993, 1995b, chapter 2) eliminated the very possibility of Deep Structure as an interface between two components no longer thought to be distinct. Though the conjunction of the Standard Theory notion of Deep Structure with K&K/B's observations provided an invincible argument against derivationalist theories of clause-type differentiation, the argument disappears entirely if Deep Structure does not exist and movement and deletion can precede rules of semantic interpretation and selection. In the wake of these developments, the observations in (2) and (3) can no longer be taken to support the lexicalist view over its derivational predecessor.

This conclusion does not entail that the lexicalist approach to clause type is wrong, of course, even if it does eliminate arguments specifically in its favor. But at the very least, the abandonment of Standard Theory should have sparked a reopening of the questions that K&K/B's work were thought to have settled.

That is not, however, what happened. Instead, the field as a whole continued to assume K&K/B's conclusions, presupposing without further discussion that lexical choice is the factor responsible for the differentiation of clause-type. In every actively pursued syntactic research tradition familiar to me, an English infinitival clause, for example, is presumed to be an infinitive from the start, the result of a set of lexical choices that includes *to* but not \pm Past or a modal. The entire look of today's syntactic theories reflects this assumption — not only proposals about movement and nominal licensing developed within Government-Binding Theory and its successors, but also their counterparts in other research traditions as well. The fact that the arguments in favor of the lexicalist presuppositions of this work no longer hold appears to have gone entirely unnoticed.

The main goal of the present work is to reopen the discussion that K&K/B once seemed to have settled, and to explore the possibility that standard approaches to certain instances of clause-type differentiation have had their logic backwards for over past four decades. In the spirit of the earliest proposals by Lees and Rosenbaum, we will ask whether crucial distinctions among clause-types might arise as a by-product, rather than a trigger, of the syntactic operations with which they correlate. For example, it might be the raising of a subject from an embedded clause to a higher A-position that causes the infinitivization of an embedded clause — not the building of an infinitive that forces the subject to move. At the very least, it is worth asking what a contemporary theory of clausal syntax might look like if reconstructed around this alternative premise.

In fact, I will argue for a stronger conclusion: that for certain key distinctions — especially the finite/non-finite distinction — the road not taken was the right road, and that the standard lexicalist approach to these distinctions should be rejected in favor of an updated derivational account. I will propose that the finite/non-finite distinction, along with some others, is actually a distinction in clause *size*. An infinitival complement to a verb like *consider* on this view, for example, is just like a full finite CP except for the absence of several outer layers of structure. I will argue further that these layers are not missing as a matter of lexical choice, but as a consequence of a derivational process that I will call *Exfoliation*. Exfoliation, in turn, is the language faculty's response to a locality problem that may arise in the course of the syntactic derivation. Extending the proposal, I will conjecture that the finite-non-finite distinction is just one instance of a broader continuum of clause-size distinctions produced by different degrees of Exfoliation (responding to different locality problems of varying severity) — including the distinction between finite clauses with and without an overt complementizer and perhaps some varieties of anti-agreement (Ouhalla 1993, 2005; Baier 2016). On the other hand, I will argue that some clause-type distinctions do have a lexical component (e.g. the presence or absence of an modal superstructure above CP) — but that even here non-finiteness is derivationally induced.

A variety of arguments will support these proposals. One word of warning will be useful before turning to these arguments, however. Though K&K/B's arguments for the Lexicalist approach (as well as my argument for reopening the debate) rested on observations about selection and semantic interpretation, the present work will not focus on their particular observations about selection (though other aspects of selection will play a prominent role), and will have little to say about the semantic sides of their argument. We will focus instead on other syntactic properties that correlate with clause type, for which it will be argued that the best explanation requires a derivational theory of clause size differences.

The reader should not enter the discussion with the idea that selection for particular sizes of clauses is in any sense a "bad guy" that the new proposals sketched here can dispense with. Exactly the opposite will turn out to be the case. Selectional properties will play a crucial role in distinguishing lexical items within and across languages, and considerable attention will be paid to these differences at several points in the discussion below. Crucially, however, these selectional properties hold post-Exfoliation, as permitted by contemporary models of grammar, and much of their explanatory force will come from this fact in the novel theoretical setting that I develop in the next section and beyond.

2 The correlation between clause size and raising: lexicalist approaches

I will use the term **R1** for the construction traditionally called *Raising to Subject*, and I will use the term **R2** for the construction variously described as *Raising to Object* and *Exceptional Case Marking* (ECM). In this section, I review the important properties of English R1 and R2 and their treatment in standard lexicalist theories of finiteness. I then introduce the derivational alternative that will be explored in this paper. Since the correct analysis of R2 is less obvious than R1, with a significantly more fraught history of debate, I will start with R2.

The central puzzle of English R2 is the observation that the nominal that immediately follows the higher verb behaves in some respects like the subject of the embedded clause, but in other respects like an object of the higher clause:

(4) **R2: postverbal nominal behaves like lower-clause subject**

- a. Mary judged there to be a good reason for the meeting. *expletive there*
- b. The detective proved it to have been raining when the murder was committed. *meteorological it*
- c. Bill believes the shit to have finally hit the fan. *idiomatic reading available*

(5) **R2: postverbal nominal behaves like higher-clause object**

- a. Mary believed ✓ *me*/**I* to have solved the problem. *object vs. subject pronoun form*
- b. Sue_{*i*} proved ✓ *herself*/**her*_{*i*} to be a capable leader. *upper-clause binding domain*

A natural resolution to the puzzle posits movement of the postverbal nominal from subject position in the lower clause to some position in the higher verb phrase, as first proposed by Rosenbaum (1965, 1967). The proposed movement, however, is string-vacuous in simple cases — licensing the suspicion that the embedded subject might not raise in to the higher verb phrase after all, and that the observations in (4) and (5) should be reconciled in some alternative manner (Chomsky 1973, 1981).

Postal (1974) argued at length against such an alternative, and in favor of movement. He noted, for example, that when the higher verb phrase is modified by a low postverbal adverb, this adverb *follows* the crucial postverbal nominal in the R2 construction (pp. 146-7):

(6) **R2: postverbal nominal precedes higher-clause low VP adverbs**

- a. Mary proved Sue conclusively to deserve the prize.
- b. She believes Bill with all her heart to be the best candidate.
- c. Somebody found Germany recently to have been relatively justified in the *Lusitania* sinking.
(Postal 1974 p. 147)

Bach (1970) (as discussed by Postal, 120-124 and Lasnik and Saito 1991) presented additional evidence from anaphora that the crucial postverbal nominal in an R2 construction may bind into a higher-clause adverbial phrase:

(7) **R2: postverbal nominal c-commands low elements in higher clause**

- a. *Principle C*
*John believes him_i to be a genius even more fervently than Bob_i's mother does.
cf. *John believes that he_i is a genius even more fervently than Bob_i's mother does.*
- b. *Principle A*
The DA proved the defendants_i to be guilty during each other_i's trials.
cf. **The DA proved that the defendants were guilty during each other's trials.*

Taken together, these arguments and others like them support the view that the postverbal nominal in R2 constructions has indeed raised from subject position in the embedded clause to a position in the higher verbal domain. In this position, it may precede and c-command a VP-level adverb in the higher clause, while still following the higher verb.¹ If this view is correct, the next important question concerns the position to which it raises. A proposal compatible with other findings concerning verb phrase structure analyzes the R2 construction as involving two instances of movement (building on proposals by Johnson 1991 and Lasnik and Saito 1991): (i) raising of the embedded subject to form a specifier of the higher V (crossing any VP-level adverbs that may have been merged), and (ii) raising of V to *v* in the higher clause (crossing the raised embedded subject). The analysis is exemplified in (8):²

1. Neeleman and Payne (to appear) present data from scope reconstruction that they suggest argues against analyses of Postal's adverb data in which it is R2 movement of the subject into the higher VP that places it to the left of higher-VP adverbs. In particular, they claim that readings that require the subject of the embedded clause to reconstruct into the embedded VP are absent. They explain this with an analysis along the lines of Pesetsky (1982b, 346-347, fn. 10) according to which the subject of the embedded clause remains within the subordinate clause, the higher-VP adverb is right-adjoined to the VP, and the predicate phrase of the subordinate clause (minus the subject) extraposes rightward over that adverb. Given the VP-internal subject hypothesis, the extraposed predicate phrase contains a trace of the subject — i.e. is an instance of remnant movement. Consequently the subject may not reconstruct into this VP, as an instance of an effect first observed for other instances of remnant movement by Barss (1986). Neeleman and Payne's examples of alleged blocked reconstruction involve inverse scope between embedded subject and object, which has been argued by Lebeaux (1991), Hornstein (1995), and Johnson and Tomioka (1998) (among others) to require the subject to reconstruct into the verb phrase (where it can be outscoped by the object adjoined to it). I am not convinced that the blocking of inverse scope that they document will not yield to appropriate intonation. But more important, I believe reconstruction below an intentional predicate is clearly possible in Postal-type examples, in contrast to Barss environments: e.g. *She believes a new approach quite sincerely to be needed* vs. *#How likely to be needed is a new approach?* For this reason, though Neeleman and Payne's findings merit further exploration, I will continue to assume that Postal's data should be analyzed as a consequence of subject raising over a higher adverbial, rather than rightward extraposition of a predicate phrase stranding its subject within the embedded clause.

2. I have labeled projections of *to* as *to'* and *toP*, rather than *T'* and *TP* with malice aforethought, for reasons that will become clear in section §3

(10) Mary made Sue out (conclusively) to have committed the crime.

If English R2 uniformly involves movement of the embedded subject, it is of course a twin of R1, where movement is not in doubt, since it is not string-vacuous. What ingredients does the standard lexicalist theory need to explain the core properties common to R1 and R2 constructions?

First, if movement of an element α requires a relation between a c-commanding *probe* with an EPP property and a featural requirement that α satisfies (as extensively argued over the past two decades), the availability of R2 movement to V indicates the presence of an appropriate probe on V. This probe is limited to a specific class of verbs such as (the active form of) *believe*, a topic to which we will return. Similarly, we may assume that the possibility of R1 movement in a given environment indicates the presence of an R1 probe on a head higher than V, a probe also limited to certain predicates. Anticipating future discussion, I will assume that this head is v , so that R1 movement proceeds through an edge position in vP . Continuing to anticipate future discussion, I also assume that this probe on v is distinct from the \bar{A} -probe that v also bears.

- (11) **Probes relevant to movement of an embedded subject** (*background assumption: lexicalist*)
- a. R2 probe on V (\in *believe, consider, judge...*)
 - b. R1 probe on v (\in *seem, appear, tend...*)
 - c. \bar{A} -probe on v

Restricting our attention for now to (11a-b), we note that the presence of these probes *permits* R1 and R2 movement to take place, but what accounts for the fact that this movement is *obligatory*, in lexicalist approaches? Presupposing the free generation of infinitival clauses, a standard proposal holds that the production of an infinitive has consequences for the case-licensing of the embedded subject. Specifically:

- (12) **Case-licensing account of the obligatoriness of subject raising in R1 and R2** (*background assumption: lexicalist*)
1. The subject position of the infinitival clause is not case-licensed, which means that if the subject remains in situ, the Case Filter (or its counterpart in related frameworks) is violated...
 2. ...unless the subject moves to a case-licensed position

Besides stipulating that a non-finite clause fails to provide a clause-internal licenser for its subject, the theory must also stipulate in some fashion that unaccusative and passive vPs , aPs and nPs fail to provide such a licenser, in order to account for the unacceptability of examples like those in (13):

- (13) **Environments posited to lack a case-licenser for a raised subject** (*background assumption: lexicalist*)
- | | |
|--|------------------------|
| a. *It seems Mary to have solved the problem. | <i>unaccusative vP</i> |
| b. *It was believed Sue to speak French well. | <i>passive vP</i> |
| c. *Mary is aware Bill to be the best candidate. | <i>aP</i> |
| d. *Mary's belief it to have been raining | <i>nP</i> |

Another important property of R1 and R2 constructions can be stated in a lexicalist approach as (14):

- (14) **Clause size requirement on Raising** (*background assumption: lexicalist*)
 The clause from which R1 or R2 movement takes place may not be a full CP.

The primary evidence for (14) is the fact that R1 and R2 constructions cross-linguistically are incompatible with an overt complementizer (Landau 2013, 18ff.) in a wide range of languages — a generalization exem-

plified by French, and Italian (Kayne 1981, 351-3; 1984a, 106), Hebrew (Landau 2002, 474-5 footnote 9), Romanian (Landau 2013, 19), Moro (Jenks and Rose 2017), and Lusaamia (Carstens and Diercks 2009), among others. There are some apparent counterexamples to (14) (see Ura 1995, chapters 2-3) — one of which, Zulu (Halpert 2012, 2016, 2018), will be discussed in some detail below. I will argue that Zulu, at least, is an exception that proves the rule, so that the generalization behind (14) could turn out to hold without exceptions, as Landau suggests.

Finally, in many, but not all languages, the clause from which R1 or R2 subject movement takes place must be non-finite, i.e. lacking tense and subject-agreement morphology. This has been taken to indicate that the correlation between the absence of case licensing for an unmoved nominal and the possibility of R1/R2 movement for that nominal is two-way — i.e. not only does the absence of in situ case licensing entail that the subject must raise, but also the availability of in situ licensing of the subject blocks it from raising. This is the “last resort” concept mentioned in section 1.

(15) **A-movement as a last resort** (*background assumption: lexicalist*)

A-movement of a nominal (including R1 or R2 movement) is possible only if failure to move would leave the nominal unlicensed.

A variety of proposals have been advanced that embed (15) in a broader generalization or derive it from more general principles (such as the Activity Condition of Chomsky 2000, p. 123), leaving open the question of why some languages appear to disobey (15), allowing raising from a case-licensed subject position (dubbed “hyperraising” by Ura (1994)), a topic to which we return in section 7.3.

Notice how the lexicalist presuppositions of the past four decades color the entire standard approach to the problems of R1 and R2 constructions. With the finiteness of a clause and the presence and absence of a complementizer layer presumed to result from free lexical choice, the proposals in (11)-(15) are all designed to jointly answer the following question: “Given that the derivation has built an infinitive, how does the system solve the problems that follow from this choice?”

But is this the right question in the first place? In the next section, I present a derivationalist alternative, in which it is the raising of the embedded subject that triggers infinitivization, by stripping away the CP and TP layers from a previously full finite CP — rather than the free building of an infinitive that triggers the raising. This alternative seeks to answer a different question from the standard approach: not how to solve the problems created by freely building an infinitival clause, but rather “under what circumstances can a full finite CP be legally reduced to an infinitive?” After presenting this derivationalist alternative, I will compare the two approaches at some length.

3 A derivationalist theory of infinitival clause creation

3.1 *Exfoliation*

At the heart of the derivationalist alternative developed here will be the hypothesis stated informally in (16):

(16) **Full CP hypothesis**

Every embedded clause is built by Merge as a full finite CP, and may be reduced to a less-than-full clause only as a consequence of later derivational processes.

To clarify what “reduced” means (for English, at least), I must posit a small innovation concerning the position of the infinitival marker *to* in clause structure. Because *to* is in complementary distribution with \pm Past and the modals such as *can* and *will*, it is common to view *to* as an instantiation of T — so that

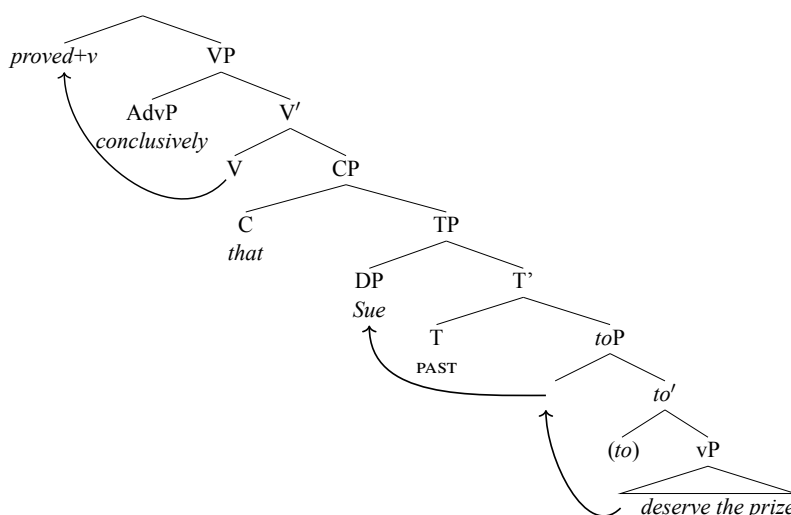
the complementarity of *to* and these other elements follows from the general fact that a clause contains only one instance of T. I propose instead that *to* is a distinct head, merged lower than T in the clause.⁵ The complementarity of \pm Past and modals with *to*, on this view due to the restriction in (17), to be restated shortly:

(17) **Overtness of *to* (preliminary)**

English *to* is overt only when not c-commanded by T within its clause.

An embedded *that*-clause with no raising of the subject will thus have the following structure, where the parentheses surrounding *to* indicates its non-overtness. I also propose that *to*, like T, bears a ϕ -probe with an EPP property, so that the subject *Sue* moves successive-cyclically, forming a specifier of *to*P before moving to form the specifier of TP in a clause that remains finite:

(18) **Structure of full finite CP (including *to*P distinct from TP)**



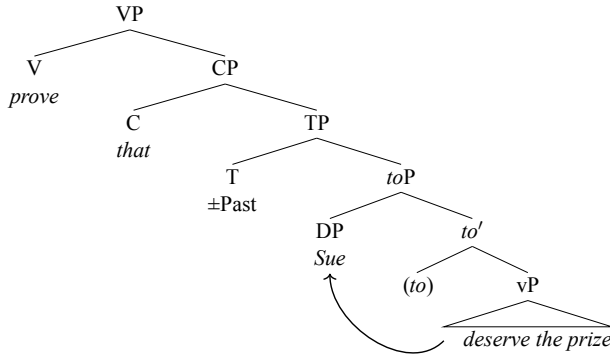
I will suggest later that (17), though in need of further justification, is not *ad hoc*, but is an English instance of a phenomenon found in other languages as well — crucial to the analysis of the much-discussed *que/qui* alternation in French, and counterparts in languages such as Bùli and West Flemish.⁶

Now let us consider a variant of (18) in which the subject *Sue* has raised to form a specifier of *to* within the embedded clause, responding to an EPP property of *to*, but has not raised further to form a specifier of T, and the derivation has progressed as far as the point at which the higher R2 verb has merged:

5. It is an interesting question, not explored here, to what extent the clausal spine positions posited in this work correspond to the hierarchy of positions posited by Rizzi (1997) (and subsequent work in the “cartographic” research program). Given its relative location and its status as a host for *to*, one might identify our *to*P with Rizzi’s (1997)TP and our TP with Rizzi’s FINP. I will leave as a topic for future work, however, the reconciliation of these proposals. I have deliberately chosen the name “*to*P” to emphasize the fact that we cannot yet supply a *raison d’être* for this category independent of the results reported here (also an issue, I believe, for Rizzi’s FINP).

6. Even internal to English, back-handed support for structures like (18) and the claim in (17) can be found in the existence of the semi-modal constructions *ought to* and *used to*, in which *ought* and *used* can be viewed as T-elements that exceptionally fail to trigger the silent version of *to*, i.e. as exceptions to (17). *Ought to* in particular shows other behavior typical of English modals, including movement over the subject (rather than *do* support) in matrix questions (*Ought we to read this book?*) and non-triggering of *do* support under sentence negation (*Bill ought not to have read this book*). The status of *used* in *used to* is less clear, since though it can act like *ought* with respect to negation (*Sue used not to read books*) *do* is also possible (*Sue didn’t used to read books*) and movement in matrix questions is impossible (*Did you used to read books* vs. **Used you to read books*).

(19) **Subject moved only as far as *toP***



Take it as a premise that *prove* in the derivation under discussion bears an R2 probe, i.e. a ϕ -probe with an EPP attribute. Assume further that the embedded CP cannot itself satisfy the needs of this probe (for reasons we shall return to), rendering *Sue* the closest potential goal for this probe. The CP phase boundary, however, separates *Sue* from this probe, and *Sue* does not occupy the edge of this phase. As a consequence, common ideas about the impenetrability of phases might prevent the R2 probe on *prove* from finding *Sue* across the CP boundary. I propose to the contrary that the CP is *not* a barrier to an external probe's ability to find a potential goal — so the R2 probe on *prove* does find *Sue* in (19). Call this property *phase penetrability*. Nonetheless, I also propose that one aspect of the standard view of phase *impenetrability* was correct. In order for the probe to successfully trigger movement of its goal across a clause boundary, that goal must indeed occupy the edge of the embedded clause. For this operation at least, a phase is *impenetrable*:

(20) **Probing across a clause boundary**

- a. **Phase penetrability:** A probe π with an EPP property can locate a goal γ across a CP boundary, even if γ does not occupy the edge of that CP...
- b. **Phase impenetrability:** ...but γ can move to π only if occupies the edge of its clause.

Given (20), *Sue* in (19) can be located by the R2 probe on *prove*. Unless some operation places *Sue* at the edge of the embedded clause, however, it cannot satisfy the EPP requirements of the probe.

I will argue that an operation with this property exists: *Exfoliation*. Exfoliation takes as input a situation like (19) in which a goal located by a probe should occupy the clausal edge but does not — and removes just enough structure from the periphery of the clause to situate the goal at that edge. In (19), where the subject *Sue* has moved to the specifier of *toP* but no further, Exfoliation applies to reduce the embedded phasal CP to a *toP* whose edge is occupied by *Sue*, as required by (20b):

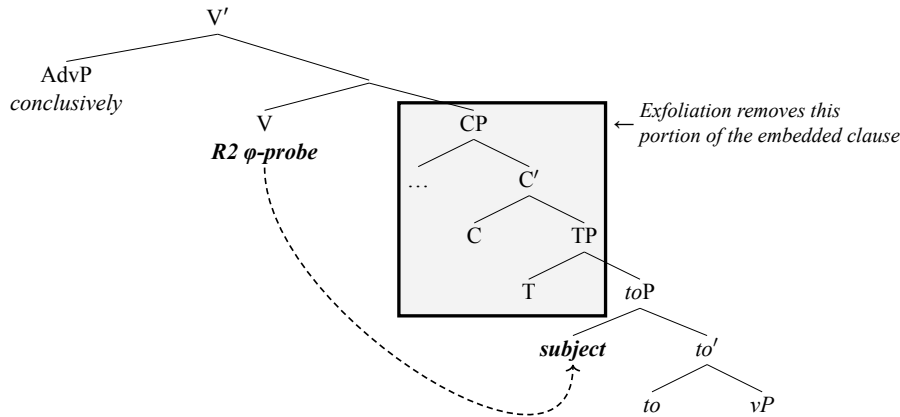
(21) **Exfoliation**

- a. **Structural Description:** ... β ... [$\text{YP}_{(\text{phase})}$... [$\text{YP}_{(\text{non-phase})}$... α ...]], where
 - (i) YP is the phase that dominates α but not β ,
 - (ii) α occupies the edge of YP ,⁷ and
 - (iii) a movement-triggering probe on β has located α as its goal.
- b. **Structural Change:** Replace YP with YP , which takes the phasal property of its predecessor.

In (19), if the higher V bears an R2-triggering ϕ -probe for which the specifier of *toP* is its goal, Exfoliation applies, replacing CP by the *toP* that it contains — in effect, deleting the CP and TP layers of the clause. The result is a clause whose head is *to*, i.e. an infinitive, which counts as phasal:

7. For present purposes, we can define *edge of α* as the XP immediately dominated by the maximal projection of α .

(22) **Exfoliation**



We can now restate (17) more satisfyingly as specifying overtiness for *to* only when Exfoliation has made it the head of a phase, a property we may call *exposure*. The definition of Exposure will be revised in section 6.2 below, but (23) will do for now:

(23) **Exposure (version 1)**

α is *exposed* iff it heads a phase.

(24) **Overtiness of *to* (final)**

English *to* is overt only when exposed.

Recall from (16) that all clauses are initially built as full finite CPs, and that an infinitival clause is created only by a later reduction of this full clause. This analysis entails that no clause should present a case-licensing problem for its subject of the sort that motivates R1 and R2 in standard lexicalist theories, eliminating the availability of case-licensing as an explanation for the obligatoriness of R1 and R2 from an infinitival clause.

What then does account for the correlation between subject movement and non-finiteness in R1 and R2 configurations? The answer lies in one additional important claim: that Exfoliation is the *only* grammatical operation that can reduce a full finite clause to an infinitive. Exfoliation in turn applies when its Structural Description is met, and not otherwise. If two elements are in a probe-goal relation, but not separated by a phase boundary, or if two elements are in a probe-goal relation, but the goal occupies the edge of a phasal rather than a non-phasal category — Exfoliation is not triggered, and an infinitive is not produced. In sections 4.1 and its immediate successors, I will argue that unacceptable infinitival clauses whose status has been attributed to case theory should instead be understood as instances of illegal Exfoliation (that is, as instances of infinitival clauses not produced by (21)), and show how this proposal solves a number of problems that arise for case-theoretic accounts of R1 and R2.

It is the claim that infinitival clauses are derived from full finite clauses by Exfoliation, which is triggered by movement that distinguishes the work presented here from other proposals in the literature that have points of similarity with it. Chomsky (1981, 66 and passim), for example, proposed that a rule of “ \bar{S} -deletion” ($\bar{S} \approx CP$) obligatorily removes the complementizer layer from the embedded clause in what we have been calling R1 and R2 constructions, for reasons internal to the theories of case assignment and trace-licensing that he developed in that work. An additional point of similarity can be discerned in the fact that what was crucial about \bar{S} -deletion was the fact that it rendered the embedded subject crucially accessible to clause-external processes. At the same time, however, the non-finiteness of the embedded clause in examples like those discussed above was not viewed as a result of \bar{S} -deletion, but as a property

already in place when \bar{S} -deletion applies, a matter of lexical choice. Indeed, it was in this context that the case-theoretic proposals concerning the subject position of infinitival clauses were developed that I argue against in section 4 and the sections that follow.⁸

There is a deeper potential kinship between the work reported here and recent proposals for “structure removal” by Müller (2016, 2017). Müller argues for feature-driven structure removal as a natural inverse of feature-driven structure building — in the context of a theory in which heads bear a stack of features triggering both kinds of operations. As a consequence, a head that bears a feature motivating Merge of some element of with it may host another feature lower on its stack that motivates the removal of α and its replacement with the complement of α . Though Müller does not explore structure removal as a source (much less the sole source) for non-finite structures, his work could be extended in that direction. A crucial difference between his work and ours, however, concerns the trigger for structural removal: the selecting head for Müller, a probe triggering extraction of the subject (and similar elements, as discussed below) for us. To the extent that the arguments developed throughout this work are correct, they will constitute an argument for our approach over Müller’s; but the similarities between the two proposals are strong enough to permit the adaptation of many specific analyses from one approach into the other. An example will be offered in section 9, where I briefly sketch a way of adapting Müller’s interesting and compelling “structure removal” analysis of passive voice into the Exfoliation framework developed here.

3.2 *Salient issues*

This proposal raises a number of questions and issues that are obvious enough to occur to the reader at this point, and salient enough to merit a brief discussion. This section briefly deals with these issues, in no particular order.

3.2.1 *Alternation with finite clauses*

The first concerns the fact that R2 forms part of an *alternation*. What permits a finite *that*-clause to co-exist as an alternant with R2 in pairs such as (25a-b):

- (25) **R2 alternates with full finite CP**
- a. Sue believes Mary to have solved the problem.
 - b. Sue believes that Mary has solved the problem.

The existence of such pairs might simply indicate that the R2 probe on V is optional — and a similar conclusion could be drawn for the R1 probe with verbs like *seem*, which show a similar alternation:

- (26) **R1 alternates with full finite CP**
- a. Mary seems to have solved the problem.
 - b. It seems that Mary has solved the problem.

Alternatively, however, such alternations might indicate that both the subject of a CP complement and the CP itself can serve successfully as goals for an R2 or R1 probe — with Minimality failing to prefer one over the other in R2 and R1 configurations because one of these possible goals (the complement clause)

8. In more recent work, Chomsky (2008) continues to assume smaller-than-CP complementation as a concomitant of R1 and R2, and derives from more general considerations (feature inheritance by T from C) what was stipulated in earlier work: that the subject position of an infinitive is case-theoretically special, motivating movement from that position. Once again, the background concerning non-finite complementation is crucially lexicalist, and the arguments presented here against lexicalist case-theoretic explanations for the properties of R1 and R2 apply equally to this variant as well (and render unnecessary in the first place the notion of feature inheritance).

dominates the other (its subject).⁹ This alternative view suggests a particular treatment of English expletive *it* and its clausal associate. If an R1 probe on v selects a complement CP as its goal, it may satisfy its EPP property by merging a doubling *it* as its specifier, as in (26b), rather than a full copy of the full embedded CP.¹⁰ With an R1 verb like *seem*, on this view, the doubling option must be stipulated to be obligatory (since *seem* may not take its CP argument as its surface subject), but other R1 predicates such as *likely* permit internal merge of the full CP as well — a difference that I will not attempt to explain here.¹¹

For reasons that will become clearer in section 4.3, I will assume the correctness of this alternative proposal — i.e. that a complement CP and its subject compete to serve as a goal for an R1 or R2 probe, with the use of expletive *it* in English reflecting one outcome of the choice of CP as goal.

3.2.2 *Nominative vs. accusative subjects*

Another issue concerns the NOM-ACC alternation that correlates with the absence vs. presence of R2 in pairs like (25a-b), as discussed in connection with English pronouns in (5a), and robustly attested in rich case-marking languages like Icelandic. I will assume that the embedded subject receives NOM case before the R2 probe triggers raising, and that NOM is replaced or overwritten by ACC in the high clause. The distribution of anaphors and pronouns that have undergone R2 movement documented in (5b) will be discussed in section 4.4.1.

3.2.3 *Control*

Another obvious question concerns infinitives whose subject is the target of *control*, rather than R1 and R2 as normally understood. We will return to this topic in section 8.2, and will (with apologies) pretend that control infinitives do not exist until that point. Furthermore our discussion in section 8.2 will be tentative and incomplete, a signpost for future research rather than a comprehensive proposal — an insufficiency of the present work that it is only fair to warn about in advance.

3.2.4 *Subject as specifier of toP and the EPP property of T*

Assuming that subjects originate within vP (Kitagawa 1986; Kuroda 1985, 1988; Sportiche 1988), we must ask why it is even possible for the subject to stop at toP , without raising further to form a specifier of TP — given that T has an EPP property that should force the subject to raise further. Here Exfoliation itself provides the answer. If the unacceptability of a finite clause in which the subject has raised incompletely is due to an unsatisfied EPP property of T, but T is deleted from the structure as a consequence of Exfoliation of the CP and TP layers — we are not surprised to see the violation rendered undetectable, since the bearer of the unsatisfied EPP feature has been eliminated in toto. This is the logic of “salvation by deletion”, familiar (though controversial) from work on sluicing (Ross 1969; Chomsky 1972), verb movement (Lasnik 2000, chapter 3) and other phenomena.¹² At the same time, the presence of finite T prior to Exfoliation

9. The assumption that two goals count as equidistant from a probe if one dominates the other contradicts the key premise of Kitahara’s (1994) explanation of the *Müller-Takano* generalization (Müller 1993, 1998; Takano (1994)). This generalization blocks remnant movement derivations in which the two instances of movement involve the same kind of probe. Kitahara’s explanation relies on Minimality treating a potential goal as closer to its probe than any potential goal that it dominates. I leave this contradiction as an unsolved problem.

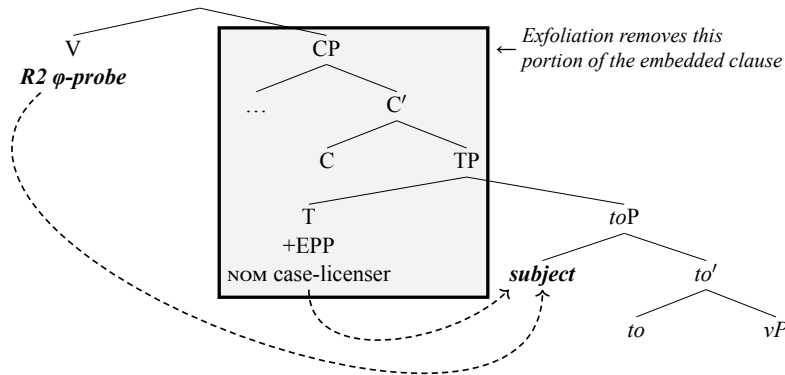
10. Wu (2017) offers an independent argument, building on Hartman (2011), that expletive *it* originates within the verbal domain, from where it raises to form the specifier of TP (rather than being initially merged in the TP system, as proposed by Chomsky 2000). See also Deal (2009) for arguments that expletive *there*, at least, originates as the specifier of vP , which lends plausibility to a comparable analysis for *it*.

11. An R2 predicate also permits the satisfaction of its EPP feature via merge of a doubling *it*, but this choice yields a factive interpretation (which makes it incompatible with some predicates): e.g. *Sue doesn’t believe it that Mary solved the problem* (which presupposes the truth of its complement). I will not attempt to account for this fact here.

12. We know independently that failure to satisfy the EPP property of T at any random point during the course of a derivation does not yield the sensation of unacceptability, since the EPP property of a head is by definition satisfied only by a Merge operation later than the one that introduces that head.

is sufficient to case-license the subject in specifier of *to*P, by downward probing of the sort familiar from work over the past two decades:

(27) **A fuller picture of infinitive-producing Exfoliation**



Of course, we must also ask what happens if the subject *does* raise to form a specifier of T and is contacted by a probe in a higher clause. We return to that topic in section 5, and ignore this question until then. Our most immediate task is showing that an Exfoliation approach to the creation of infinitival clauses is viable and solves problems that arise for the traditional lexicalist approaches. That is the topic of the next major section.

3.2.5 *What happens to specifiers of an exfoliated phrase?*

Because Exfoliation was formulated as a replacement operation in (21), it is clear that if α was a complement of a head H before Exfoliation and is replaced by a subconstituent β as a consequence of the operation, β will be the new complement of H. In effect, β inherits this position from its pre-Exfoliation predecessor, and of course all pre-Exfoliation dependents of β (its specifiers, adjuncts, and complements) remain dependents of β . Questions do arise, however, if α hosted dependents other than its complement before Exfoliation — for example, if a pre-Exfoliation CP hosted a specifier. Do such dependents disappear, or do they become dependents of β or H?

It seems clear that these dependents may remain. Consider, for example, how successive-cyclic *wh*-movement proceeds from the clausal complement of an R2 predicate in an example like (28):

(28) ***Wh*-movement from an R2 construction**

Which problem did Sue believe [Mary to have solved ___]?

If the R2 probe is a property of V, while v above V bears the \bar{A} -probe responsible for extracting a *wh*-phrase from the embedded clause, this *wh*-phrase will still occupy the specifier of the embedded CP when Exfoliation is triggered by the R2 probe on V. Clearly, therefore, Exfoliation does not eliminate the specifier of the phrase it eliminates (since it is available as a goal for the \bar{A} -probe on v at a later derivational stage). It must therefore reattach in some position.

Additional evidence is provided by observations of McCloskey (2000, 68 ff.) concerning the stranding of pluralizing *all* in intermediate landing sites of *wh*-movement in the West Ulster dialect of English. McCloskey famously noted that pluralizing *all* may be stranded by elements such as *who* in the specifier position of a declarative CP, thus supporting analyses that posit this position as an intermediate landing site for \bar{A} -movement. In the same study, he also notes that *all* may be stranded to the right of the raised subject in an R2 construction. This follows if the position in which *all* is stranded is the specifier of the

embedded clause — so long as R2 does indeed raise the subject into the higher VP, as we have assumed above.

(29) **All-stranding in R2 constructions (West Ulster English)**

Who did you expect/want [— your mother to meet — at the party]?
 ‘Who-PL did you expect/want your mother to meet at the party?’

(McCloskey 2000, 70, ex. (39a-b))

This observation also entails, of course, that the contents of the specifier of CP may remain after its host CP has been deleted. McCloskey notes that stranded *all* must follow the raised subject in examples like (29), and may not precede it. This suggests that the specifier of an exfoliated phrase may reattach as a specifier of its replacement, so that the previous specifier of CP becomes a specifier of *toP* in (29) Exfoliation might therefore be better reformulated as a replacement not of CP by *toP* in R1 and R2 constructions, but as a replacement of an intermediate projection of C by the mother of *to*, but other formulations can also be envisioned. For simplicity’s sake, I will retain the statement of Exfoliation in (21), while noting separately the need for an addendum like that discussed here.¹³

Likewise, as Liliane Haegeman (personal communication) points out, successful binding of the reciprocal by the matrix subject in (30) suggests that the copy of the *wh*-phrase that originally constituted the specifier of the embedded CP remains after the φ -probe on V has eliminated this CP by Exfoliation — since only in this position can the reciprocal take *the women* as its antecedent without violating Principle A, and *these women* is not merged into the structure until *v* is merged with VP, i.e. after Exfoliation:

(30) **Principle A reconstruction in R2 constructions**

How many photos of each other do the women believe [— the photographer to have taken —]?

Finally, note that I have carefully suggested that reattachment of a specifier may happen, but not that it is obligatory. This issue will not be important to the results reported in the body of this work, but will arise once again in the final section, where the analysis of passive is briefly discussed.

3.2.6 *Movement to specifier of CP and Antilocality*

An additional important question concerns the apparent inability of the subject in the configurations discussed here to move successive-cyclically through the specifier of CP position on its way to its final R2 position within the higher VP. In the context of the work reported here, this issue will not be viewed as a minor addendum, but will assume some considerable importance in later sections. If a feature on C has the ability to trigger successive-cyclic movement in constructions such as long-distance *wh*-movement, and if infinitives start their lives as full CPs as claimed above, something must be preventing C from attracting the subject in configurations like (27). In (27) itself, if the subject stopped off in the specifier of the embedded CP without raising first to the specifier of TP, Exfoliation could not take place. The embedded clause would remain finite — and would be judged deviant, because the EPP requirements of T will not have been satisfied.

13. In addressing a similar question arising in the context of a somewhat different proposal mentioned above, Müller (2017, 6 ff.) suggests that when a phrase αP is removed, its specifiers reattach as a specifier of the higher head that triggered the operation — rather than as a specifier of the phrase that replaces αP , as I propose here. Müller’s proposal would yield the same result for McCloskey’s data in an Exfoliation context only if the theory can ensure that the specifier of the exfoliated CP becomes an *inner* specifier of the higher V — so that follows and never precedes the raised subject. This could be achieved by an ordering of operations that requires reattachment motivated by Exfoliation to precede the movement that Exfoliation makes possible.

One might imagine that this derivation is blocked when the subject is an ordinary nominal because it lacks a feature such as *wh*, topic or focus that would make it a goal for an \bar{A} -probe on C. This cannot be a general solution, however, since the subject of an R2 or R1 construction may be a moved or in situ *wh*-phrase (or may be used as a topic or focus) without changing the paradigm in any way (e.g. *Who believes who to have solved the problem*). A more general solution is needed to prevent a probe on C from attracting the subject at all. For the moment, let us simply stipulate that this pattern of attraction is blocked, by positing an *Antilocality* constraint that forbids movement to the specifier of CP unless it crosses ν P, similar to proposals that have been advanced by many previous researchers (Saito and Murasugi 1998; Bošković 1994; Ishii 1999; Grohmann 2003; Erlewine 2016; Brillman and Hirsch 2014):

- (31) **Antilocality constraint** (*to be replaced*)
Movement to the edge of CP must cross a phase boundary.

I will argue in section 5.1 that Antilocality should be replaced by a more general “Lethal Ambiguity” condition with a slightly different character. For the time being, however, let us assume that Antilocality is correct, and it will play a crucial role at more than one point in the following discussion.

4 Predictions of an Exfoliation account of R2 and R1 infinitival clauses

4.1 *Surprising Case Filter-like effects on non-nominal subjects*

The starting point for the theory of nominal licensing proposed by Vergnaud (1976/2006) was the observation that the distribution of nominal phrases is restricted in a way that the distribution of a CP or PP argument is not. At the heart of the theory is the proposal that this difference in distribution reflects licensing needs particular to nominals but absent from CPs and PPs. The examples in (32) exemplify this distinction for CPs vs. nominals:

- (32) **A CP complement does not need to be case-licensed in complement position.**
- a. We are sure [that the world is round].
cf. **We are sure [the world's roundness].*
 - b. my proof [that the world is round]
cf. **my proof [the world's roundness]*
 - c. They assured us [that the world is round].
cf. **They assured us [the world's roundness].*
 - d. It was proved [that the world is round].
cf. **It was proved [the world's roundness].*

This contrast follows in standard accounts from the joint action of a Case Filter (or similar restriction) that requires nominals, but not other categories, to be licensed — plus the exclusion of the bracketed complement positions in (32) from the roster of positions in which licensing is possible. In the previous section, we reviewed the extension of this standard theory that governs the distribution of subjects. Against the background of a lexicalist perspective on clause-types, this extension adds finite T to the roster of heads that can license a nominal in English, but excludes non-finite T. Consequently, in a non-finite clause, a subject nominal that fails to move to a position in which it can be case-licensed by finite T (and is not licensed by a higher element such as *for*) fails the Case Filter, yielding contrasts like those in (33):

- | | |
|---|-----------|
| (33) Nominal subjects of an infinitival clause | |
| a. Sue considers Mary to have solved the problem. | R2 |
| b. Mary seems to speak French well. | R1 |
| c. *It seems Mary to have solved the problem. | unacc. V |
| d. *It was believed Mary to speak French well. | passive V |
| e. *Mary is aware Bill to be the best candidate. | A |
| f. *Mary's belief it to have been raining | N |
| [(c-f) repeated from (13a-d)] | |

This standard proposal makes a clear prediction in light of (32). A non-nominal phrase that is acceptable as the subject of a finite clause should be fully acceptable, all things being equal, as the subject of any kind of clause, finite or non-finite, whether R2 movement takes place or not — including all the positions occupied by *Mary* in (33c-f).

This prediction, however, is strikingly false. CP subjects show exactly the same distribution as nominal subjects, as if they needed to be case-licensed when functioning as subjects, despite lacking this need when functioning as complements:

- | | |
|--|-----------|
| (34) Clausal subjects of an infinitival clause | |
| a. Sue considers [that the world is round] to be a tragedy | R2 |
| b. [That the world is round] seems to be a tragedy. | R1 |
| c. *It seems [that the world is round] to be a tragedy. | unacc. V |
| d. *It was believed [that the world is round] to be a tragedy. | passive V |
| e. *Mary is aware [that the world is round] to be a tragedy | A |
| f. *Mary's belief [that the world is round] to be a tragedy | N |

By contrast, in a derivationalist approach that attributes clause size distinctions to Exfoliation, the explanation for the distribution of nominal subjects in (33) is not case-theoretic at all. No contrast is predicted between nominal and clausal subjects. On this approach, *all* subjects of all clauses are licensed, since all clauses start their lives as full finite CPs, capable of licensing their subjects. Examples like (33c-f) are excluded not because the embedded subject fails the Case Filter, but because these examples show *illegal infinitivization* — infinitival clauses that could not have been produced by Exfoliation because no probe attracted the embedded subject into the higher VP. Recall that an embedded clause is reduced to an infinitive on this approach only under very specific circumstances: if the specifier of *toP* has been probed by a CP-external head. To block the starred examples in (33), where the subject of the embedded clause is nominal, it is sufficient to propose that no CP-external head has successfully probed the specifier of *toP* in the embedded clause — in particular, no head with the power to move it to the position in which we see that element on the surface. If the region above the embedded clauses in (33) lacks an R2 probe, then the embedded subjects in (33c-f) can only be parsed as occupying a position internal to the embedded clause. This entails that no Exfoliation has taken place. Consequently, the embedded clause should have remained finite. Crucially, exactly the same prediction holds for (34), where the subject of the embedded clause is clausal. Case-licensing of the embedded subject is irrelevant to all these contrasts. The only thing that matters is whether the embedded subject, be it nominal or clausal, has been extracted from its clause in response to a CP-external probe. If this is not possible in (33c-f) for lack of an R2 probe, it should be equally impossible in (34c-f).

It might be objected that this theory needs something ad hoc: a list of environments that do and do not contain an R2 probe, in order to predict the contrasts in (33) and (34). It is therefore important to note at

this point that *every* proposal compatible with the general picture of R1 and R2 constructions sketched in the previous section must distinguish a list of heads that bear an R1 or R2 probe from those that do not. Of course, ultimately one wants this list to follow from more general considerations, but such an achievement should be no more difficult in an Exfoliation approach than in its competitors.

For present purposes, I will assume the following list of probes in the verbal domain of English (vP and VP) to be exhaustive:¹⁴

(35) **Probes that yield movement of an embedded subject in English**

- a. **R2 probe — triggering movement to Spec,VP:** present on [a subset of] active instances of V (but not passive or unaccusative verbs, or A or N)
- b. **R1 probe — triggering movement to Spec,vP:** present on unaccusative v or a taking a subset of predicates as their complement (usable as an intermediate landing site on the way to a case position in passive and unaccusative configurations if no intervener blocks the movement)
- c. **\bar{A} -probe — triggering movement to Spec, vP:** present on v , a , and n

This argument for the Exfoliation approach based on the distribution of CP subjects is not watertight, however. In particular, one might question a key premise of the argument of the previous section by proposing that English clausal subjects are actually obligatorily nominal in some fashion — and therefore in need of case-licensing, in contrast to clausal complements. The parallel between (33) and (34) could then be attributed to standard case-theory in a lexicalist approach to finiteness, and would no longer support the Exfoliation approach over the lexicalist case-theoretic alternative.

The puzzle for case theory is not limited to clausal subjects, however. Every type of constituent that can function as a subject in English shows the same paradigm. (By “function as a subject” I mean “fulfill the same EPP requirement that is otherwise fulfilled by a preverbal nominal in English”.) Consider, for example, the predicate fronting construction illustrated in (36), where the fronted predicate satisfies this requirement:

(36) **Predicate fronting in a finite clause**

Even more important than linguistics is the fate of the planet.

Predicate fronting in a finite clause reveals exactly the same paradigm as (33) and (34):

14. Omitted from this list is whatever triggers or licenses rightward displacement of a “heavy” embedded-clause subject (an instance of “Complex NP Shift” noted by Postal (1974, 83 ff.) (and discussed further by Rizzi (1990b, 34 ff.)) in examples like the following:

- a. Sue proved ___ to be prime [every number on this list].
- b. Allen showed ___ to be Martians [those teachers who continually gave him poor grades]. (Postal 1974, 85, ex.(4f))

If rightward movement is not entirely excluded by antisymmetry or some other factor, one possibility is a +EPP probe on v that for some reason, possibly prosodic or information-structural, linearizes its goal to the right — the same probe to which one might attribute rightward Heavy Shift of complements. In cases like these, R2 movement forming a specifier of V might feed rightward Heavy Shift triggered by the probe on v , or the probe on v might find the embedded subject within its clause, triggering Exfoliation itself. The possibility called “Kayne’s paradigm” in the next section suggests that the second derivation must be at least permitted. I will not discuss Heavy Shift at any length here, reserving discussion for the occasional footnote.

(37) **Predicate fronting in an infinitival clause**

- | | | |
|----|--|------------------|
| a. | Sue considers [even more important than linguistics] to be the fate of the planet. ¹⁵ | <i>R2</i> |
| b. | [Even more important than linguistics] seems to be the fate of the planet. | <i>R1</i> |
| c. | *It seems [even more important than linguistics] to be the fate of the planet. | <i>unacc. V</i> |
| d. | *It was believed [even more important than linguistics] to be the fate of the planet. | <i>passive V</i> |
| e. | *Mary is aware [even more important than linguistics] to be the fate of the planet | <i>A</i> |
| f. | *Mary's belief [even more important than linguistics] to be the fate of the planet | <i>N</i> |

It is unlikely that one can successfully argue that non-arguments like the fronted predicates in (37) are nominal and therefore in need of case. The Exfoliation alternative, by contrast, straightforwardly explains the data without reference to case or obligatory nominality. I take the relative acceptability of (37a) to indicate that the R2 probe, like T or *to* in (37), is able to attract the fronted predicative phrase in the first place. It is therefore not a ϕ -probe hunting exclusively for nominals, but a probe with a more general set of requirements. The predicate fronting paradigm in (37) is predicted by the same principles that predict its counterparts with nominal and clausal subjects.

Locative inversion yields an identical paradigm, as do constructions with expletive *there* — with the same considerations favoring an Exfoliation account over a case-theoretic alternative:

(38) **Locative inversion in an infinitival clause**

- | | | |
|----|---|------------------|
| a. | Sue considers [in this room] to be found the finest examples of Athenian sculpture | <i>R2</i> |
| b. | [In this room] seems to have been found the finest examples of Athenian sculpture. | <i>R1</i> |
| c. | *It seems [in this room] to be found the finest examples of Athenian sculpture | <i>unacc. V</i> |
| d. | *It was believed [in this room] to be found the finest examples of Athenian sculpture | <i>passive V</i> |
| e. | *Mary is aware [in this room] to be found the finest examples of Athenian sculpture | <i>A</i> |
| f. | *Mary's belief [in this room] to be found the finest examples of Athenian sculpture | <i>N</i> |

(39) **Expletive in an infinitival clause**

- | | | |
|----|--|------------------|
| a. | Sue considers [there] to be a riot in progress. | <i>R2</i> |
| b. | [There] seems to be a riot in progress. | <i>R1</i> |
| c. | *It seems [there] to be a riot in progress. | <i>unacc. V</i> |
| d. | *It was believed [there] to be a riot in progress. | <i>passive V</i> |
| e. | *Mary is aware [there] to be a riot in progress. | <i>A</i> |
| f. | *Mary's belief [there] to be a riot in progress | <i>N</i> |

One loose end that should be mentioned at this point concerns the position from which the non-nominal phrases discussed above undergo R2. In a simple finite clause, these expressions satisfy the general English requirement for a “subject”, making it natural to suppose that they are attracted by the same probe on T that otherwise attracts a nominal subject. If this probe is a ϕ -probe, then CPs, predicates, locatives, and expletive *there* must be viewed as bearing one or more ϕ -features serving as a goal for T. In the R2

15. Some speakers do not fully accept predicate fronting in a R2 infinitival (perhaps because the R2 probe is not fully happy with a predicate as its goal) — but the relevant contrast remains clear. A similar comment holds of (38a) below).

constructions discussed above, this element has moved only as far as the specifier of *to*P in the embedded clause. This in turn suggests that *to* bears the same kind of φ -probe as T.¹⁶

Though Exfoliation provides a uniform explanation for all the paradigms discussed in this section, a lexicalist defender of the standard case-theoretic approach might reply as follows. The constructions in (37)-(39) all include a postverbal nominal. This nominal also needs to be case-licensed. Perhaps it is this postverbal nominal's needs that remain unsatisfied in the starred members of these paradigms. This lexicalist alternative would require distinct explanations for the paradigms in (34) and the paradigms (37)-(39), in contrast to the uniform explanation provided by the Exfoliation alternative. It would also need some account of how the postverbal nominal gets licensed in R2 constructions where it is the fronted predicate, fronted locative, or *there* that undergoes R2 movement, and there is no visible finite T within probing distance of the embedded postverbal nominal that could plausibly license it. On an Exfoliation account, by contrast, the postverbal nominal is licensed pre-Exfoliation, by whatever mechanism licenses this nominal in non-exfoliated, fully finite clauses.

Of course, there is no *logical* reason to require a uniform explanation for the various phenomena discussed in this section, beyond general considerations of explanatory parsimony. In the next section, therefore, we examine another puzzle posed by infinitival subjects for case theory that dissolves under an Exfoliation view — and poses an even more difficult problem for case theoretic accounts of the subject position of infinitives.

4.2 Surprising absence of Case Filter effects on nominal subjects: derivational opacity

The previous section offered an Exfoliation explanation for non-nominals that behave under standard lexicalist theories as if they anomalously require case. This section discusses nominals that seem to behave under these same theories as if they anomalously do *not* need case — and argues against an alternative under which case actually is assigned to them in a special fashion. Once again, I will argue that a derivationalist theory of finiteness based on Exfoliation eliminates the puzzle. There will be one wrinkle, concerning clauses whose subject is expletive *it*, for which I will tentatively suggest an explanation that is simple, but does require an additional stipulation.

Consider a configuration in which an active instance of V has been merged with a (full finite) CP, but the subject σ of the embedded clause may not be accessed by an R2 probe on V. On an Exfoliation approach to infinitival clauses, there are two scenarios in which this might happen:

- (a) the higher clause lacks the R2 probe; or
- (b) an intervening nominal blocks contact between the R2 probe and σ for reasons of Minimality.

In an Exfoliation approach, the embedded clause in both scenario (a) and (b) may still become an infinitive if a *non*-R2 probe makes contact with σ and successfully extracts it from the embedded clause. In scenario (a), the extractor could be either an R1 probe or an \bar{A} -probe. In situation (b), the extractor could only be an \bar{A} -probe, since the same Minimality considerations that would block an R2 probe from extracting the embedded subject should also block an R1 probe from doing the same. I show below that these predictions are fulfilled. In the context of a lexicalist approach to finiteness, in which infinitival clauses are born and not made, however, these predictions (especially the one that concerns \bar{A} -movement) look like additional puzzles of case theory.

16. Alternatively, it might be supposed, as often argued, that one or more of these non-nominal subjects is actually attracted by a head distinct from T (and perhaps from *to* as well). The same result would follow, so long as this head may be lower in the structure than T, producing an infinitive when Exfoliation applies.

The predictions of the Exfoliation approach in scenario (a) are instantiated in French, on the following assumption:

(40) **French *believe*-class verbs**

A French verb of the *believe*-class (unlike its English counterparts) does not bear an R2 probe.

The claim in (40) immediately predicts (41a), which would have an acceptable parse if the higher V had an R2 probe. More interestingly, it also predicts the sharp contrast between (41a) and the fully acceptable (41b), in which the embedded subject has moved in response to an \bar{A} -probe on the higher *v*. Likewise (41c), in which an R1 probe on passive *v* triggers longer-distance A-movement of the embedded subject, is also predicted to be acceptable:¹⁷

(41) **Kayne paradigm with French verbs like ‘believe’ (= (41))**

a. **R2:**

*Je croyais cet homme être arrivé.
‘I believed this man to have arrived.’

b. **\bar{A} -movement:**

l’homme que je croyais ___ être arrivé...
the man that I believed AUX.INF arrived...
‘the man that I believed to have arrived...’

(cf. Kayne 1981, p. 357, ex. (65))

c. **passive:**

%Marie a longtemps été crue ___ avoir résolu ce problème.
Marie AUX.3SG long.time AUX.PTCP believed AUX.INF solved this problem.
‘Mary has for a long time been believed to have solved this problem.’

(Pollock 1985, p. 307, ex. (56))

English also instantiates scenario (a) with verbs such as *wager*, a class whose properties were discovered by Postal (1974, 305 ff.):¹⁸

(42) **Scenario (a) instantiated by English *wager*-class verbs**

- a. *We wagered Mary to be the most likely winner.
- b. Mary, who we wagered ___ to be the most likely winner...
- c. Mary was wagered ___ to be the most likely winner.

(43) **Other verbs in the *wager*-class**

admit, affirm, announce, assert, avow, claim, conjecture, declare, decree, disclose, grant, guarantee, intimate, maintain, mumble, mutter, note, observe, posit, recollect, said, scream, shout, sight, state, stipulate, verify, whisper, yell, ...

Pesetsky (1991) noted that most of the verbs that behave like *wager* are also obligatorily agentive, and argued that this correlation was systematic. For example, a non-agentive *believe*-class verb coerced into agentivity (by use in an imperative, for example), loses the possibility of R2:

17. Cross-clausal passive as in (41c) is not fully acceptable to all speakers, as discussed by Pollock (1985), and not uniformly available to verbs of the *believe* class.

18. Postal described these verbs as obeying a “Derived Object Constraint”, which licenses an infinitival complement so long as its subject does not end up in the R2 position, which for Postal was a direct object position in the higher verbal domain.

(44) **Coercion into the *wager*-class entails loss of R2 probe**

- a. Sue ultimately understood Bill to have died only after we had explained it to her many times.
- b. ??No, you can't talk to Bill. Try to understand him to have died.
(cf. *No, you can't talk to Bill. Try to understand that he has died.*)

On an Exfoliation approach, the stipulation in (45) (for which one obviously would like a deeper explanation), an English counterpart to (40), immediately accounts for the paradigm in (42), just as it accounted for (41):¹⁹

(45) **Agent-R2 stipulation (English)** (*background assumption: derivationalist*)

An obligatorily agentive verb does not bear an R2 probe.

Scenario (b) is exemplified by English double-object verbs such as *assure*, which I will call the *Kayne paradigm* after its discoverer (Kayne 1984a, xiii):

(46) **Scenario (b) exemplified by English double-object verbs (Kayne paradigm)**

- a. *I assure you Mary to be the best candidate.
- b. Mary, who I assure you ___ to be the best candidate ...
- c. *Mary was assured you ___ to be the best candidate ...

Here, even if we assume *assure* bears an R2 probe (since it is not obligatorily agentive; cf. *the evidence assured us that Mary was the best candidate*), the fact that the main-clause indirect object intervenes between the higher verb and the embedded subject will prevent the R2 probe from finding the embedded subject in the first place, accounting for (46a). The same considerations apply to the R1 probe in (46c). On the other hand, the \bar{A} -probe on *v* should not be blocked by the indirect object from contacting the embedded subject in the specifier of *toP* within the embedded clause — so long as the embedded subject, but not the indirect object, bears relevant \bar{A} -features. The contrast between (46a) and (46b) is thus predicted as well.

Let us now compare these derivationalist, Exfoliation-based explanations with plausible case-theoretic, lexicalist alternatives. If we assume that the infinitival clauses in (41), (42), and (46) are produced as a matter of free lexical choice, and that an infinitival clause fails to furnish a clause-internal case-licenser for its subject, the question posed by the unstarred members of these paradigms is whether the derivation provides a clause-*external* licenser for the embedded subject. Putting aside the passive (c) examples for the moment, let us consider how this approach might explain the contrast between unacceptable R2 in the (a) examples and acceptable \bar{A} -movement of the same element in the minimally contrasting (b) examples.

The natural response on a lexicalist approach is to posit a case-licenser in the higher clause that becomes accessible to the subject of the embedded infinitive only when it moves. Kayne (1981; 1984a, xiii) offered a proposal of just this sort. He proposed that in configurations showing (what I have dubbed) the Kayne paradigm, the embedded infinitival clause presents a barrier to assignment of case from the higher clause to the embedded subject. But if that subject undergoes successive-cyclic \bar{A} -movement through an embedded specifier of CP of the infinitival clause, it is accessible to case-licensing from the higher clause while in that intermediate landing site.

19. Rightward Heavy Shift of the embedded subject (see footnote 14) is possible with *wager*-class verbs, as noted by Postal (1974, 305, ex. (42d))

They wagered ___ to be double-agents [all of the Parisians who the CIA had hired in Nice]. (adapted from Postal)
This indicates that whatever probe is responsible for Heavy Shift, it is not the R2 probe itself.

If case-licensing is blocked by a structurally intervening nominal, then this specific proposal will not explain the fact that the *croire* and *wager* paradigms extend to double-object configurations like (46b), since \bar{A} -movement of the embedded subject to the edge of its own clause will not raise it above the higher-clause indirect object. The updating of Kayne's proposal by Rezac (2013, 310 ff.) avoids this problem by positing the specifier position of the main-clause vP as the position in which this licensing takes place.

At the center of Kayne's and Rezac's proposals, however, is the presupposition that the embedded subject of an infinitival clause requires a case-licenser in the higher clausal domain in the first place — a claim denied by the Exfoliation alternative, under which the infinitival clause started out full and finite. This claim can be tested. If the embedded subject in the (b) sentences above does indeed rely on a higher-clause case-licenser, then we expect the possibility exemplified in these examples to disappear if the predicate of the higher-clause is replaced with an element that does not otherwise case-license nominals.

In fact, however, when the main-clause predicate is a passive verb, an adjective or a noun, we continue to observe the Kayne paradigm. \bar{A} -extraction of an embedded subject still saves the subject of an embedded infinitival clause:

(47) **Putative case-licensing of subject of infinitival under \bar{A} -movement insensitive to distinctions that matter for licensing complements**

background assumption: lexicalist

- | | |
|---|--------------------------------|
| a. Mary, who I've been assured ___ to be the best candidate... | <i>passive</i> ²⁰ |
| b. Mary, who I am positive ___ to be the best candidate... Mary, who we're confident ___ to be the best candidate... | <i>adjective</i> ²¹ |
| c. Mary, who I have a hunch ___ to be the best candidate... | <i>noun</i> ²² |

Recall now that Kayne's variant according to which the \bar{A} -moved nominal is case-licensed in the embedded specifier of CP in (41b), (42b), and (46b) also runs afoul of Minimality considerations in explaining the double-object example (46b) — in contrast to variants like Rezac's that posit the specifier of the higher-clause vP as the licensing position. Suppose now that one attempts to deal with the problem posed by (47) for all versions of this proposal with a claim that the distinction between licenser and non-licenser disappears for some reason when the licensing position has been targeted by \bar{A} -movement. Such a proposal would have to stipulate that this kind of liberal case-licensing is available to an \bar{A} -moved nominal only when it has been extracted from the subject position of an infinitive. \bar{A} -movement of a nominal complement does not save the nominal from case-filter effects, as (48) shows:

20. Kayne himself observed that passive morphology fails to block the possibility seen in examples like this.

21. Kayne appends a star to *John Smith, who I'm sure ___ to be one of the very best students in the class...*, supporting a conclusion opposite from the one advanced here. I suspect that Kayne's example may suffer from a garden-path problem, since *sure* is both a transitive adjective (*I am sure that John Smith is one of the very best students...*) and an unaccusative R1 adjective. A tendency to misparse the subject *I* as the filler of the subject gap in the infinitival clause might be the source of the star reported by Kayne. I have chosen adjectives without this ambiguity for my examples above, and have not found disagreement with the judgment that they are acceptable.

22. I find myself somewhat queasy about this example, but I have not found any objection to it from other speakers.

(48) **Putative case-licensing in \bar{A} -specifier position limited to moved subject of infinitival clause**

background assumption: lexicalist

- | | |
|---|------------------|
| a. your honesty, which I've been assured *(of)... | <i>passive</i> |
| b. Mary, who I am positive *(about)... | <i>adjective</i> |
| c. Mary, who I have a hunch *(about)... | <i>noun</i> |

Thus neither Kayne's nor Rezac's proposal appears to be sustainable as an explanation for the Kayne paradigm. I conclude that the solution to the puzzle does not involve the positing of an infinitive-external licenser for the moved subject, but instead involves a classic kind of *derivational opacity*. The subject of the embedded clause is case-licensed in an entirely normal fashion by finite syntactic structure that later disappears as a consequence of Exfoliation triggered by the movement of that subject. The generalization that subjects are licensed by material not overtly present in an infinitive (e.g. tense or agreement) is not surface-true, but is true at an earlier derivational stage. This conclusion thus supports the derivationalist view of finiteness developed here, according to which the embedded clause is constructed by Merge as full and finite. As we have seen, the if certain higher predicates lack an R2 probe, that single claim predicts all the paradigms discussed so far under an Exfoliation analysis of infinitive formation — precisely because its central question is not “Now that Merge has built an infinitival clause, can movement solve the problems that this creates for the subject?”, but “Was the infinitival clause legally produced by Exfoliation?”

4.3 A puzzle for the Kayne paradigm

The claim that only Exfoliation can produce an infinitival clause is crucial to the explanation of the array of contrasts that follow in standard lexicalist accounts from the special case-licensing problems faced by the subject of such a clause. The impossibility of (42a) and (46a) above, for example, follows in the Exfoliation approach from the fact that no probe has made contact with the subject of the embedded clause — not from any difficulty with licensing of the the embedded subject. By limiting itself to situations in which the crucial goal is one phase away from the probe, Exfoliation as stated in (21) also entails that \bar{A} -movement of a non-subject from inside vP will not trigger the rule (in contrast to the Kayne paradigm just discussed, in which the subject itself undergoes \bar{A} -movement):

(49) **Non-subject \bar{A} -movement does not motivate Exfoliation**

- a. *French, which Mary wagered Sue to speak fluently ___ ...
 b. *This book, which I assure you Sue to have read ___ ...

The *wh*-phrase in the unacceptable (49a-b) originates within vP of the embedded clause, from where it can reach the specifier of the highest CP by successive cyclic movement through phase edges, without ever triggering Exfoliation. We return to the actual path that it takes shortly.

There is one pattern, however, for which which the traditional lexicalist case-theoretic approach makes a correct prediction, but which the derivationalist alternative explored here fails to predict on its own.²³ The Kayne paradigm is surprisingly unavailable if the higher-clause contains an R1 predicate such as *seem* or *likely*, or the passive form of transitive verbs like *believe* — and if the subject of that predicate is expletive *it*:

(50) **Kayne-paradigm \bar{A} -extraction impossible with an R1 predicate and expletive *it***

- a. *Mary, who it seems ___ to be the best candidate ...
 b. *Mary, who it is likely ___ to be the best candidate ...
 c. *Mary, who it was believed ___ to be the best candidate ...

23. To the best of my knowledge, these facts, though well-known in their own right (Chomsky, 1980, 28 ex. 77), have not been previously noted as posing a particular problem for the analysis of the Kayne paradigm.

The unacceptability of examples comparable to (50) but without \bar{A} -movement, such as the following, has already been explained.

(51) **Examples comparable to (50) but without \bar{A} -movement**

- a. *It seems Mary to have solved the problem. (= (33c), (13a))
- b. *It is likely Mary to be the best candidate.
- c. *It was believed Mary to be the best candidate.

Since an unaccusative predicate like *seems* lacks an R2 probe, there is no parse for (51a-c) in which the embedded subject has been extracted out of its original clause. Consequently, the infinitival clauses in these examples could not have been produced by Exfoliation in the first place.

As things stand, however, the examples in (50) should not have the same status. All things being equal, the *wh*-phrase in (50) should be able to participate in a derivation in which it raises only as far as the specifier of *to*P in the embedded clause, where it is eventually targeted across the embedded CP boundary by the \bar{A} -probe on *v* in the higher clause. This configuration meets the structural description for Exfoliation.

The unavailability of the Kayne paradigm in these R1 constructions cannot be attributed to any general incompatibility of the paradigm with unaccusativity or passive voice. As examples like (47a) above already showed, when the subject of a passive ditransitive verb is a raised indirect object, rather than expletive *it*, Kayne-paradigm \bar{A} -extraction of the embedded subject is successful. The availability of subject \bar{A} -extraction from the complement of an R1 predicate appears to be sensitive to whether the higher-clause subject is argumental or expletive. The promotion of expletive *it* to subject position that must somehow be incompatible with this pattern of extraction — and that fact is unexpected under the proposal as developed so far.²⁴

I propose that the source of the incompatibility is the availability of a successfully competing derivation in which it is *wh*-phrase subject of the embedded clause rather than expletive *it* that raises to the specifier of the higher *v*P — and ultimately forms the subject of the higher clause before undergoing *wh*-movement:

(52) **Alternative to (50a-c)**

- a. Mary, who ___ seems ___ to be the best candidate ...
- b. Mary, who ___ is likely ___ to be the best candidate ...
- c. Mary, who ___ was believed ___ to be the best candidate ...

Recall our discussion in section 3.2.1, of alternations like those in (53)-(54) below:

24. It might be possible to demonstrate the same with an unaccusative ditransitive. If it is indeed a general fact that an unaccusative predicate may not be passivized, as first argued by Perlmutter and Postal (1984), the unavailability of passivization for a verb of saying whose subject refers to an inanimate message source (e.g. a book chapter) might indicate that the surface subject is a raised locative rather than an external argument:

(i) **Unaccusative use of communication verbs**

- a. Mary claims that language is innate.
- b. It is claimed by Mary that language is innate.
- c. Chapter 3 claims that language is innate.
- d.* It is claimed by chapter 3 that language is innate.

The Kayne paradigm is available with the active version of this type of construction, which might thus be an unaccusative counterpart of examples like (47a):

(ii) **Kayne paradigm with (arguably) unaccusative communication verb**

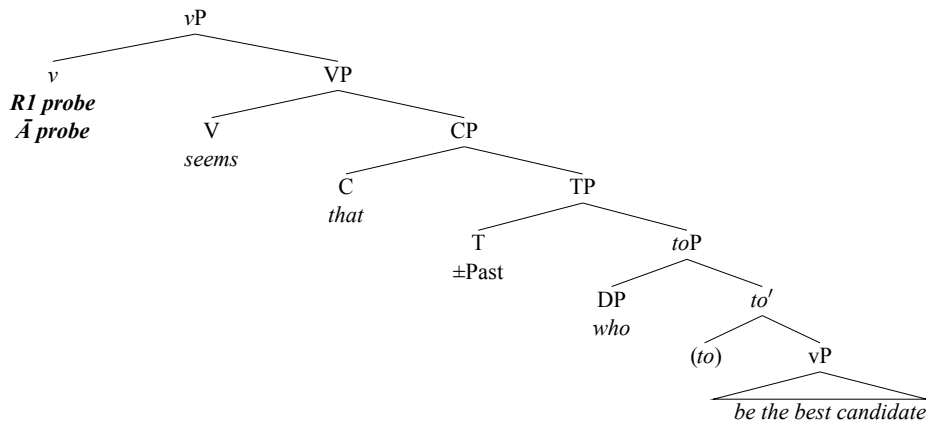
- Language, which chapter 3 claims ___ to be innate ...

- (53) **R2 alternates with full finite CP (= (25))**
 a. Sue believes Mary to have solved the problem.
 b. Sue believes that Mary has solved the problem.
- (54) **R1 alternates with full finite CP (= (26))**
 a. Mary seems to have solved the problem.
 b. It seems that Mary to have solved the problem.

One of the two accounts considered in that discussion proposed that both the complement CP and its subject are possible goals for the R2 probe on a higher V or the R1 probe on a higher *v*, and that free choice among these options is responsible for the alternation. The choice is free because the domination relation between CP and its subject prevents either phrase from counting as an intervener for the other. In addition, I suggested that variants with expletive *it* like (54b) reflect the choice of the CP as a whole as the goal for the R1 probe on *v* — with the merger of *it* satisfying the probe’s EPP property.

Note now that both the R1 probe and the \bar{A} -probe relevant to *wh*-movement are located on *v*. With this in mind, consider the choices available to the R1 probe on *v* in a potential Kayne-paradigm situation in which a *wh*-phrase has formed the specifier of *to*P in the embedded clause (and has not raised further to T):

(55) **Potential Kayne-paradigm situation**



All things being equal, the R1 probe on *v* should have two choices for the goal that satisfies its EPP requirements: (1) the entire embedded CP, or (2) *who*, which forms the specifier of the embedded *to*P. Crucially, however, choice (2) is also the (only possible) goal for the \bar{A} -probe that is also located on *v*. A natural Economy condition in such situations is the following:²⁵

(56) **Economy condition on multiple probe satisfaction**

When two probes can satisfy their requirements with a single operation (in (55), movement of *who*), this option blocks any alternative derivation in which the same pair of requirements are satisfied with two distinct operations (in (55), movement of *who* and merge of *it*).

This Economy condition in effect blocks each example in (50) because of the availability of the corresponding example in (52). In each case, the ability to satisfy both probes on *v* by the raising of *who* pre-

25. Exactly this logic was pursued by Pesetsky and Torrego (2001) in their account of the complementizer-trace effect, though their account cannot be cited as independent support for the present proposal, in view of the very different analysis of this effect offered below. Ideas of a similar sort have been advanced under the rubric of “multitasking” (Rackowski and Richards 2005; Kotek 2014b; Van Urk and Richards 2015; among others), though it remains to be seen whether there is a consistent logic to these proposals that works across the various cases in which it has been applied. I leave this (ultimately crucial) task for later research.

empties the separate satisfaction of the R1 probe by *it*-CP doubling and of the \bar{A} probe by the raising of *who*. Condition (56) does not, however, prevent expletive *it* from cooccurring with \bar{A} -movement from lower positions in the clause, as in (57) below, since the only possible clause-internal goal for the R1 probe on *v* is *Mary*, which is not a possible goal for the \bar{A} -probe on *v*:

- (57) **\bar{A} -movement not generally incompatible with expletive *it***
 this problem, which it seems that Mary has solved ...

Likewise, the Economy condition does not block (47a), where the main-clause indirect object is a closer goal for the R1 probe on *v* than the embedded subject. Once again, this is not a situation in which the requirements of both probes on *v* may be satisfied by a single goal.

Finally, before leaving the Kayne paradigm, it is worth reflecting on how remarkable and challenging the paradigm is in its own right — whether or not the account of the Kayne paradigm presented here proves correct. Note first that all the constructions discussed in this section represent a rather learned register — not normal conversational English. Nonetheless speakers have stable intuitions that a particular set of predicates disallows normal R2, but does permit an infinitival complement so long as:

- the matrix predicate is a passive or unaccusative verb, an unaccusative adjective, or noun, and the embedded subject undergoes R1 movement; or
- the embedded subject undergoes \bar{A} -movement and the embedded clause is not doubled by expletive *it* in the subject position of the higher clause.

The contrast discussed in this subsection and summarized in the second bullet above, is especially remarkable. The judgments are clear and stable, but they concern an strikingly obscure set of circumstances in a paradigm that is already confined to a special register of English. Whatever accounts for the comings and goings of \bar{A} -extraction in the Kayne paradigm should almost certainly be rooted in principles of far greater generality than the descriptive statements above.²⁶ If the discussion here is correct, the Kayne paradigm as a whole follows from the very nature of the process that creates infinitival clauses in the first place; and the remarkable observation in the second bullet above might follow from a general Economy condition on probe-goal interaction.

4.4 *Unraised nominatives in Icelandic: another derivational opacity argument*

In section 4.1, several English constructions were discussed in which the DP that would otherwise be the subject of the sentence occupies a post-verbal position, and some other element appears to satisfy the EPP requirement for a preverbal subject. The constructions in question included predicate fronting, locative inversion and clauses with expletive *there*). The point of interest in that section was the fact that when these

26. The logic of this point is not new, of course, and mirrors Chomsky's (1982, 75) well-known remarks concerning the parasitic gap construction: "A descriptive statement ... does not resolve the problem of parasitic gaps; rather, it poses the problem. The problem is to explain why the phenomenon exists with the properties it has. For the reasons discussed earlier, the answer is very likely to be that the phenomenon exists with the properties it has because of other properties of UG and the particular grammar that are quite independent of parasitic gaps; again, it is most unlikely that particular grammars have rules governing parasitic gaps or that UG includes specific principles bearing on this phenomenon, which is a particularly interesting one for just this reason. While this seems a very plausible assumption, it amounts to quite a strong claim, as noted earlier. It means, for example, that all of the quite intricate properties of parasitic gaps must be reducible to general principles of UG, given rules and structures of the particular grammar that are established on other grounds; it means as well that if languages appear to differ with respect to the existence or properties of parasitic gaps, these differences must be completely explained on the basis of other structural differences among the languages in question. The task for the linguist, then, is to show how independent principles of UG and independent properties of a particular grammar interact to yield the distribution and interpretation of parasitic gaps." Though the Kayne paradigm has not received the attention accorded to parasitic gaps, I believe it poses the same exciting and instructive challenge to the theory of syntax, for reasons identical to those enumerated by Chomsky in this passage.

constructions are found embedded as infinitives, the preverbal phrase behaves, from a standard lexicalist perspective, as if it anomalously requires case — and the observation that no such anomaly arises in the Exfoliation theory. In the concluding paragraph of that section, however, we made an additional important observation: that the Exfoliation approach also correctly predicts that the post-verbal nominal runs into no special licensing problem in an R2 clause. It is licensed before Exfoliation by whatever licenses it in finite clauses that never undergo Exfoliation, and therefore remain finite).

Very similar observations can be made about an infamous puzzle in Icelandic syntax noted by Yip et al. (1987, 240-242) and further discussed by Marantz (1991) and others. As is well-known, Icelandic permits a subject to bear a so-called “quirky” case when required as a lexical property of the verb. A non-quirky third-person complement of such a verb bears nominative morphology and governs number agreement on the finite verb, as (58) exemplifies.

(58) **Quirky subject, nominative object in finite clause (Icelandic)**

- a. Barninu batnaði veikin.
 the.child.DAT recovered.from.3SG the.disease.NOM.SG
 ‘The child recovered from the disease.’ (Andrews 1982, 462)
- b. Barninu bötнуðu veikirnar.
 the.child.DAT recovered.from.3PL the.disease.NOM.PL
 ‘The child recovered from the diseases.’

A point of particular interest has been the fact that the same case pattern is found in R2 constructions, where the embedded clause is infinitival, as (59) shows. The possibility of the parenthesized matrix adverbial following the raised subject makes it clear that this is indeed an R2 construction:

(59) **Quirky subject, nominative object in an R2 infinitival complement (Icelandic)**

- Læknirinn_i telur barninu (í barnaskap sínum_i) batnaði veikin.
 the.doctor.NOM believes the.child.DAT (in foolishness his) recovered.from.INF the.disease.NOM
 ‘The doctor_i believes the child (in his_i foolishness) to have recovered from the disease.’

The embedded NOM object in (59) is particularly unexpected under standard lexicalist theories of case and nominal licensing that accept the following statements as tenets:

- (a) A nominal must be case-licensed through agreement with an appropriate head, and nominative case is the result of agreement with finite T.
 (b) Non-finite clauses are born non-finite.

In examples like (59), as Marantz (1991, 18-19) notes, “if tensed inflection with agreement is the source of NOM case on the objects of DAT subject verbs, we would expect the object to lose its NOM case in an infinitive, because infinitive inflection does not assign NOM. Instead [...], such DAT subject/NOM object verbs still take a NOM object in infinitival constructions although there is no element around to assign NOM case.” The only finite instance of T is located in the main clause, separated from the embedded NOM argument by an intervening DAT, and assigns its NOM (in standard theories) to the main-clause subject.

One of the two propositions (a) or (b) must therefore be false. Marantz argued that it is (a) that must be jettisoned, and that case is irrelevant to nominal licensing.²⁷ If proposition (b) is false, however, as has been argued here, we need not take phenomena like (59) to even bear on the question of whether (a) is correct. Just as in the case of the English constructions discussed in 4.1, we are free to propose that the object of the embedded verb in (59) is licensed and bears NOM morphology as a consequence of pre-Exfoliation agreement with the ϕ -probe on the finite T of its clause.

Of course, as a matter of logic, the Exfoliation approach does not by itself provide independent support for such a proposal. It merely removes examples like (59) as an obstacle to it. We might accept the arguments for Exfoliation but still have other reasons to propose that an Icelandic object bears NOM morphology not because it is targeted by a ϕ -probe on T, but because it is the highest nominal in its clause in need of case morphology — as in the “Case in Tiers” proposal of Yip et al. (1987) and the “Dependent Case” model of Marantz (1991). On this view, NOM might be a trigger rather than a consequence of agreement with T in languages like Icelandic, just as argued by Bobaljik (2008). But even so, one could still argue, in view of patterns like (32) and much other work (for example, Levin 2015), that nominals do require special licensing, as I have been assuming throughout.

Whatever the correct view of the relation between NOM and agreement might be, the Exfoliation approach entails that there is a derivational stage at which agreement obtains between T and NOM even in an infinitival clause like the embedded clause of (59).²⁸ Is there independent evidence for such a stage? If some other phenomenon can be successfully argued to correlate specifically with agreement (rather than with NOM case, independent of agreement), and if that phenomenon is detected in infinitival clauses like the embedded clause of (59), it would provide a new independent derivational opacity argument for an Exfoliation analysis of such clauses. Below, I discuss two Icelandic phenomena with exactly these properties.

4.4.1 *Anaphor Agreement Effect in Icelandic infinitives*

The first phenomenon of relevance is the common incompatibility of reflexive anaphors with agreement, which Rizzi (1990a) dubbed the *Anaphor-Agreement Effect (AAE)*, exemplified in (60) for English and Icelandic:

27. In place of traditional ideas about the relation between case-licensing and the distribution of nominals, Marantz advocates an account of R1 that is EPP-based — with a preference for movement over external Merge accounting for the obligatory movement of the subject of an infinitive in English seen in (33). The distinction between nominals and non-nominals in other positions (such as the patterns in (32)) is left without an explanation on this view.

28. Nicholas Longenbaugh (personal communication) points out that this conclusion raises a problem concerning the order of operations. It has been widely argued in the literature that a DAT subject in Icelandic blocks person agreement (and, for some but not all speakers, number agreement as well) between T and NOM in a DAT-subject construction — unless the DAT argument undergoes A-movement to a position where it no longer structurally intervenes between T and NOM (Sigurðsson and Holmberg 2008 and references cited there). When a DAT subject is attracted into a higher VP by an R2 probe, movement of just this sort takes place, so it might seem that all is well. The ordering problem arises, however, if Exfoliation derivationally precedes the raising of the DAT argument. After Exfoliation, the T of the embedded clause, which might have agreed with the embedded NOM argument, is no longer present. If the arguments in the following subsections are correct, T does agree with NOM before Exfoliation removes the TP layer. There are two families of solutions. First, we might permit agreement to take note of the movement of the intervening DAT into the higher VP *before* Exfoliation, either by specifying the following ordering or by viewing all three processes as simultaneous. Exfoliation on this view is not so much a precondition for movement from a non-edge position as a rescue strategy when such movement happens:

1. move embedded subject into the higher VP
2. mark T-NOM agreement in the lower clause as a non-violation of minimality
3. Exfoliation applies

Alternatively, we might permit T to find NOM as its goal across an intervening DAT, but mark the violation of minimality on T itself — so that when T is eliminated as a by-product of Exfoliation, the violation disappears as well. I leave the issue of the correct solution open.

(60) **Anaphor-Agreement Effect**

- a. *Mary believes that herself gave a good talk.
 b. *Jón segir að sig elski Maríu. (Icelandic)
 John says that REFL love.SUBJ.3SG Mary

The phenomenon seen in (60) is widespread across unrelated and geographically diverse languages, suggesting that its roots run deep — and in particular, that we are not dealing with an idiosyncratic paradigm gap. Evidence that it is *agreement* that is cross-linguistically toxic to reflexives, and not *NOM* case (or subjecthood), comes from multiple sources — in particular, two important predictions noted by Woolford (1999, 258). First, the AAE hypothesis predicts, apparently correctly, that a *NOM*-marked reflexive anaphor should be acceptable in a language without subject agreement (as long as its antecedent is sufficiently local). It also predicts, again apparently correctly, that any syntactic position that is agreed with, even a non-subject, should block the appearance of a reflexive in that position. Further indirect evidence for the cross-linguistic reality of the AAE is the fact that languages often seem to go out of their way to provide an expression of reflexivity that does not run afoul of the AAE. These strategies may be particular to AAE-inducing positions, permitting the suppression of otherwise obligatory ϕ -agreement (marginally possible in Italian; Sundaresan (2016, 79 ex. 3)) or the replacement of normal object ϕ -agreement morphology with an invariant marker (as in Swahili, discussed by Woolford). Alternatively, the special strategy may involve the reflexive itself, which may be lexically designated as a bearer of an oblique case that side-steps agreement (as in the Inuit languages studied by Bok-Bennema 1991 and discussed in an AAE context by Woolford and by Yuan 2017a), or which may be embedded in a larger nominal that can be the target of agreement without running afoul of the AAE.²⁹

Since long-distance binding of a reflexive across a subjunctive clause boundary is generally permitted in Icelandic, it is no surprise that when a reflexive in such a clause bears quirky case and therefore fails to trigger ϕ -agreement, it is acceptable as a subject:

(61) **No AAE effect for quirky subject (Icelandic)**

- Hún sagði að sér þætti vænt um mig.
 she said that REFL.DAT was.SUBJ.3SG fond of me
 ‘She_i said that she_i was fond of me.’ (Maling 1984, 216 ex. (8b); Woolford 1999, 261 ex. (9a))

It is likewise no surprise that a *NOM* object, which *is* a target for agreement by finite T, may not be a reflexive in a finite clause. This is, in essence, just an Icelandic example of the AAE affecting direct objects:

(62) **AAE effect for *NOM* object (Icelandic)**

- *Maríu leiðist sig.
 Maria.DAT find.boring.3SG REFL.NOM
 Intended: ‘Maria finds herself boring.’
 (Everaert 1991, 289, ex 27; cf. Woolford 1999, 261 ex 8b)

Surprising from an AAE perspective, however, is the fact that a reflexive is also excluded as the *NOM* object in an *infinitival* R2 clause like (59), where there is no visible agreement morphology whatsoever in the embedded clause, as illustrated in (62):

29. See Sundaresan (2016) for a recent discussion of many such strategies. I owe my own understanding of these possibilities to the preliminary sections of Yuan (2017a).

(63) **AAE effect for NOM object (Icelandic)**

*Ég tel Maríu leiðast sig.
 I believe Maria.DAT find.boring.INF REFL.NOM

Intended: ‘I consider Maria to find herself boring.’

(Heimar Viðarsson and Halldor Sigurðsson, personal communication; building on Everaert 1991)

The unacceptability of the reflexive in (63) cannot be attributed to a failure of c-command by the DAT antecedent, since a DAT nominal may serve as the antecedent for a *non-NOM* reflexive, as noted by Zaenen et al. (1985, 456 ex 31) and Taraldsen (1996, 200 ex 28), among others. If we adopt a lexicalist approach to infinitival clauses, and if it is truly agreement that blocks the reflexive anaphor in examples like (60) and (63), we do not expect (61) to contrast with (63), since in both constructions the reflexive has a local antecedent and in neither construction is there visible agreement between the verb and the reflexive.

From the derivationalist perspective developed here, however, this contrast is expected. Before Exfoliation, the embedded clause in (63) was fully finite, and as such showed agreement between the embedded T and the NOM object. If the AAE is a correct generalization (and if no other factor explains the unacceptability of the reflexive in examples like (63)), this observation constitutes independent evidence for a derivational stage in which infinitival clauses are full and finite. It also constitutes a striking example of *opaque interaction* in syntax, since all signs of the agreement that otherwise correlates with the impossibility of a reflexive have been obliterated by Exfoliation.

At least one significant problem remains, however. The impossibility of an embedded NOM object reflexive in an R2 construction like (63) contrasts with the complete acceptability of a reflexive as the raised ACC subject in an R2 construction — despite the fact that here too the reflexive occupied a position targeted by agreement before Exfoliation took place:

(64) **No AAE effect for raised ACC subject in R2**

- a. She believes herself to be strong.
- b. Hún telur sig vera sterka. (Icelandic)
 She.NOM believes REFL.ACC be.INF strong.F.ACC

What accounts for this contrast? One obvious difference between the raised subject in (64) and its unraised counterpart in examples like (63) is the fact that the embedded subject in (64) has received a new case (ACC) after moving into the higher VP, while nothing comparable takes place in examples like (63). I suggest that this fact holds the key to the contrast.

One sign that case, rather than raising per se, is responsible for the contrast comes from R2 constructions in which a new case is not assigned after movement of the embedded subject. Icelandic differs from English in permitting an R2 probe on an unaccusative V with DAT-subject verbs like ‘seem’ and ‘appear’ — as in (65), where the availability of the parenthesized higher-VP subject-oriented parenthetical to the right of the raised subject argues for R2 movement. Famously, the case of the raised subject is NOM, as predicted in multiple ways by the various proposals mentioned above — since it is not locally commanded by a distinct non-oblique nominal either before or after raising into the matrix VP, and enters an agree relation with the embedded T before Exfoliation, and with the matrix T after raising:

(65) **“Nominative with infinitive” construction (Icelandic)**

Mér sýndist Haraldur (í barnskap mínum) hafa gert þetta vel.
 me.DAT seemed Harold.NOM (in foolishness my) have.INF done this well

‘Harold seemed to me (in my foolishness) to have done this well.’

(Thráinsson 1979, 426, ex 121)

Crucially, the raised NOM subject in this construction may not be a reflexive:

(66) **AAE effect in “Nominative with infinitive” construction (Icelandic)**

*Mér sýndist sig hafa gert þetta vel.
 me.DAT seemed REFL.NOM have.INF done this well
 ‘I seemed to myself to have done this well.’

This problem can be resolved if we view Icelandic case and nominal licensing as sharing key properties with case and licensing in Sakha, as analyzed by Baker and Vinokurova (2010, esp. 639) — and add to the picture a novel view of the source of the AAE: that it is a Case Filter effect. Baker and Vinokurova argued at length, on grounds unrelated to the present discussion, that nominal licensing in Sakha takes place in one of two ways: either (1) by agreement with an element such as T, or (2) by the assignment of dependent case (under local c-command by a distinct non-oblique nominal). The novelty in their proposal was two-fold. First, the integration of dependent case into a view that also countenances agreement as a source of case; and second, the idea that dependent case has a licensing role and is not purely morphological (a view independently supported by Branen 2017 on Kikuyu). If Icelandic has essentially the same system as Sakha (and the clause is a locality domain for dependent case), then licensing by agreement with T should be the only strategy available for the subject of a finite clause, or for a direct object locally c-commanded only by an oblique nominal within that clause.³⁰

Now let us introduce the novel view of AAE to be advanced here. I propose that positions targeted by agreement are not intrinsically toxic to a reflexive, as in standard views of the AAE, but merely fail to case-license the reflexive:

(67) **AAE revised**

Agreement does not case-license a reflexive anaphor.

It follows from (67) that a reflexive that remains in a position where agreement with T is the only possible source of licensing will violate the Case Filter. But if the reflexive moves to a case-licensing position not subject to (67), no violation will ensue. I suggest that this is what saves the reflexives in (64), assuming a Baker-Vinokurova theory of case assignment.

If this proposal is correct, an obvious question concerns the reasons why (67) should hold. One possibility is that a reflexive is simply not an appropriate agreement target in the first place for a probe on T — either because of some intrinsically anti-reflexive property of agreement (as suggested by Picallo 1985 and Rizzi 1990a) or perhaps because reflexives are deficient in some ϕ -feature, as has often been suggested, crucial to successful agreement.³¹ I will leave this matter for future research.

4.4.2 *Syncretism-related amelioration of a person restriction in Icelandic infinitives*

We now turn to the second agreement-related phenomenon that might provide additional evidence for a derivational stage in which the verb of an R2 infinitive is finite and shows agreement with a NOM argument.

30. An oblique nominal like the dative subject in (61) may be presumed to be licensed by a null P — another form of licensing (cf. Levin (2015)). Note that in the Exfoliation theory, this does not prevent such obliques from undergoing Raising, since no Activity Condition is assumed.

31. If this is correct, a question arises about some of the strategies mentioned above as “end runs” around the AAE in some languages. In particular, the suppression of otherwise obligatory ϕ -agreement marginally possible in Italian and the replacement of normal object ϕ -agreement morphology with an invariant marker found in Swahili could be viewed as instances of special case-licensors available for reflexives.

As is well-known, [+Participant] (first-person and second-person) NOM objects are problematic in finite clauses with overt agreement, for most speakers. Example (68) demonstrates this effect for clauses with present and past-tense indicative verbs.³²

(68) **NOM objects in present- and past-tense indicative clauses (Icelandic)**

| Present | Past |
|---|---|
| a. (?)Henni leiðist ég. her.DAT find.boring.PRS.1SG I.NOM Intended: ‘She finds me boring.’ | g. (?)Henni leiddist ég. her.DAT find.boring.PST.1SG I.NOM Intended: ‘She found me boring.’ |
| b. (?)Henni leiðist þú. her.DAT find.boring.PRS.2SG YOU.NOMSG Intended: ‘She finds you (sg.) boring.’ | h. (?)Henni leiddist þú. her.DAT find.boring.PST.2SG YOU.NOMSG Intended: ‘She found you (sg.) boring.’ |
| c. ✓ Henni leiðist hann. her.DAT find.boring.PRS.3SG he.NOMSG ‘She finds him boring.’ | i. ✓ Henni leiddist hann. her.DAT find.boring.PST.3SG he.NOMSG ‘She found him boring.’ |
| d. *Henni leiðumst við. her.DAT find.boring.PRS.1PL WE.NOM Intended: ‘She finds us boring.’ | j. *Henni leiddumst við. her.DAT find.boring.PST.1PL WE.NOM Intended: ‘She found us boring.’ |
| e. ?Henni leiðist þið. her.DAT find.boring.PRS.2PL YOU.NOM.PL Intended: ‘She finds you (pl.) boring.’ | k. ?*Henni leiddust þið. her.DAT find.boring.PST.2PL YOU.NOM.PL Intended: ‘She found you (pl.) boring.’ |
| f. ✓ Henni leiðast þeir. her.DAT find.boring.PRS.3PL they.NOM ‘She finds them boring.’ | l. ✓ Henni leiddust þeir. her.DAT find.boring.PST.3PL they.NOM ‘She found them boring.’ |

Most accounts of the contrast between [+Participant] and third-person NOM attribute the effect to some failure connected to agreement with [+Participant] NOM objects. In one family of accounts, the DAT argument is a structural intervener that blocks person agreement between T and the NOM object — which in turn runs afoul of a licensing requirement on [+Participant] nominals that requires such agreement (Anagnostopoulou 2003, 272-274; Béjar and Rizac 2003, 56ff.). Third-person nominals lack person features entirely, and are thus immune to the agreement requirement. One sign of the relevance of agreement to these contrasts is the fact that the contrast disappears for speakers who have replaced NOM objects in their speech with ACC objects, which do not trigger verbal agreement (and is not found in closely related Faroese, where ACC is often the norm).

It is therefore significant that a similar effect (for some speakers) surfaces even in *infinitival* R2 clauses, as first noted by Sigurðsson (2004, 155 note 14) and discussed in more detail by Schütze (2003):

(69) **1PL and 2PL NOM objects in an R2 infinitive (Icelandic)**

Ég tel henni leiðast...
I believe her.DAT find.boring.INF...
‘I consider her to find boring...’

32. For the comparative judgments given here, I am very grateful to Höskuldur Thráinsson (reporting judgments of two others as well) and to Halldór Ármann Sigurðsson, p.c. The overall strength of their judgments of deviance differed somewhat, but I believe the pattern presented here represents their data fairly. It is unfortunately important to emphasize the uncertainty with which these judgments were given, and the variation that seems to exist among Icelandic speakers. I am also grateful, for example, to Iris Edda Nowenstein, a younger generation speaker, who permits 3PL agreement in the (d) and (j) examples of (68) and dislikes the (c) and (f) examples of (69) below at a level comparable to the others in that paradigm.

- | | |
|-------------------------------|-----------------------------------|
| a. ?* ...ég. ...I.NOM.SG | d. * ...við. ...we.NOM |
| b. ?* ...þú. ...YOU.NOM.SG | e. ?* ...þið. ...YOU.NOM.PL |
| c. ✓ ...hann. ...he.NOM | f. ✓ ...þeir. ...boys.they.NOM |

If the contrast between third-person and [+Participant] subjects in (68) is due to an agreement problem, then we must conclude that the same kind of agreement is present in the infinitival embedded clauses of (69), precisely as predicted by an Exfoliation account.

The point might be taken even further. There might be evidence that the actual *exponents of finite agreement* are in derivational play before Exfoliation. Let us now pay attention to the fact (ignored so far) that the judgments listed for the deviant, non-third-person examples in (68) are not equally strong. The worst example in every paradigm is the 1_{PL} form; the second worst example is the 2_{PL} form; and the singular [+Participant] forms are judged deviant, but not quite as bad. Schütze (2003) attributes to Sigurðsson the important observation that these shaded judgments correlate with the degree of syncretism of the relevant [+Participant] verbal morphology with the unmarked 3_{SG} form of the verb (which one may view as a non-agreeing form). Quoting Schütze’s summary of the generalization (adapted to the two paradigms listed above):

“[In a] detailed survey of agreement judgments, [...] Sigurðsson (1990-1991, 1996) observed the following descriptive generalization: ‘Many speakers seem to accept [1st- and 2nd-person] nominative objects in so far as they can be interpreted such that they both do and do not control agreement.’ Thus, [(68a/g) and (68b/h)] are essentially fine because all three singular forms of this verb [in both tenses] are syncretic; [(68d/j)] is completely out because the 1_{PL} form sounds nothing like the 3_{SG} form; [(68k)] is marginally possible, according to Sigurðsson, because the 2_{PL} verb form sounds very similar to the 3_{SG} form.” — and [(68e)] is even better because the 2_{PL} past tense form is fully syncretic with 3_{SG}. (Schütze 2003, 299)

Schütze offers a proposal to explain this generalization, according to which a ϕ -probe on T that finds and agrees (or attempts to agree) with the DAT argument in constructions like these may probe further and agree for a second time with the lower NOM argument (with some degree of marginality) — so long as the morphological consequence for the verb of finding the DAT argument (i.e. 3_{SG}, the unmarked form) and the morphological result of agreement with the [+Participant] argument sound the same or very similar. Sigurðsson’s generalization and Schütze’s proposal thus groups this phenomenon with other cases of feature conflict resolution ameliorated by syncretism, such as those discussed by Pullum and Zwicky (1986) and Citko (2005, 486-488), among others. Asarina (2011, 188 ff.) attributes the phenomenon to the possibility of a single node bearing a split feature-structure as a consequence of multiple case assignment or agreement. This result is acceptable so long as the condition in (70) is obeyed:

(70) **Spellout of multiple feature structures** (Asarina 2011, 191)

All feature structures on a single item must be spelled out by a single insertion rule.

If these proposals concerning (68) are on the right track, then the recapitulation of the paradigm in (69) argues not only that an R2 infinitive spends some derivational time as a full finite clause, but also that provisional lexical insertion takes place during the finite phase of the derivation (updated after Exfoliation),

so that syncretisms and non-syncretisms that disappear after Exfoliation nonetheless interact with (70) in a manner detectable in speaker judgments.³³

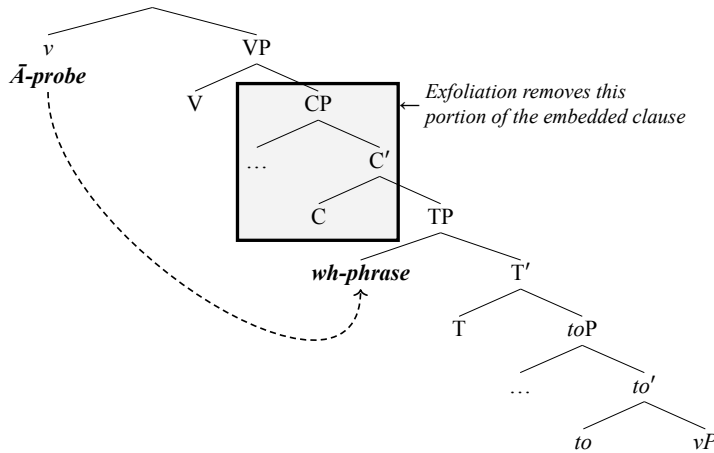
This result is potentially, in my view, a particularly strong argument for the Exfoliation approach, if correctly analyzed — and an interesting example of the kind of derivational opacity predicted by the approach. The main grounds for caution appear to be empirical, given the (presently unknown) degree of variation and uncertainty that surrounds some of the important contrasts. For that reason, I will leave for future research the possibility of a less cautious presentation of the findings of this section.

5 Exfoliation of CP alone

5.1 Complementizer-trace effects

The discussion so far has focused on derivations in which the subject of an embedded CP raises only as far as the specifier of *to*P, yielding infinitivization when it is the goal of one or another clause-external probe. But the subject of an embedded clause may also satisfy the EPP property of T by raising to the specifier of TP, of course, where it may be targeted by the very same higher probes. Such a scenario should also trigger Exfoliation, but should not yield an infinitive. Clausal layers higher than TP should disappear, but the finite TP layer will remain. Consider, for example, the predicted effect of an \bar{A} -probe on *v* that finds a *wh*-phrase in the specifier of TP of a complement clause. This *wh*-phrase should be able to move into the higher *v*P, so long as the CP layer of the embedded clause is exfoliated away:

(71) Exfoliation of only CP layer



The Antilocality constraint (31), repeated below, entails that there is no way for the *wh*-phrase specifier of TP in (71) to escape from the embedded clause except by skipping the specifier of CP, triggering Exfoliation, as shown. There is no “plan B”.

(72) Antilocality constraint (=31)

Movement to the edge of CP must cross a phase boundary.

33. The fact that the ability or inability to realize a pre-Exfoliation verb form affects speaker judgments contrasts with the inability of pre-Exfoliation EPP violations to affect speaker judgments, as discussed in section 3.2.4. Recall from that section’s discussion, however, that it is an independently observable fact that an unsatisfied EPP feature is only toxic if it remains to the end of the derivation. The phenomenon discussed in this section, by contrast, involves a failure of *process*: failure to find a pronounceable form. It is plausible, though perhaps not inevitable, that this is the reason for the contrast in effect.

Consequently \bar{A} -extraction of the subject from a clause that remains finite should be incompatible with the appearance of an overt complementizer. This prediction is correct and well-known as the *complementizer-trace effect* first explored by Perlmutter (1968, 1971) and studied by many others since.³⁴ The complementizer *that* is obligatorily absent when the subject of a finite clause is extracted by \bar{A} -movement, with no comparable requirement when a vP -internal element such as the direct object is extracted:³⁵

(73) **Complementizer-trace effect**

- a. Who do you think (that) Sue met ____ .
- b. Who do you think (*that) ____ met Sue.

None of the elements of this explanation for the complementizer-trace effect are specific to it — perhaps uniquely among the various explanations that have been advanced for the effect. Exfoliation has been extensively argued for in previous sections, and the Antilocality constraint was a crucial component of the explanation of the Kayne paradigm. The account is also robust enough to correctly predict complementizer-trace effects with \bar{A} -movement of non-nominal phrases that satisfy or obviate the EPP requirement of T, in the Locative Inversion and Predicate Fronting constructions discussed in section 4.1:

(74) **That-trace-Effect with Locative Inversion and Predicate Fronting**

- a. How much more important than linguistics did she say (*that) ____ was the fate of the planet.
- b. In which room did she say (*that) ____ were found the finest examples of Athenian sculpture.

There are some missing pieces, however. One concerns the optional absence of *that* when a non-subject is extracted, an instance of the more general optionality of overt *that* in complement clauses in English. We will offer an Exfoliation explanation for this in section 6.7. Another problem is the fact that Antilocality blocks short-distance movement to the specifier of CP in constructions such as *Who read the book?* — a topic that we will take up shortly.

A third problem concerns Antilocality itself. As we have seen, it correctly predicts a complementizer-trace effect for a variety of elements \bar{A} -moved from the region between vP and CP, including locatives and predicate phrases in inversion constructions, as well as canonical subjects. On the other hand, the constraint wrongly predicts that a vP -external adjunct should also show a *that*-trace effect. As Huang (1982, 575) and Lasnik and Saito (1984, 255 ff.) observed, this is not the case. Extraction of *why* from an embedded clause is acceptable even across an overt *that*. In example (75b), the fact that the reason variable bound by *why* outscopes negation in the embedded clause makes it clear that *why* originates in a position outside the embedded vP . Movement of this adjunct should thus have been subject to Antilocality, yielding a complementizer-trace effect. Example (75c) makes the same point for a different adjunct, showing that the problem is not a peculiarity of *why*:

(75) **No *that*-trace Effect with extraction of adjunct from a vP external position**

- a. Why do you think [(that) he left early ____]? (Lasnik and Saito 1984, 255 ex. 80)
- b. Why did the reporter say [(that) Mary won't vote for the bill ____]?

34. Fillmore (1963, 220-221, esp. ex 32) appears to be the first discoverer of the effect that Perlmutter rediscovered a few years later. See Pesetsky (2017) for a survey of the many accounts that have been offered.

35. Ours is not the first account to entertain the possibility of a bare CP-less clause in the acceptable variant of (73b). Earlier proposals with this property include Doherty (1993/2013, 103 ff.), Erlewine (2017), Rizzi and Shlonsky (2007, 150), and Chomsky (2015, 10 ff.). In contrast, most other attempts to explain the complementizer-trace effect in English, including those surveyed by Pesetsky (2017), assume the continued presence of a complementizer when the subject is extracted, and take it as their main task to determine why the complementizer must be null under these circumstances. In this work, I will attempt a detailed comparison with earlier proposals, in the hope that the generality of the Exfoliation approach speaks for itself.

- c. According to which meteorologist did Sue say [(that) it wasn't going to rain tomorrow ___]?

The ν P-external elements that yield a complementizer-trace effect do have a property in common that distinguishes them from those that do not: they have all *moved* into the ν P-external domain to the position from which they \bar{A} -move from a lower position within the ν P. This is true of normal subjects, assuming the VP-internal subject hypothesis, and is self-evidently true of the fronted locative and predicate phrases in (74) — but is not true of the adjuncts in (75), which enter the derivation ν P-externally.

If movement from ν P proceeds through the edge of that phase, an alternative generalization emerges that can successfully replace Antilocality. Consider the situation in which an \bar{A} -probe on C finds a goal external to ν P that has moved there from the edge of ν P. This goal occupies multiple distinct positions that are all visible to that probe — including the specifier of ν P and the goal's final position, plus any intermediate ν P-external positions that the goal might have moved through. By contrast, when such a probe finds an element like *why* that was externally merged outside ν P (and did not move within the ν P-internal domain), this goal does not occupy multiple accessible positions. If the presence or absence of multiple accessible positions is the significant factor in blocking vs. permitting movement to the specifier of CP, it suggests that a kind of *Lethal Ambiguity* condition (McGinnis 2004) is at work, rather than Antilocality per se:³⁶

(76) **Lethal Ambiguity Antilocality Constraint (LAAC)**

Movement of α to the edge of a phase π is possible only if α occupies a unique position visible in π .

(77) **“Visible”**

α is *visible* in a phase π iff

- a. every phase that dominates α also dominates π ; or
- b. α occupies the edge of phase ρ and every phase that dominates ρ also dominates π (i.e. ρ is the phase constructed immediately before π).

The reference to phase edge is necessary in order to permit multi-step movement to non-phase-edge positions, as when a nominal raises from the specifier of ν P to form the specifier of *to*P, and continues to undergo phase-internal A-movement to a position such as the specifier of TP. Reference to phase edge as a landing site rather than probe-goal interaction with the phase head will be relevant to a proposal concerning English relative clauses below. Obviously, this raises the question of why movement to the phase edge should be special in this way — a question I will leave open here. In what follows, I will assume that it is (76) that works hand-in-hand with Exfoliation to yield the complementizer-trace effect (though one further emendation will be necessary in section 6.1 below)

Under LAAC in (76), an object or other ν P-internal element that undergoes \bar{A} -movement to the specifier of ν P position may be directly attracted by an \bar{A} -probe on C without creating any problem, so long as it does not stop at any other position between ν and C. Notice also that the initial step of movement to the specifier of ν P in such derivations does not itself violate (76), so long as it proceeds directly from a θ -

36. The contrasts among extractions that do and do not trigger a complementizer-trace effect, along with the proposed account of these contrasts, also argues against drastic proposals that deny that the specifier of CP is ever a possible intermediate landing site for movement (in contrast to the specifier of ν P) — for example, Den Dikken (2009a, 2009b). Independent arguments that successive-cyclic *wh*-movement may proceed through the edge of CP also militate against a general ban on the specifier of CP as an intermediate landing site (e.g. McCloskey 2000; Van Urk and Richards 2015; Van Urk 2015; Davis 2018a, 2018b).

position or from the specifier position of a lower phase.³⁷ The same conclusion holds even if the element in question is a nominative-marked *v*P-internal subject of the sort found in languages like Italian (Rizzi 1982; Brandi and Cordin 1981, 1989).

5.2 *Adverb amelioration of complementizer-trace effects: more derivational opacity*

In sections 4.2 and 4.4, derivational opacity arguments were presented for the derivationalist view of infinitivization: generalizations about the subjects of reduced infinitival clauses that are not surface-true, but hold exceptionlessly at an independently motivated derivational stage in which these clauses are full and finite. In this section, I will outline an argument with a similar logic that supports the account of complementizer-trace effects presented in the previous subsection: that the complementizerless finite clause obligatorily found in English when a subject is extracted started life as a full CP including a complementizer. The argument comes from a repetition constraint on double-complementizer configurations that is also observed when the second complementizer has been removed by Exfoliation, so only one of the complementizers triggering the constraint is present in the surface form.

McCloskey (2006, 23; citing Richard Kayne, personal communication) called attention to the fact that conversational English permits embedded clauses that feature two instances of *that* separated by intervening adverbial material:

(78) **Double-*that* complements**

- a. “We know that for all intents and purposes that the government created a rating agency oligopoly that prevented the market from enjoying more competition.” (*Congressional Record* vol. 155, pt. 23 p. 31300; <http://bit.ly/2ExmceW>)
- b. “But the simple analysis which suggests that because American investment takes place here that we should be a lapdog for their efforts in the war is one that I think is quite objectionable and quite offensive.” (McCloskey 2006, 104 ex. 69a; from *Irish Times*, February 7, 2003)
- c. “He thinks that if you are in a bilingual classroom that you will not be encouraged to learn English.” (McCloskey 2006, 104 ex. 69b; from Student Essay, California)

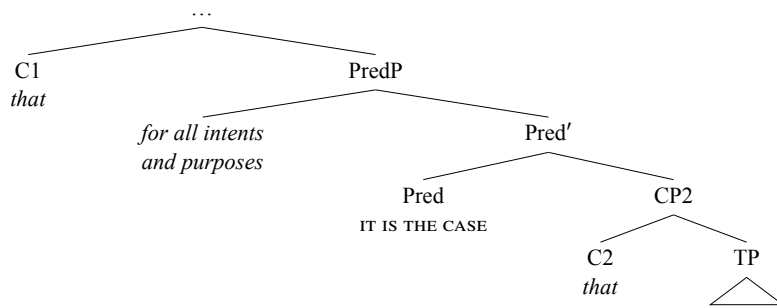
I propose that the adverb in such constructions modifies a phonologically null and semantically bleached predicate whose meaning is something like “it is the case that” or perhaps “it may be claimed” — with the result that these constructions are actually bi-clausal (deviating here from McCloskey’s analysis):³⁸

37. \bar{A} -movement to the specifier of *v*P from the subject position of an R2 infinitive would violate (76) if it stopped off in the specifier position of the higher VP first, since both that position and its earlier position as the specifier of *to*P would be accessible to the \bar{A} -probe on *v*. As we saw in our discussion of *wager*-class verbs, Romance *believe*-class verbs, and the Kayne paradigm, however, (section 4.2) there is no reason to assume that the moving phrase needs to stop in the specifier of VP, since direct \bar{A} -movement into the *v*P domain from the specifier of *to*P is possible (and will trigger Exfoliation just as movement to the specifier of VP would).

38. McCloskey (p. 105) also discusses Irish English examples with a similar flavor, in which both instances of C are interrogative:

- a. Patsy asked him if, when he was sent to college, was it for a clergyman or a solicitor.
 - b. John was asking me if, when the house was sold, would they move back to Derry.
- One might posit an agreement rule that links the interrogativity of a higher complementizer to the interrogativity of the lower. Alternatively, and more in the spirit of the analysis of the declarative clauses discussed in the main text, would be positing a null predicate meaning something like “it is known”: e.g. “John was asking me if, when the house was sold, IT IS KNOWN whether they would move back to Derry.”

(79) **Double-CP complementation**



McCloskey also noted that the presence of overt material like the adverbial in (79) is obligatory. If the two occurrences of *that* are string-adjacent, the result is unacceptable:

(80) **Unacceptable complementizer doubling**

*We know that that the government created a rating agency oligopoly.

We may account for the effect in (80) with a rule that stigmatizes C immediately adjacent to another instances of C by appending an asterisk to a complementizer that meets the rule’s structural description, which causes a sensation of deviance at PF when C is pronounced:

(81) **C Identity Avoidance Rule**

$C \rightarrow *C / \text{adjacent to a distinct instance of } C$

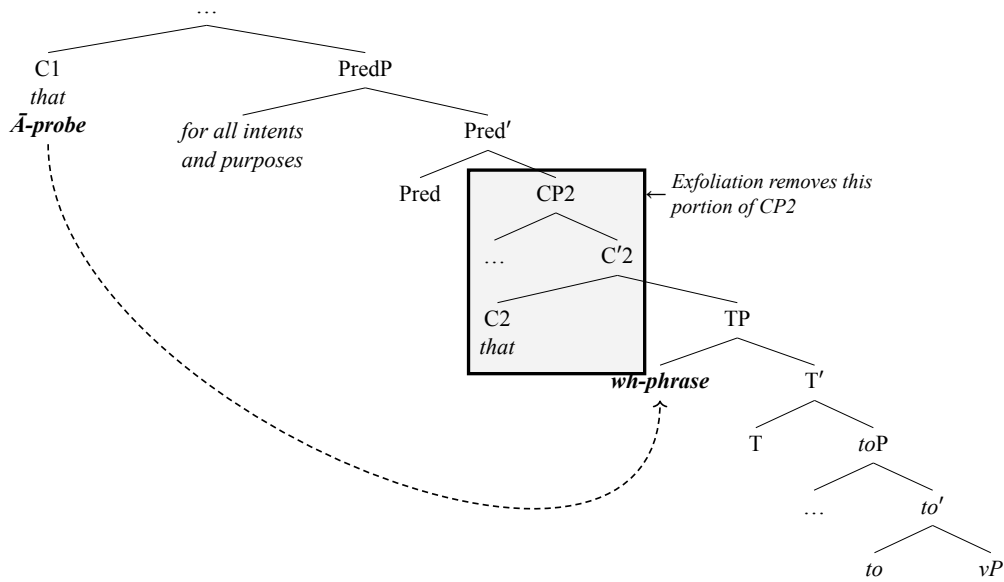
The reasons for this specific formulation (rather than a general filter) will become clear in section 6.7, where English complementizerless clauses (without obvious subject extraction) are discussed.

Consider now the predicted consequences of \bar{A} -extracting an element from CP2 in a structure like (79). If the extracted element is the subject, Exfoliation of the CP layer of CP2 should be required — so the lower instance of *that* should obligatorily disappear. No Exfoliation should be required when a non-subject is extracted — permitting the lower instance of *that* to remain. Crucially, nothing requires the *higher* instance of *that* to disappear under either circumstance, since nothing triggers exfoliation of the higher CP. These predictions are correct:

(82) **Apparent amelioration of the complementizer-trace Effect with Double-CP complementation (the “adverb intervention exception”)**

- a. What kind of rating agency oligopoly did she claim that for all intents and purposes that the government had created ___ ?
- b. Which government did she claim that for all intents and purposes (*that) ___ had created a rating agency oligopoly?

(83) Analysis of (82b)



The availability of double-CP structures thus offers a legal means for producing a subject extraction that superficially appears to obviate the complementizer-trace effect. I call the appearance of an end run around the complementizer-trace effect merely “superficial”, because the overt complementizer that co-occurs with subject extraction is not actually the complementizer of the clause in which the subject originates, but a higher instance of C.

Strikingly, however, the availability of this end run around the complementizer-trace effect is restricted by the effects of the C Identity Avoidance Rule. Apparent violations of the complementizer-trace restriction are limited to constructions in which adverbial material intervenes between the overt complementizer and the extraction site of the subject — or else the field would never have discovered the complementizer-trace effect in the first place (at least for English). This is exactly the phenomenon made famous by Bresnan (1977, 194, fn 6) and later by Culicover (1993a, 1993b), often described as an “adverb intervention exception” to the complementizer-trace effect. If examples of this “exception” uniformly involve a double-CP structure like (83), there is no actual exception here, just a *faux ami* resulting from the combination of this double-CP structure with subject extraction, which triggers Exfoliation of C2 but not C1.

The most important point to note is the counter-bleeding relation between the C Identity Avoidance Rule and Exfoliation. This interaction provides us with a hitherto missing derivational opacity argument for the treatment of complementizer-trace effects advanced here. In previous sections, we studied several effects that can be argued to have tense or agreement as their trigger, but show up in infinitival clauses where there is no overt tense or agreement. These effects argued for a pre-Exfoliation derivational stage in which tense and agreement is actually present, and thus for our overall derivationalist approach to reduced clauses (i.e. clauses smaller than full finite CPs). In this subsection, the effects of a C Identity Avoidance Rule were detected in structures where only one complementizer is actually pronounced. This supports the derivationalist approach in the same fashion as our earlier derivational opacity arguments, this time with respect to complementizer omission in a clause that remains finite. This provides a crucial missing argument for our approach to complementizer-trace effects, as well as an account that predicts a phenomenon commonly regarded as an exception to these effects.³⁹

39. It is crucial to the analysis that the subject is extracted by a probe on C1 and not by a probe on some lower head — or else Exfoliation would wrongly bleed the C Identity Avoidance Rule. CP1 must therefore lack *vP*.

6 Variation in the surface manifestation of complementizer-trace effects

If the results reported here are correct, long-distance extraction of the subject (or any element with a similar syntax) triggers Exfoliation, reducing the size of the clause from which the subject is extracted. Crucially, Exfoliation is the *only* process that produces reduced clauses (putting aside Restructuring contexts, as we will throughout this work). Having discussed infinitivization at length in earlier parts of this work, we then turned our attention to shallower instances of Exfoliation that eliminate the complementizer but leave the clause finite. We observed that several peculiarities of subject \bar{A} -movement in English followed straightforwardly from Exfoliation interacting with other properties of that language's syntax.

But the correlation of subject extraction with unusual clausal syntax is far from unique to English. Across the world's languages, we repeatedly observe that extraction of the subject and subject-like elements yields a clausal syntax distinct from the configurations found in other circumstances. This is surely no coincidence, and supports a proposal like ours in which subject extraction universally poses a problem for which the system provides a universal solution. Not surprisingly, Poverty of the Stimulus considerations point in the same direction (Chomsky and Lasnik 1977). As Phillips (2013) shows, examples of any kind of extraction from a clause introduced by *that* in English are so rare in child-directed speech that there is no way that input data can be held responsible for the fact that subject extraction (but not non-subject extraction) is incompatible with overt *that*. (See Pesetsky 2017, 2-3 for further discussion.)

At the same time, the actual appearance of a clause from which the subject has been extracted differs in multiple ways from language to language. In English, the idea that subject extraction reduces clause size has immediate appeal, since a clause from which the subject has been \bar{A} -extracted looks entirely normal except for the absence of the complementizer. In many languages, however, this is not the case. Subject extraction in French and Bùli, for example, yields a clause in which the normal complementizer is missing, but a different morpheme appears instead. More complicated patterns are also found, in which the consequences of subject extraction seem to depend on other details of the clause, and some languages appear to entirely exclude extraction from the canonical subject position.

In this section, I will argue that despite the diversity of the peculiarities that characterize subject extraction in the languages of the world, the view of complementizer-trace effects advanced here actually predicts this variation, once the ingredients already discussed are supplemented with a universal principle governing the pronunciation of functional heads in a universal sequence. These are the factors that combine to make subject extraction look uniformly "special" across the languages of the world. Cross-linguistic differences in the precise nature of this specialness result from the interaction of these universal properties with the lexical resources of individual languages and a limited repertoire of post-Exfoliation selectional restrictions from which languages may choose. For the time being, I continue to restrict the discussion to instances of Exfoliation that do not eliminate the TP layer, leaving the clause reduced but still finite, returning to non-finite outcomes in later sections.

6.1 *The que~qui alternation in French*

The discussion so far has assumed a structure for the upper phase of a finite clause that consists of the heads C, T, *to* and *v*, in that order — with the position of *to* the major innovation of the proposal. An additional necessary innovation was (24), repeated below:

(84) **Overtness of *to* (= (24))**

English *to* is overt only when exposed.

This innovation, through crucial to the Exfoliation analysis of finite/infinitival alternations, is suspicious because of its *ad hoc* character. While the best outcome of further research would be a derivation of (84)

from deeper principles, a second-best outcome would be a demonstration that it is just a special instance of a broader family of rules that link pronunciation to exposure. Such a demonstration would not satisfy us that the problem has been solved but would suggest at least that we have made a true discovery, albeit one not fully understood. I will argue that the so-called *que~qui* alternation in French and similar phenomena in other languages provide a demonstration of just this sort.

As first noted by Perlmutter (1971, 99 ff.), when a subject is \bar{A} -moved from a finite clause in French, the complementizer *que* is impossible. This fact would look just like the French counterpart of the complementizer-trace effect, except for the fact that the word *qui* surfaces in what looks like the same position (Perlmutter 1971, 101-102 fn. 2). For this reason, most accounts of this phenomenon have treated *qui* as an alternative form of *que*, i.e. as a complementizer, with the alternation triggered by some property of the structure particular to subject extraction (Pesetsky 1982a; Rizzi 1990b, 56-58; Taraldsen (2001)).⁴⁰

(85) ***Que~qui* alternation (French)**

- | | | |
|----|--|-------------------------------|
| a. | Qui a-t-il dit que Marie voulait voir ___ ? who has-he said that Marie wanted to.see 'Who did he say that Marie wanted to see?' | <i>non-subject extraction</i> |
| b. | Qui a-t-il dit qui voulait voir Marie? who has-he said qui wanted to.see Marie 'Who did he say wanted to see Marie?' | <i>subject extraction</i> |
- (Perlmutter 1971, 99-122)

If (84) belongs to a broader class of rules, however, another kind of analysis can be imagined. We might view the embedded clause in (85b) as subject to Exfoliation, and therefore complementizerless — and analyze *qui*, not as an alternative form of the complementizer, but as a lower head distinct from C, with a probe and EPP property that attracts the subject. Crucially, this lower head is overt only when when C is missing, a property that strongly recalls (84):

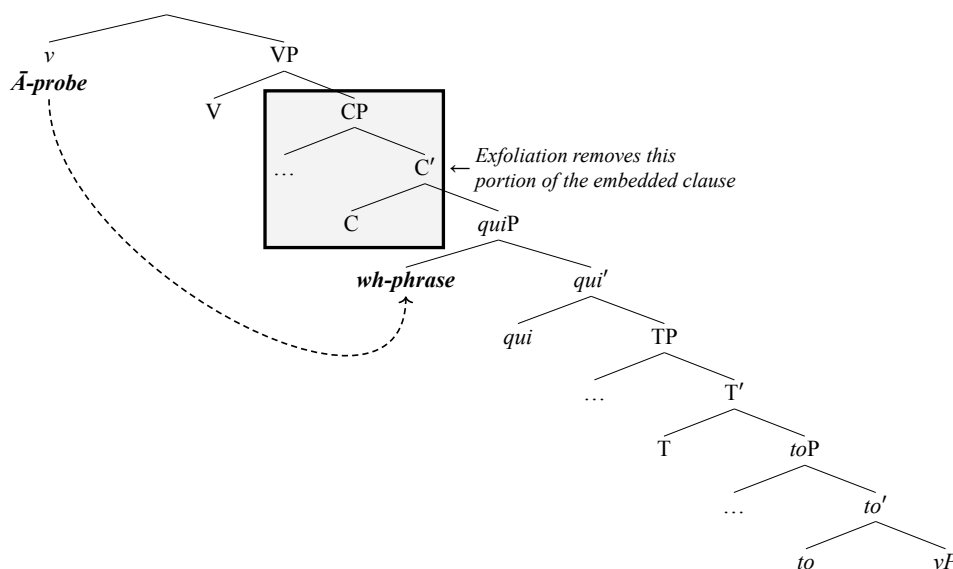
(86) **Overtness of *qui***

French *qui* is overt only when exposed.

On this analysis, the configuration in (85b) arises when the *wh*-phrase subject raises to form a specifier of *qui*P. From this position, it is unable to be attracted by the \bar{A} -probe on C due to LAAC, as stated in (76) — but is attracted by the \bar{A} -probe on the higher ν , triggering Exfoliation of the embedded CP. This instance of Exfoliation leaves the embedded clause in (85b) smaller than a full CP, but larger than TP, and the gap is thus located to the left, not the right, of *qui*:

40. The position of the subject gap in (85b) is not indicated for reasons that will be clear immediately below.

(87) **Exfoliation of only CP layer, leaving *qui*P (French)**



For this analysis to achieve the desired result, the theory must exclude an alternative derivation in which the subject raises only as far as T, leaving the EPP property of *qui* unsatisfied. Exfoliation would then eliminate *qui*P as well as CP, yielding an alternate version of (85b) that lacks both *que* and *qui* — in essence, a French version of the English result when a subject is \bar{A} -extracted. Non-satisfaction of the EPP property of *qui* should not yield deviance any more than non-satisfaction of EPP on T yields deviance in the derivation of an infinitival clause. A bare TP outcome of Exfoliation is, however, unacceptable in French:

(88) **Exfoliation of *qui*P as well as CP, leaving a bare TP (French)**

*Qui a-t-il dit ___ voulait voir Marie?
 who has-he said wanted to.see Marie

As we noted in section 1, however, selectional requirements of heads can in principle be imposed at any point in the derivation, in modern models of syntax without a level of Deep Structure. If French generally bars TP as a complement to V, the derivation that yields (88) will be filtered out by this selectional restriction:

(89) **Selectional property (French)**

*[V TP]

A more specific filter with a similar character might further restrict the availability of *qui*P clauses as arguments of higher predicates. Godard (1986, 55-56) presents judgments that support the following generalization (dubbed “Godard’s Generalization by Koopman and Sportiche 2014):

(90) **Godard’s Generalization**

\bar{A} -extraction of the subject from a finite clause introduced with *qui* as in (85b) is possible only when the higher predicate also allows Kayne-paradigm \bar{A} -extraction of the subject from a corresponding infinitival clause like (41b).

For Godard, both types of extraction are possible with a class of verbs that includes *dire* 'say', *croire* 'believe', *penser* 'think', and *savoir* 'know'; less acceptable with *prétendre* 'claim', *supposer* 'suppose', *juger* 'judge', and *estimer* 'feel'; and impossible with verbs like *vouloir* 'want' and *désirer* 'desire'. On the theory under discussion, what is at stake is the ability to tolerate any clausal complement smaller than CP, including *qui*P and *to*P. As a shortcut, let us use the feature [+F] to designate the predicates that tolerate such a complement with the feature (Chomsky and Lasnik (1977, 486 ff.)):

(91) **Godard's generalization as a selectional property (French)**

*[-F *x*], where *x* is a clausal projection smaller than CP

The fact that Godard's generalization is so easy to state in an Exfoliation analysis that views both *qui*-clauses and infinitival clauses as smaller than CP counts as a weak but real argument in its favor. Furthermore, the claimed impossibility of *qui* with verbs of desiring such as *vouloir* 'want', which take subjunctive complements, may suggest a role for *qui* as a privative indicative marker (i.e. a marker absent in subjunctive clauses).⁴¹

6.2 WP superstructures

The complementizer-trace effects discussed in preceding sections involve long-distance extraction from an embedded declarative clause. Some languages, however, show these effects with (what appear to be) short-distance extractions as well. This fact will turn out to be important to the solution of an outstanding puzzle concerning short-distance subject extraction even in English, the topic of the next subsection. This discussion in turn will provide a crucial stepping stone to a broader survey of variation in complementizer-trace effects.

One example of a complementizer-trace effect in what looks like short-distance extraction was noted by Henry (1995, 107 and 141 fn. 2) in her study of the Belfast dialect of Irish English. Henry observed that Belfast English, unlike Standard English, permits indirect questions to be introduced by a non-subject *wh*-phrase moved immediately followed by the complementizer *that*. Crucially, however, a *wh*-phrase moved from the local subject position may does not permit *that*, as (92b) shows:

(92) **Complementizer-trace effect in short-distance questions (Belfast English)**

- a. I wonder which dish that they picked ____ . *object extraction*
 - b. I wonder which author (*that) ____ wrote this book. *subject extraction*
- (Henry 1995, 107 ex. (27) and 141 fn. 2 ex. (9))

Since Standard English disallows (92a) as well as (92b), there must be some restriction on the overtness of the complementizer in Standard English that the Belfast dialect manages to evade. Keyser (1975, 27 ex. 66), Chomsky and Lasnik (1977, 446 ex. (53)), and much subsequent work posited a special "Doubly Filled Comp Filter" specific to the C-system to exclude examples like those in (92). An updated statement of their proposal is given in (93) below. A terminological note: a head "retains" a specifier when that

41. Unfortunately, some key judgments appear to vary among speakers. Koopman and Sportiche (2014, 54), for example, disagree with Godard in allowing subject extraction with *qui* for desiderative verbs like *vouloir*, while blocking comparable extraction from an infinitival complement to the same verb. This could perhaps be described in an Exfoliation framework, but without the neatness of (91). Koopman and Sportiche also exclude manner-of-speaking verbs and non-attitude predicates such as *parier* 'bet' from the class of [+F] predicates — but in this respect differ from the experimental subjects whose judgments are reported by Berthelot (2017, 159), for whom no reduction in acceptability was detected with *prétendre* and no contrast is found with *parier* 'bet' either. Furthermore, Berthelot's speakers generally found *qui* with subjunctive complements to desiderative verbs *more* acceptable than with indicative complements to verbs of believing and saying. Thus, while Godard's generalization (for relevant speakers) provides support for an Exfoliation approach to the *que*~*qui* alternation, the empirical picture would benefit from some sharpening.

specifier does not move further in the course of the derivation (cf. Rizzi’s 2006 notion of a “criterial” position):

(93) **The “Doubly Filled Comp Filter” effect**

C is unpronounced if it hosts and retains a specifier.⁴²

It may be observed at this point that there is some kinship between (93) and the pronunciation conditions on *to* and *qui* discussed in previous sections. Both kinds of conditions specify the circumstances under which a functional head in the domain above vP is pronounced or unpronounced, and both single out phase heads, explicitly or implicitly. Since C is always a phase head, a statement exactly like the formulations applicable to *to* and *qui* would be satisfied trivially. Since *to* and *qui* become phase-heads only as a consequence of Exfoliation, they would also satisfy a statement about them that was modeled on (93) (in caring about hosting and retention of a specifier) whenever they also satisfy the conditions that permit them to be pronounced only when heading a phase. These considerations suggest that we are dealing with a unified notion of *exposure* relevant to pronunciation that makes reference to both phase-head status and retention of a specifier. Let us therefore expand the notion of *exposure*, and generalize the overt/under conditions proposed for *to* and *qui* to all functional heads in the relevant domain:

(93) **Exposure (final version; revision of (23))**

α is *exposed* iff it heads a phase and does not retain a specifier.

(94) **Exposure Condition (version 1; replaces item-specific overt/under conditions above)**

A functional head [external to vP] is overt only if exposed.

Most important, let us explore the possibility that the Exposure Condition is not particular to specific languages or individual functional heads — but is universal and general, at least for the functional heads higher than v . The bracketed exclusion of functional heads internal to vP is not a matter of principle, but merely reflects the fact that they have not been an object of study in this work, so I am not confident about the extension of the Exposure Condition to them.

Note finally that (94) is stated as a conditional, and not a biconditional, permitting functional heads to be null for other reasons. I will suggest below that the condition can in fact be strengthened to a biconditional, but other results must be in place before we can explore this possibility.

Let us now consider what must be proposed when a language such as Belfast English appears to violate (94). If we assume that the Exposure Condition (and thus the Doubly Filled Comp Filter effect) is universal, then an example like (92a) must be showing *wh*-movement to a position *above* the embedded CP — a position available in Belfast English, but not in dialects of English where (92a) is impossible. I therefore propose that Belfast English permits an interrogative *superstructure* to be built above a phasal

42. Reference to specifier retention is employed instead of reference to the overt/under status of the specifier — which would have been a more faithful updating of Keyser’s and Chomsky and Lasnik’s proposals. That reference to overt/under status is inappropriate is indicated by the possibility in West Ulster English of pronouncing in the specifier of CP a pluralizing morpheme *all* stranded by a *who* or *what* that has moved on (McCloskey 2000). This stranded *all* is free to cooccur with an overt complementizer:

What did he say *all* that he wanted to buy ___? (McCloskey 2000, 62, ex. (11b))

If this construction involves scattered pronunciation of *who all* rather than literal stranding, the formulation of the effect in (93) covers this case. The generalization of (93) that follows will reinforce this point.

Reference to overt/under status would be necessary if we were to adopt the contemporaneous proposal that relative clauses such as *the book that I read* involve \bar{A} -movement of a phonologically null operator, which may co-occur with an overt complementizer, which partly motivated the Doubly Filled Comp Filter. This problem disappears, however, if we adopt the proposal for such relatives discussed in section 6.7.2.

declarative CP. The specifier of this superstructure, not the specifier of the CP below it, is the actual final landing site for \bar{A} -movement in an interrogative clause like the embedded clause of (92a). The CP itself merely hosts successive-cyclic movement into this superstructure.

I will call this superstructural projection **WP** (*W* for “*wh*”), and assume that *W* takes a normal phasal declarative CP as its complement. \bar{A} -features with interpretive properties such as interrogativity that are otherwise be associated with *C* are instead associated with *W* when a WP superstructure is deployed. In effect, if WP is built, apparent examples of short-distance \bar{A} -movement of the subject actually have the syntax of long-distance movement. This proposal immediately predicts the possibility of subject extraction triggered by the \bar{A} -probe on *W*, with no violation of LAAC, and also correctly predicts the obligatory absence of *that* under such circumstances as seen in (92b) — since even if WP is deployed above CP, the extraction of the embedded subject to the specifier of *W* position triggers Exfoliation of the CP layer:

(95) **Exfoliation in short-distance questions (Belfast English)**

- a. I wonder [_{WP} which dish *W* [_{CP} that [_{TP} they picked]]].
- b. I wonder [_{WP} which author *W* [_{CP} that [_{TP} wrote this book]]] \uparrow .
- (Exfoliation deletes the structure in gray circles.)*

In addition, the universality and generality of the Exposure Condition in (94) correctly predicts that *W* itself should be phonologically null, since its specifier is a “criterial” position (in the sense of Rizzi 2006), and is therefore retained by *W*. The fact that the specifier of CP is not criterial and is therefore not retained by *C* is what permits the phonological realization of *C* as *that* in examples like (92a).

This scenario is not limited to Belfast English. Igbo short-distance questions, for example, appear to show exactly the same pattern as Belfast English (Amaechi and Georgi 2017, to appear), and can therefore be accorded the same analysis — with the additional twist that the WP superstructure (and thus the appearance of a Doubly Filled Comp effect violation) is obligatory:⁴³

(96) ***kà*- \emptyset alternation in short-distance questions (Igbo)**

- a. Ònyé *kà* Òbí hùrù n’-áhiá *object extraction*
 who COMP⁴⁴ Obi saw P-market
 ‘Who did Obi see at the market?’
- b. Ònyé (**kà*) hùrù Àdá n’-áhiá *subject extraction*
 who (*COMP) saw Ada P-market
 ‘Who saw Ada at the market?’

43. Amaechi and Georgi (2017, to appear) present two arguments that the subject in a short-distance subject question like (96b) remains in situ, rather than moving at all. One argument arises from a tonal downstep on the verb triggered by long-distance movement of an interrogative subject and subject relativization, but not by putative short-distance movement of an interrogative *wh*-element. The configuration that fails to trigger the downstep is also unique, however, in showing an overt *wh*-form immediately preceding the verb, so it is perhaps possible that this, rather than the absence of movement, is the relevant factor. Their other argument concerns conjunction: the strong ungrammaticality of any attempt at ATB extraction of an interrogative *wh*-form in which the putative extraction site in one, but not all, conjuncts is the local subject. This might well follow on the Exfoliation approach from the fact that Exfoliation will render such examples instances of coordination of non-likes: TP with CP, if *W*’ coordination is excluded (perhaps because conjuncts must be maximal projections).

44. Amaechi and Georgi gloss *kà* as a focus marker.

(97) **Exfoliation in short-distance questions (Igbo)**

a. [_{WP} Ònyé W [_{CP} kà [_{TP} Òbi hùrù n’-áhiá]].

b. [_{WP} Ònyé W [_{CP} kà [_{TP} hùrù Àdá n’-áhiá]] I].

(Exfoliation deletes the structure in gray circles.)

The WP proposal transposed into French should yield a *que*~*qui* alternation, a correct prediction. In variants of French such as Québécois that permit violations of the Doubly-Filled Comp effect, an extracted non-subject may co-occur with the finite declarative complementizer *que*, as seen in (98a). When a subject is extracted, however, *que* does not appear, but *qui* does (Bouchard 1984, 127 ex 156), just as if the extraction were long-distance, responding to a probe external to CP, as seen in (98b):

(98) ***Que*~*qui* alternation in short-distance questions (dialects of French)**

a. Je me demande qui **que** Marie voulait voir ?
 I wonder who C Marie wanted to.see
 ‘I wonder who Marie wanted to see?’

b. Je me demande qui **qui** voulait voir Marie.
 I wonder who QUI wanted to.see Marie
 ‘I wonder who wanted to see Marie.’

Once again, I propose that the final movement step is triggered by a probe external to CP, and thus actually constitutes extraction out of a declarative CP, despite appearances:⁴⁵

(99) **Exfoliation in short-distance questions (dialects of French)**

a. Je me demande [_{WP} ^{qui_{wh}} W [_{CP} que [_{quiP} Marie ø_{qui} voulait voir]].

(ø_{qui} unpronounced due to (86))

b. Je me demande [_{WP} ^{qui_{wh}} W [_{CP} que [_{quiP} qui voulait voir Marie]] I].

(Exfoliation deletes the structure in gray circles.)

Precisely the same analysis may be given for what looks like the same alternation in Bùli, where short-distance extraction of the subject yields a clause introduced by the morpheme *ālì*, while non-subject extraction yields a clause introduced by *āti*. (All Bùli data in this section, and the main lines of analysis, are due to Sulemana 2017, except where indicated.)

45. I distinguish the grammatical formative *qui* that heads *quiP* from the homophonous animate *wh*-form *qui* ‘who’, indicated here with a subscript *wh* (following Kayne 1977, 265ff and others). Complex *wh*-phrases such as *quelle femme* ‘which woman’ are not very acceptable in constructions like (98a-b), for unclear reasons (Marcotte 2006; confirmed by Paul Hirschbühler and Jillian Mills, social media communication). Since *wh*-questions formed with *what* have complications of their own independent of the issues at hand (Koopman 1982b, 1983), the best examples of constructions like ((98b)) inevitably involve *qui_{wh}*, confusing though the homophony may be. Puzzlingly, Henry (p.140, fn. 3) notes that for some speakers the corresponding constructions in Belfast English are limited to *wh*-questions like those in (92), in which the fronted *wh*-phrase is not bare *who* or *which*, but phrasal — the exact opposite of the French restriction. The fact that the construction in both languages shows the predicted consequences of Exfoliation triggered by subject movement to the specifier of WP suggests, however, that the analyses should not be too distinct, despite this surprising contrast in allowable *wh*-elements.

(100) ***ātì-āli* alternation in short-distance questions (Bùli)**

- a. (Ká) b^wā ātì bí:ká digì: ___? (subject extraction)
 Q what ĀTÌ child.DEF cook
 'What did the child cook?'
- b. (Ká) wānā ___ āli dig lāmmú:?
 Q who ĀLÌ cook meat.DEF
 'Who cooked meat?'

If this apparent alternation is indeed the Bùli counterpart of French *que~qui*, then the *wh*-movement gaps are correctly situated in (100a-b) above. Bùli clauses include a phrase headed by *āli* analogous to French *qui*P between C and T, and a rule like (101) analogous to that posited for *qui* in (86) regulates the overttness of *āli*.

(101) **Overttness of *āli***

Bùli *āli* is overt only when exposed.

I will call the head represented by Bùli *āli* and French *qui* ALIQUI (to honor both languages).⁴⁶ Bùli differs from French in that there is no option to omit WP and assign the semantic function of W to C. Consequently Bùli does not permit variants of constructions with overt \bar{A} -movement that omit *ātì* and *āli*.

Exfoliation removes the CP but not the ALIQUIP layer in examples like (100a), yielding the appearance of an alternation between *ātì* and *āli*, though in fact they occupy distinct positions:

(102) **Exfoliation in short-distance questions (Bùli)**

- a. [_{WP} Ká b^wā W [_{CP} ___ ātì [_{ALIQUIP} bí:ká $\emptyset_{\bar{a}li}$ digì: ___]]].
($\emptyset_{\bar{a}li}$ unpronounced due to (101))
- b. [_{WP} Ká wānā W [_{CP} ātì [_{ALIQUIP} ___ āli dig lāmmú:]]].
(Exfoliation deletes the structure in gray circles.)

Bùli is of particular interest because it offers an argument from the positioning of adverbs in favor of the hypothesis that *āli* occupies a lower position than *ātì*, discovered by Sulemana. An adverb like *nīem* 'usually' follows *ātì* and the subject when an object is extracted, but precedes *āli* when the subject is extracted. (Sulemana shows similar data for *diēm* 'yesterday'.) This is predicted by the analysis proposed here if the adverb is merged in the ALIQUIP-domain, *ātì* instantiates the higher head C, and the subject occupies the specifier of ALIQUIP:

46. As was the case with *toP*, I have deliberately chosen an uninformative name for this category, to bookmark the fact that we leave important questions open concerning the category's function — independent of the evidence for its existence presented here. In footnote 5, I took note of a possible identification of our *toP* and TP with the TP and FINP (respectively) of Rizzi's (1997) cartographic proposals. Alternatively, however, one might identify Rizzi's TP with our TP and Rizzi's FINP with our ALIQUIP (leaving *toP* as a category without a correspondent in the cartographic literature). I continue to leave these issues as a question for future investigation.

(103) **Adverb order with *ātì* and with *ālì* (Bùli)**

- a. (Ká) b^wā **ātì** Azuma **pīem** á dīgī? (object extraction)
 Q what *ātì* (C) Azuma usually IPFV cook
 'What does Azuma usually cook?'
- b. (Ká) wānā **pīem** **ālì** á dīgī lām? (subject extraction)
 Q who usually *ālì* (ALIQUI) IPFV cook meat
 'Who usually cooks meat?'

Unexplained, unfortunately, is the requirement that adverbs like Bùli 'usually' merge in the ALIQUIP domain, and the apparent fact that comparable adverbs in French do not merge in this domain (since Sulemana's argument cannot be reproduced for French). Despite these unresolved issues, the Bùli paradigm may nonetheless be taken as a demonstration that an apparent alternation of the *que~qui* type does represent the pronunciation under complementary conditions of two heads in distinct positions.

One might still wonder whether Bùli *ātì~ālì* and French *que~qui* might be syntactic *faux amis*, so that conclusions reached about the analysis of the Bùli alternation do not shed light on the French alternation. In this connection, it may be useful to observe (with Sulemana) that Bùli *ālì* and French *qui* travel together in a second context as well: as a post-subject marker in direct perception complements to verbs like 'see', a construction known in the as the "pseudorelative" (because of its superficial resemblance to subject relative clauses in Romance languages, where they were first studied):

(104) **Pseudorelatives use *qui* (French) and *ālì* (Bùli)**

- a. J'ai vu Marie **qui** rit. (French)
 1SG AUX see.PTCP Marie ALIQUI laugh
 'I saw Marie laugh.'
- b. Mí pà Asouk **ālì** à lā (lā). (Bùli)
 1SG see.PST Asouk ALIQUI IPFV laugh PTCL
 'I saw Asouk laugh.'

We might seek an analysis of the pseudorelative construction modeled on R2, if the subject can be shown to raise from its original clause, either into the higher verb phrase or into a clausal superstructure along the lines of the WP posited above.⁴⁷ The constituent structure of pseudorelatives cross-linguistically is controversial, however, and I will not explore the construction beyond its ability to hint that Bùli *ālì* and French *qui* might indeed be counterparts.

Long-distance extraction of subjects and non-subjects behaves as predicted in Bùli. While extraction of a non-subject from an embedded clause may co-occur with overt complementizers in both clauses (with no *ālì*), extraction of a subject from an embedded clause yields *ālì* and no overt complementizer in that clause (and *ātì* but no *ālì* in the main clause).

47. See Koopman and Sportiche 2014 for a broader attempt at a unified analysis of the *qui* of subject extraction and pseudorelatives (building on Kayne 1977, 268-9).

(105) *āti*~*āli* alternation in long-distance questions (Bùlì)

- a. (Ká) b^wā **āti** fì pá:-chīm **āyīn** mì dìgì: ___ ? (object extraction)
 Q what *āti* (C) 2SG think C 1SG cook
 'What do you think I cooked?'
- b. (Ká) wānā **āti** fì pá:-chīm wà **āli** dìg lāmmú:? (subject extraction)
 Q who *āti* (C) 2SG think 3SG *āli* (ALIQUEI) cook meat
 'Who do you think cooked the meat?'

There are two twists that must be mentioned, however. First, on the analysis developed here, where W rather than C is the locus of interrogative or focus semantics in Bùlì, *āti* must be analyzed as a declarative complementizer selected by W, rather than as the locus of interrogative or focus semantics in its own right, as Sulemana proposes. The embedded clause of (105a) contains a different complementizer *āyīn* selected by 'think'. It and several other complementizers selected by particular predicates are thus simply forms of C *not* selected by W.

Second, it is surprising but also significant that the subject extraction in (105b) leaves a (mandatory) pronoun *wà* where we expect a gap. This pronoun, which agrees with the *wh*-phrase in noun-class, has been argued by Sulemana (in prep.) to have the status of a pronounced trace of movement rather than a resumptive pronoun — since the relation between the *wh*-phrase and the pronoun is sensitive to islands. As a pronounced trace, it does not count as a specifier “retained” by *āli*, permitting *āli* to be overt without violating the Exposure Condition in (94). Sulemana also shows that the pronoun is not an instantiation of verbal agreement, but occupies the normal subject position, and, crucially, that such a pronoun is obligatory whenever the subject is extracted, no matter by what kind of probe. In particular, A-movement in R1 configurations leaves a pronoun (also found in some obligatory control complements). Consequently, the presence of the pronoun in (105b) provides an argument that the construction involves movement. The reason why the pronoun must appear in the first place is, however, not addressed by the proposals developed here.

6.3 Short-distance subject extraction

Standard English and Standard French do not in general permit apparent violations of the Doubly Filled Comp filter of the sort discussed in the previous section that motivated WP superstructures. We might therefore conclude that WP is entirely missing from these languages. These languages present an additional puzzle, however, which suggests a different conclusion.

All things being equal, the Antilocality effect engendered by LAAC should completely exclude short-distance \bar{A} -movement to C from any position external to *vP* but lower than C. Questions like those in (106), for example, should be impossible as an instance of *wh*-movement to C from the specifier of TP:

(106) **Short-distance movement of subject**

- a. I wonder who has read the book.
- b. Je me demande qui a lu le livre. (French)
 I wonder who AUX read the book

One might imagine alternative analyses that invoke a strategy other than local movement from the specifier of TP to the specifier of CP (Rizzi and Shlonsky 2007, 119) — for example, “skipping” (Rizzi and Shlonsky’s term for direct movement into the CP domain from the edge of *vP* without an intermediate stop in a higher specifier position); or in-situ interpretation without movement (cf. Beck 2006, Kotek 2014a). While skipping appears to be the solution to this problem in languages like Standard Italian, Fiorentino or

Trentino that more generally permit the subject to remain *v*P-internal (Rizzi 1982; Brandi and Cordin 1981, 1989), it is an unlikely proposal for languages like French and English that lack this option .

In-situ solutions for English short-distance subject *wh*-constructions, on the other hand, have been proposed for English by Chung and McCloskey (1983), Chomsky (1986, 48 ff.), and Brillman and Hirsch (2014), among others — principally because such constructions yield weaker *wh*-island effects for some speakers than counterparts with non-subject extraction. If the subject *wh*-phrase remains within TP in embedded questions like (106a-b), however, we must also determine whether the embedded clause as a whole is a CP or a bare TP. If we analyze it as a CP, the obligatory nullness of C is a mystery, if the subject does not undergo movement to the specifier of CP, where the Doubly Filled Comp Filter effect would cover the situation. If one pursues the possibility that the construction is a bare TP, however, it will be necessary to abandon the Full CP Hypothesis (16), an essential component of all the results of this work so far. For French, it would be necessary to abandon (91) as well, since this would be an instance of a bare TP not produced by Exfoliation.

If examples like (106a-b) can be analyzed as involving \bar{A} -movement into a WP superstructure that embeds a phasal CP, however, these difficulties do not arise. Phase Impenetrability will require Exfoliation of that CP — and if the result is a TP complement to C, (106a-b) are derived. The challenge is to permit this derivation while disallowing derivations in which a non-subject is extracted and the CP complement to W does not undergo Exfoliation, to block apparent Doubly Filled Comp Filter violations like (95a) and (102a). An additional challenge for Standard French is blocking a derivation under which Exfoliation reduces a complement clause to ALIQUI rather than TP, to avoid (102b) in standard dialects. The fact that selectional properties may be imposed throughout the derivation permits these restrictions to be stated as a selectional restriction of W:⁴⁸

- (107) **Selectional property (Standard English and Standard French)**
 *[W {ALIQUIP, CP}]

The formulation in (107) may be extended if it turns out that there are other potential post-Exfoliation complements to W that must be excluded (including *to*P, to which I return below), but will do for now. For the remainder of this section, however, I will assume that the functional sequence between C and *v* is universally limited to C, ALIQUI, T and *to*. Though it may be objected that a deeper proposal might derive language-specific stipulations like (107) from more general properties of the languages for which they are true, it is still important to observe (as we discuss below) that the range of selectional statements permitted by the theory is limited, and appears to predict to a first approximation much of the range of variation in subject/non-subject asymmetries reported in the literature.

6.4 *The Exposure Condition as a biconditional*

I propose that the core components of the proposal advanced in this work are universal, i.e. fixed properties of the human language faculty:

- (a) Full CP hypothesis (16)
- (b) Phase penetrability/impenetrability (20)
- (c) Exfoliation (21)
- (d) LAAC (76)

48. Selectional restrictions are stated negatively (as filters) in this paper, because this format makes the consequences of the restrictions easier to keep in mind. If the categories forming a clause are fixed cross-linguistically, we could equally well state these properties positively, as in Chomsky 1965: e.g. [+__ TP] as a property of W rather than (107).

In addition, I now advance the possibility that the rules determining the overtness or phonological nullness of elements in the functional sequence between C and *v* are also universal and fixed — contrary to appearances and what is generally supposed. I thus propose that a language may not specify a morpheme such as ALIQUI, for example, as phonologically null. When such a morpheme is phonologically unrealized in a given construction of a language, it is always and only because of the Exposure Condition that it is phonologically null. There is always an overt pronunciation available for it in principle. I therefore propose that the following statements are also cross-linguistically true, among others:

- (e) *to* is overt if and only if exposed.
- (f) ALIQUI is overt if and only if exposed.
- (g) C is overt if and only if exposed.
- (h) W is overt if and only if exposed.

For the time being, let us ignore *to*P complementation as a possible outcome of Exfoliation. Let us also ignore the question of null C in languages like English that show an apparent optionality in the use of *that* to introduce embedded declarative clauses, until we return to this topic in section 6.7.

The claim in (f) permits us to avoid stipulating that certain languages, such as English, lack ALIQUI as an explanation for the fact that subject extraction does not yield an overt ALIQUI morpheme as it does in French and Bùli. If both W and predicates such as V reject ALIQUIP complementation, Exfoliation triggered by subject extraction will yield a clause no larger than TP, thus excluding ALIQUI — and clauses without subject extraction will never show overt ALIQUI, thanks to (f). On this view, both Standard and Belfast English have an ALIQUI after all, pronounceable in principle, but generally unpronounced for selectional reasons. Bùli, Standard French and Non-standard French, by contrast, exclude TP as a complement of W and predicates such as V, with the result that ALIQUI is overt under subject extraction.

Absent from the list above is T, which, when exposed by subject extraction in a language like English, does not appear as an overt morpheme as ALIQUI does under comparable circumstances in French and Bùli. This fact might be attributable to the fact that T commonly assigns morphology to a verb (main or auxiliary), which might be taken as satisfying the Exposure Condition in another way. While this proposal raises questions about languages that appear to lack tense or subject agreement morphology, I will leave these questions open, accepting the possibility that the special property of T may ultimately need some other explanation, and tentatively propose (108) as the general principle underlying (f)-(h)

(108) **Exposure Condition (biconditionalized — final)**

A functional head external to *v*P is overt if and only if (i) it is exposed and (ii) its features are not assigned as morphology to the verb.

6.5 *Variation attributable to selection*

What does the work of regulating the nullness and overtness of the functional heads above *v*P on this view are the selectional restrictions of elements that take CP as a (pre-Exfoliation) complement. Let us therefore take stock by considering one by one the patterns predicted by different selectional options for W and V (which I will take as representative of the class of argument-taking categories, arguably also including A and N) — and how they are exemplified in individual languages.

We first consider selectional restrictions that exclude some single category as a complement to W, but allow others. The consequences of excluding TP or ALIQUIP have already been discussed and exemplified in preceding discussion.

(109) *[W TP]

Consequences:

WP possible → *wh* + C sequences permitted
 Short-distance subject extraction with obligatory ALIQUI

Examples:

Non-Standard French (98), *Bùli* (100)

(110) *[W ALIQUIP]

Consequences:

WP possible → *wh* + C sequences permitted
 Short-distance subject extraction with no ALIQUI

Examples:

Belfast English (92), *Igbo* (96)

Unfortunately, I do not know of a language exemplifying the predicted consequences of excluding only CP:

(111) *[W CP]

Consequences:

WP possible only under Short-Distance subject extraction → *wh* + C sequences not permitted
 Short-distance subject extraction with optional ALIQUI

Examples:

unknown

If the exclusion of TP is added to (111), however, so that only ALIQUIP is permitted as a complement to W, the result should be a language in which only short-distance subject extraction is compatible with WP. Thus there should be no *wh*+C sequences observed with non-subject extractions, but an ALIQUI morpheme should obligatorily appear under short-distance extraction of the subject. One such a language is Kreyòl (Haitian Creole), where a morpheme *ki*, which we may identify as ALIQUI, surfaces obligatorily under short-distance subject extraction, but not when a non-subject is extracted, yielding an apparent \emptyset ~*ki* alternation.

(112) \emptyset ~*ki* alternation in short-distance questions (Kreyòl)

a. Kilès Mari te wè? (object extraction)
 who Mari ANT see
 ‘Who did Mari see?’

b. Kilès *(ki) te wè Mari? (subject extraction)
 who *(ALIQUI) ANT see Mari
 ‘Who saw Mari?’

(Takahashi and Gračanin-Yukseš 2008, 223 ex. (1); Michel DeGraff, personal communication)

Another example is the standard dialect of Norwegian described by Taraldsen (1986) (restricting our attention to embedded questions), where we may identify as ALIQUI the morpheme *som* that surfaces obligatorily under short-distance subject extraction but not otherwise:

(113) \emptyset ~*som* alternation in short-distance questions (Norwegian)

a. Vi vet hvem Marit snakker med. (object extraction)
 We know who Marit talks with
 ‘We know who Marit is talking with.’

- b. Vi vet hvem *(som) snakker med Marit. (subject extraction)
 We know who *(ALIQUI) talks with Marit
 ‘We know who is talking with Marit.’ (Taraldsen 1986, 150 ex. (7)-(10))

(114) ***[W {TP, CP}]**

Consequences:

WP possible only under Short-Distance subject extraction → *wh* + C sequences not permitted
 Short-distance subject extraction with obligatory ALIQUI

Examples:

Kreyòl, Norwegian

If we add exclusion of ALIQUIP to (111) rather than TP, the result is the pattern of Standard English or Standard French short-distance subject questions, as discussed immediately above:

(115) ***[W {ALIQUIP, CP}] (= 107)**

Consequences:

WP possible only under Short-Distance subject extraction → *wh* + C sequences not permitted
 Short-distance subject extraction with no ALIQUI

Example:

Standard English, Standard French

If ALIQUIP and TP are excluded as complements to W, but CP is permitted, apparent violations of the Doubly Filled Comp filter (*i.e.* *wh*+complementizer sequences) will be permitted for non-subject extraction — but there should be no legal path for short-distance subject extraction from the domain above *v*P. Movement to the specifier of CP from a *v*P-external subject position will be blocked by LAAC. Movement to the specifier of WP, by triggering Exfoliation, will yield a structure that violates one or another of W’s selectional restrictions. As a consequence, a subject question can only be formed by a strategy such as skipping — moving the subject to the specifier of CP or WP directly from inside *v*P, without stopping off in a VP-external position.

A language that appears to fit this description is Veneto (a Northern Italian dialect). According to Cecilia Poletto (personal communication), Veneto provides the same argument as other Northern Italian dialects that short-distance subject questions obligatorily employ the skipping strategy. Like Fiorentino and Trentino as discussed by Brandi and Cordin (1981, 1989), Veneto requires a preverbal subject to be doubled by a agreeing clitic on the verb, that is obligatorily absent when the subject is postverbal (and presumably *v*P-internal). The clitic is also obligatorily absent when the subject is \bar{A} -moved, whether short-distance or long-distance (Poletto 1995, 299), suggesting that \bar{A} -movement is possible only from the *v*P-internal position. Crucially, Veneto also permits apparent violations of the Doubly Filled Comp filter:

(116) **Non-subject vs. subject extraction cooccurring with *wh*+C sequences (Veneto)**

- a. Non so chi che el ga visto. (object extraction)
 NEG know.1SG who COMP SCL.3MSG has seen
 ‘I do not know who he saw.’
- b. Non so chi che (*el) ga telefoná. (subject extraction)
 NEG know.1SG who COMP (*SCL.3MSG) has phoned
 ‘I do not know who phoned.’ (Cecilia Poletto, personal communication)

(117) ***[W {ALIQUIP, TP}]**

Consequences:

WP possible → *wh* + C sequences permitted
 no SD subject extraction (except via a strategy such as skipping)

Example:

Veneto

If CP, ALIQUIP and TP are all forbidden as complements to W, the result is a language in which WP itself is effectively forbidden. This yields a language just like Veneto in blocking short-distance subject extraction from the domain above *v*P, but differs from Veneto in disallowing apparent violations of the Doubly Filled Comp filter. Standard Italian and the Northern Italian dialects Fiorentino and Trentino appear to be examples of this:

(118) ***[W {CP, ALIQUIP, TP}]**

Consequences:

WP not possible → *wh* + C sequences not permitted
 no SD subject extraction (except via a strategy such as skipping)

Examples:

Standard Italian, Fiorentino, Trentino

As we have seen, a language may also impose selectional restrictions on declarative clausal complements to predicates such as V — which may affect the appearance of the clause under subject vs. non-subject extraction. Any pattern of selectional restrictions that excludes CP complementation would create a situation in which a clausal complement is acceptable only when its subject is extracted. In the domain of finite complementation, I am unaware of any languages with this property, perhaps for reasons of usability. This leaves three other possibilities, all of which are attested.

As we have already seen, long-distance extraction of the subject in French (with the embedded clause remaining finite) yields a clause introduced by the ALIQUI element *qui*, and a corresponding extraction Bùli yields a clause introduced by *āli*. As already noted, this is predicted if V has a selectional restriction barring TP as a post-Exfoliation complement. Likewise, for most speakers of Kreyòl, the same configuration yields a clause introduced by *ki*, suggesting the same analysis. For some Kreyòl speakers, however, the *ki* is optional under subject extraction (DeGraff 1993, 80 ex. 43, 87 fn. 34; Takahashi and Gračanin-Yukse 2008, 226 fn. 4) — which is expected if for those speakers V has no relevant selectional restriction, permitting either ALIQUIP or TP as the output of Exfoliation under subject extraction (depending on how high the subject has raised). Dialect variation in the optionality vs. obligatoriness of *ki* is indicated by the “%” sign outside parentheses in (119b):

(119) **0~*ki* alternation in long-distance questions (Kreyòl)**

- a. Kilès Mari manse (ke) Jan renmen?
 who Mari thinks that Jan likes
 ‘Who does Mari think Jan likes?’
- b. Kilès Mari panse %(ki) renmen Jan?
 who Mari thinks ALIQUI likes Jan
 ‘Who does Mari think likes Jan?’

(Takahashi and Gračanin-Yukse 2008, 239; Michel DeGraff, p.c.)

(120) *[V (nothing)]

Consequences:

Long-distance subject extraction with or without ALIQUI (but no C)

Example:

Kreyòl (some speakers)

(121) *[V TP]

Consequences:

Long-distance subject extraction with ALIQUI (and no C)

Examples:

Standard and Non-Standard French (85) Bùli (105) Kreyòl (some speakers)

A language in which V rejects only ALIQUIP but permits TP is a language in which subject extraction will eliminate the possibility of a complementizer —without an overt ALIQUI morpheme standing in seeming alternation with it. Standard and Belfast English have this property, as does Igbo — which differs from English, as noted by Amaechi and Georgi (2017, to appear) in requiring the complementizer to be overt in an embedded declarative clause *except* when the subject is extracted:⁴⁹

(122) *nà*~ \emptyset alternation in long-distance questions (Igbo)

a. Úchè chère *(*nà*) Òbí hùrù Àdá n’-áhíá. (obligatory C; no extraction)

Uche thinks *(C) Òbí saw Ada P-market

‘Uche thinks that Obi saw Ada at the market.’

b. Ònyé kà Úchè chère *(*nà*) Òbí hùrù n’-áhíá. (obligatory C; object extraction)

who C (FOC) Uche thinks *(C) Obi saw P-market

‘Who does Uche think that Obi saw at the market?’

c. Ònyé kà Úchè chère *(*nà*) hùrù Àdá n’-áhíá. (no C; subject extraction)

who C (FOC) Uche thinks *(C) saw Ada P-market

‘Who does Uche think saw Ada at the market?’

(123) *[V ALIQUIP]

Consequences:

Long-distance subject extraction with no ALIQUI (and no C)

Example:

Standard and Belfast English (73) Igbo (122)

49. Norwegian as commonly described is another example of such a language, but various dialects differ minimally in lacking the restriction in (123) and permitting subject extraction from an embedded clause introduced by the same ALIQUI morpheme *som* seen in (113) above:

a. *accepted throughout Norway*

Hvem tror du har gjort det?
who think you has done it

b. *accepted in Northern Norway, Trøndelag, and the North West coast of Norway*

Hvem tror du som har gjort det?
who think you ALIQUI has done it

‘Who do you think has done it?’ (Westergaard et al. 2012, 333 ex. (7a-b); Bentzen 2014, 438 ex. (7b), 439 ex. (9))

Westergaard et al. (2012) document a correlation (earlier suggested by Nordgård 1985) between the acceptability of examples like (b) and the possibility of non-verb-second order in a matrix interrogative. If this correlation is significant, it is not clear that the present proposal suggests an explanation, since it roots the possibility of (b) in a shallow selectional factor, without an obvious connection to verb-second.

Finally, a language that excludes both ALIQUIP and TP as complements to a predicate such as V will entirely disallow subject extraction from the area between *v*P and C, forcing the language to resort to some other strategy such as skipping. This is what we find in Standard Italian, and in the various dialects discussed above:

(124) *[V ALIQUIP, TP]

Consequences:

No subject extraction from position above *v*P

Example:

Standard Italian and dialects

An additional dimension of variation that should be noted here. In Bùli, Igbo, and Veneto, the WP superstructure appears to be obligatory in questions and certain other \bar{A} -constructions, with the result that non-subject extraction always creates an apparent violation of the Doubly Filled Comp Filter effect. This could be stated as a fact about C and W. Alternatively, for embedded constructions at least, it could be a selectional fact, if V can be said to reject CP complementation, where C is headed by a satisfied \bar{A} -feature. For main clauses, one might imagine that a hidden higher performative verb could have the same property, but I will leave the determination of the correct proposal for future research.

6.6 Homophony complexities

A final complication — not for the theory of the phenomena discussed here, but for the analysis of specific cases (by the child acquiring these systems, as well as the linguist attempting to analyze them) — is the possibility that multiple heads in the functional sequence between *v* and C may have the same phonological realization. For example, if we assume that what look like counterparts to the pseudorelative construction in Italian and Greek have the same analysis as their counterparts in French and Bùli, they are headed by ALIQUI post-Exfoliation. The putative ALIQUI morpheme in these languages, however, is identical to the declarative complementizer:

(125) **Pseudorelatives with ALIQUI identical to COMP**

a. Ho visto Mario che correva. *Italian*
 AUX.1SG seen Mario ALIQUI (=COMP) ran
 ‘I saw Mario run.’

b. Idha ton Yani pu etrexe. *Greek*
 saw.1SG the.ACC Yani ALIQUI (=COMP) ran.PST.IPFV.3SG
 ‘I saw Yani run.’

(*pou* otherwise introduces factive and relative clauses; Angelopoulos 2015, 1)

Similarly, Norwegian may be a language in which the exponent of ALIQUI (*som*) is identical to a specific form of C selected by the relative-clause variant of W.

(126) **Som in Norwegian relative clauses**

a. Vi kjenner den mannen *Op* (som) Marit snakker med. (object extraction)
 We know the man SOM_C Marit talks with
 ‘We know the man that Marit is talking with.’

b. Vi kjenner den mannen *Op* *(som) snakker med Marit. (subject extraction)
 We know the man SOM_C talks with Marit
 ‘We know the man that is talking with Marit.’

In Norwegian the interrogative variant of W does not select this form of C, but in Swedish it does (Taraldsen 1986, 150 ex. (7)-(10)):

(127) **Som in Swedish vs. Norwegian short-distance questions**

S:✓
N:* Vi vet hvem som Marit snakker med.
we know who SOM_C Marit talks with
'We know who Mary is talking with'

A similar tack might be taken to explain what look at first glance to be counterexamples to the universality of complementizer-trace effects. For example, as discussed by Kandybowicz (2006, 2008), the Nupe complementizer *'án* appears to be compatible with subject extraction (with no evidence in the literature that Nupe resorts to a skipping strategy).⁵⁰ If Nupe *'án* is actually an exponent of both C and of ALIQUI, however, there is no counterexample:

(128) **Subject extraction from clause introduced by 'án (Nupe)**

a. Zě Musa gàn ['án nì enyà] o?
who Musa say ALIQUI beat drum FOC
'Who did Musa say beat a drum?' (Kandybowicz 2008, 123 ex. (6b))

b. Musa gàn ['ún (<'án) u: nì enyà].
Musa say COMP 3SG beat drum
'Musa said that s/he beat a drum.' (Kandybowicz 2009, 338 ex. (35b))

Of course this analysis does seem a bit like cheating. One might instead suspect that the counterexample is real, and that Nupe truly lacks complementizer-trace effects, and thus poses a challenge to the universality of the factors that yield this effect in other languages. This does not appear to be the case, however, as can be seen from other facts discussed by Kandybowicz. A clause may be introduced by a more complex form *gànan*, which Kandybowicz suggests is a bimorphemic complementizer, formed from *'án* and *gàn* 'say':⁵¹

(129) **gànan as complementizer (Nupe)**

Musa gàn [gànan etsu gí eci]
Musa say COMP chief eat yam
'Musa said that the chief ate a yam' (Kandybowicz 2008, 117 ex. (1a))

As Kandybowicz shows, \bar{A} -extraction of the subject from a clause introduced by *gànan* is restricted in a complex fashion. Subject extraction is possible if the clause following *gànan* is introduced by an overt present or future tense marker, by the remote-past expression *pányi lě* 'a long time ago', or by an ϕ -agreeing element that Kandybowicz describes as a resumptive pronoun, but not otherwise:

50. My discussion of Nupe is entirely indebted to Kandybowicz's (2006, 2008) findings, but reorders his presentation of the facts to support a very different analysis from his, as noted below.

51. Jason Kandybowicz (personal communication) reports that *'án* and *gànan* appear to be in free variation, with no detectable difference in meaning or ability to be selected by a higher predicate.

(130) **Subject extraction from *gànan* clause (Nupe)**

a. Zě Musa gàn [gànan ___ è/à nì enyà] o? *overt tense marker*
 who Musa say GÀNÁN PRS/FUT beat drum FOC
 ‘Who did Musa say is beating/will beat a drum?’

b. Zě Musa gàn [gànan **pányi lě** nì enyà] o? *remote past*
 who Musa say GÀNÁN before PST beat drum FOC
 ‘Who did Musa say that a long time ago beat a drum?’

c. Zě Musa gàn gànan **u:** má du o? *φ-agreeing element*
 who Musa say GÀNÁN 3SG know cook FOC
 ‘Who did Musa say knows how to cook?’

d. *Zě Musa gàn [gànan ___ nì enyà] o? *none of the above*
 who Mus say GÀNÁN beat drum FOC
 ‘Who did Musa say is beating/will beat a drum?’

(Kandybowicz 2008, 127 ex. (13b); 124 ex. (8b); 129 ex. (14b); 127 ex. (13a))

Significantly, if we accept Kandybowicz’s identification of the boldfaced ϕ -agreeing element in (130c) as a resumptive pronoun, it must be restricted in this function to subject extraction, as object extraction disallows any kind of resumption (Kandybowicz 2008, 124 ex. (9d-f)), and must be further restricted to clauses that lack the present, future, and remote-past markers of (130a) and (130b). These markers are in complementary distribution under subject extraction with the ϕ -agreeing element boldfaced in (130c) (*ibid*, 124 ex. (26d-e)). The ϕ -agreeing element is also excluded under subject extraction from clauses that are introduced by the complementizer ’án, rather than *gànan* (*ibid*, 136 ex. (c)). Kandybowicz develops a proposal under which overt tense markers, the remote past marker, and ’án ameliorate violations of the complementizer-trace effect (for reasons to which I return shortly), and suggests that the ϕ -agreeing element is a spell-out of an \bar{A} -trace inserted as a last resort only to avoid a complementizer-trace effect.

The proposals advanced here suggest another possibility. If *gànan* is bimorphemic, as Kandybowicz suggests, it can be imagined that *gànan* constructions are actually double-CP structures, in a manner reminiscent of our proposals for English in section 5.2 — with *gàn* heading the higher CP and ’án heading the lower clause. In a clause without subject extraction like (129), ’án undergoes head movement to *gàn*. When the subject is extracted, Exfoliation reduces the size of the lower CP, with the patterns of (130) as the result. In particular, I propose that the acceptable output of Exfoliation seen in each example of (130a-c) is TP, with ALIQUIP (and *toP*) excluded as outcomes by the selectional restrictions of the higher *gàn*-complementizer (cf. (123)).

Rather than viewing the ϕ -agreeing element in (130c) as a resumptive pronoun, I propose that it is an ϕ -agreeing form of T. On this view, it is in complementary distribution with PRS, FUT and the remote-past marker because it represents a distinct value for tense from values compatible with these elements.⁵² The reason this element is overt only under subject extraction is the Exposure Condition. Nupe is a language without morphological marking of tense on the verb, so we are not surprised to see T following the same laws of pronunciation as other elements in the functional sequence between *v* and C.

52. Such sentences appear to have the characteristic semantics of unmarked tense, dubbed “factative” by Welmers and Welmers (1968), as discussed by Dechaine (1991) (cf. Stowell 1991/1996; Fitzpatrick 2006). As Banfield and Macintyre (1915, 36) and Smith (1969, 117) both note (and as confirmed by Jason Kandybowicz, personal communication) the verb in such sentences may be understood as past tense — or as present tense, when the verb is stative.

We must then ask about the interaction of the Exposure Condition with *è* ‘PRS’, *à* ‘FUT’, as well as the remote past marker *pányi lě*, which remain overt even in the absence of subject extraction. If these elements are specifiers of T, rather than instances of T itself, this behavior is expected. This is in fact Kandybowicz’s own conclusion concerning the remote past marker, which obligatorily precedes the subject when it is not extracted and may follow focused constituents. Kandybowicz proposes that it is adjoined to TP:

(131) ***Pányi lě* adjoined to TP (Nupe)**

Ebógáo, pányí lě Musa (*pányí lě) dzò eyì.
 therefore before PST Musa (before PST) plant corn
 ‘Therefore, a long time ago, Musa planted corn.’

(Kandybowicz 2008, 41 ex. (30a))

The PRS and FUT markers might be analyzed with a very similar syntax, except that they must merge below the subject (and linearize to its left), perhaps because they are bare heads, rather than phrases like the remote-past marker.

For this analysis to be correct, the free-standing verb *gàn* must be stipulated as permitting CP and ALIQUI complements, as a selectional property, as seen in (128) and (129) — but not TP complements. The version of *gàn* that attracts *’án* to form *gànán*, however, permits only CP and TP complements — and not ALIQUIP complements. These selectional properties are, of course, unexceptional in the broader typology of subject extraction patterns, as discussed in the previous section.

Finally, notice that our analysis of subject extraction from *gànán* clauses offers yet another instance of derivational opacity. The *-án* morpheme survives as a suffix on *gàn-* after its source position is deleted by Exfoliation, a point of some interest if this analysis is correct. *Gànán*, according to Kandybowicz, is used with sentential complements “whose propositional content is asserted/presupposed”, while another two-part complementizer *ke...na* is reserved for clauses whose content is not asserted or presupposed (for example, the complement to ‘seems’). Kandybowicz suggests that the interaction of this second complementizer with subject extraction is identical to the behavior of *gànán*, which would suggest a similar analysis in which *na* is a lower instance of C that raises to *ke* — but for some reason is linearized to the right — and survives in its higher position even when its source position has been eradicated by Exfoliation. I leave the investigation of this possibility to further research.

Kandybowicz (2006, 2008) proposes a very different account of the patterns of subject extraction in Nupe, according to which prosodic factors bear primary responsibility for the effect. He shows that the right edge of an intonational phrase boundary immediately follows *gànán*, but not *’án*, so that whatever follows *gànán* must be the leftmost element of a new intonational phrase. Kandybowicz suggests that this element must be external to *vP*, for reasons having to do with the alignment of intonational and syntactic phrasing, but proposes that it may not be a segmentally empty element — hence the need for an overt *vP*-external element, as seen in (130a-c). The account of Kandybowicz’s findings offered here, by contrast, is purely syntactic, and uses ingredients already defended in previous discussion.⁵³ Furthermore, the analysis presented here suggests an account of the prosodic contrast noted by Kandybowicz between *gànán* and *’àn*: *gànán* takes a phase as its complement both before and after Exfoliation, while *’àn* takes a non-phasal TP as its complement. If it is the phase boundary following *gànán* that is responsible for the prosodic

53. Kandybowicz calls the Nupe remote past marker *pányi lě* an adverbial, and views the amelioration of the complementizer-trace effect in examples like (130b) as a Nupe counterpart to the effects of sentential adverbs in English discussed in section 5.2 above. As Kandybowicz (p. 135, fn. 11) notes, however, *pányi lě* is the only element of its kind in the language, which I suspect leaves open the possibility of other analyses such as the one proposed here. Kandybowicz does note (p. 40, fn 14) that *pányi lě* may occur to the left of focused elements (a preferred position, in fact) and sentence-finally (where it precedes the focus marker), which might be consequences of movement on the view advanced here.

break that Kandybowicz documents, the prosodic properties that correlate with differences in subject extraction can be seen as consequences, rather than causes, of the factors that yield the complementizer-trace effect in Nupe. This conclusion is of interest, as Nupe is the language for which the most detailed argument has been advanced for a prosodic account of this effect, in opposition to a purely syntactic account like that advanced here.⁵⁴

To return to the broader point of this section: it is premature to give up on the universality of the factors that underlie the complementizer-trace effect in the face of apparent counterexamples and puzzles in the languages of the world. It remains striking that even in languages where certain paradigms are problematic for the universality of the subject/non-subject asymmetries that result from the interaction of phase theory with Exfoliation, there is often some other corner of the language where exactly this kind of asymmetry pops out after all — and the theory has a place for the apparent counterexamples too. What remains a task for future work is a more precise delineation of the full set of possibilities, when repertoires of selectional options and possible homophonies interact with those aspects of the proposal advanced as universal components of the human language faculty.

The next subsection ties up one additional loose end concerning English. This discussion will be useful in succeeding sections, where we reintroduce consideration of non-finite outputs of Exfoliation.

6.7 Complementizerless clauses in English

The biconditionalized Exposure Condition (108) entails that C, like other functional heads in the clausal spine, always has a phonological exponent in principle (as stated in item (f) of the list on page 52), i.e. that there is no such thing as a lexically null variant of C. This raises the immediate question of finite complementizerless clauses without any obvious subject extraction in English — both embedded declarative clauses as in (132a-b) and so-called “contact relative clauses” (Jespersen 1949, 132 ff.) as in (133a-b):

(132) **Complementizerless embedded declarative clauses (English)**

- a. Mary concluded he should be invited to our conference.
- b. John claims John spoke with Fred.

(133) **Contact relative clauses (English)**

- a. This is a person Bill knows well.
- b. This the book Sue praised to the skies on her blog.

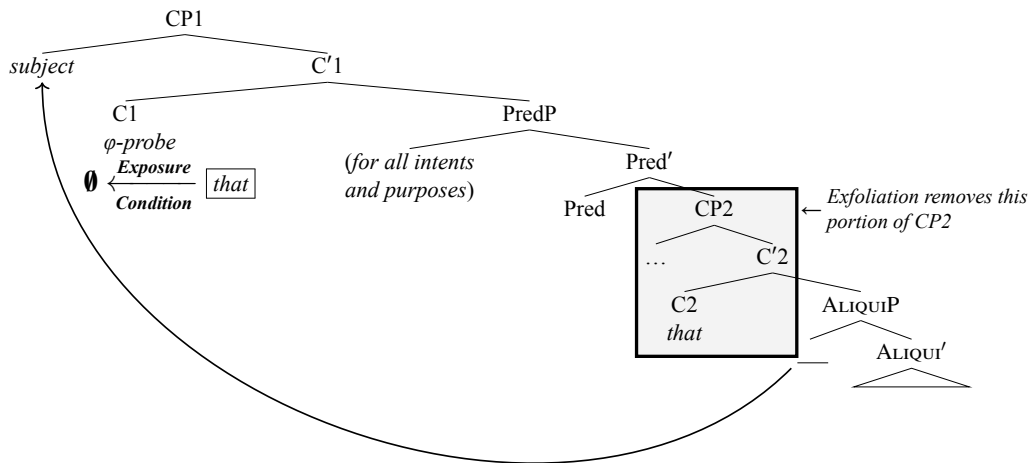
The discussion so far provides two circumstances under which a complementizer may fail to be pronounced: (a) when deleted by Exfoliation and (b) when unpronounced due to non-exposure. I will suggest that both factors are at play in producing complementizerless embedded declarative and relative clauses like those in (132) and (133). The key to explaining such examples will be the availability of the double CP structures discussed in section 5.2 (where it was crucial to the account of adverb-intervention exceptions to the complementizer-trace effect). Despite appearances, I propose that subject extraction does take place in these constructions, as first argued for complementizerless embedded declarative clauses by Pesetsky and Torrego (2001, 373 ff.) (though in the context of a different proposal concerning complementizer-trace effects). I consider complementizerless embedded declarative clauses first, and then turn to contact relatives.

54. Kandybowicz (2006) extends his proposal beyond Nupe, suggesting that complementizer-trace effects cross-linguistically have prosodic explanations — as occasionally claimed, for example, in connection with the adverb intervention effects for English discussed in section 5.2. Ritchart et al. (2015), however, present data suggesting that prosodic factors do not play a role in these effects. See Pesetsky (2017, 11-13) for some additional discussion.

6.7.1 *Complementizerless declarative clauses in English*

In section 5.2, I proposed that English C may take as its complement a null predicative phrase whose semantics are roughly “it is the case that...” — and that the head of this predicative phrase itself takes a second CP complement. Suppose now that in addition to its \bar{A} -probe, English C also bears a ϕ -probe with an EPP property. This ϕ -probe will attract the highest nominal accessible to it, whenever conditions permit. Most of the time, however, conditions will *not* permit this ϕ -probe to satisfy its EPP requirement, because the nearest attractable element will occupy the specifier of the local TP, and will therefore be unattractable as an anti-locality consequence of LAAC. One place where LAAC will not prevent a ϕ -probe on C from satisfying its requirements is the higher C of a double-CP structure, like those discussed in section 5.2. In such a structure, if the higher clause lacks a nominal attractable by C, the ϕ -probe on C1 will find the subject of the lower CP (i.e. CP2) as its goal and move it to form a specifier of CP1, without running afoul of LAAC. Crucially this operation will trigger Exfoliation of CP2, eliminating the lower instance of *that*, as a standard instance of the complementizer-trace effect. Furthermore, if C1 retains its specifier (i.e. if the subject attracted by the ϕ -probe on C1 does not move further), the Exposure Condition will render the higher instance of *that* unpronounced (though syntactically present). The consequence will be an embedded clause with no overt complementizers at all — ironically, a straightforward and predicted consequence of a structure that started out with not one, but *two* distinct and potentially pronounceable complementizers.

(134) **Analysis of complementizerless clause (English)**



It is important to emphasize the importance to this analysis of the claim that the null predicate in these constructions lacks nominal arguments, so that the closest nominal argument to the ϕ -probe on C1 is indeed the subject within CP2. This is a stipulation that future research needs to confirm and explain. What is perhaps not a stipulation in the same sense is the presence of the ϕ -probe on C in the first place. If C bears a ϕ -probe, then there is an interesting uniformity to the functional heads from ν through C: ν , *to*, T, ALIQUI and C itself. Each one may attract the subject, and each one therefore bears a ϕ -probe. It is only LAAC and the special status of C as a phase-head that prevents the needs of its ϕ -probe from being satisfied outside the special circumstances of (134).

If this analysis for English complementizerless declaratives is correct, the subject has moved out of the CP within which it was first merged, and ends up structurally higher than when it follows an overt *that*. Evidence from adverb positioning supports this claim. Doherty (1997) observed that an sentence-level adverbial phrase may precede the subject of an embedded clause when the adverbial immediately follows an overt *that* — but may not precede the subject when *that* is omitted (as also discussed by Grimshaw 1997 and Pesetsky and Torrego 2001):

(135) **Adverbials may not precede subject in complementizerless declarative clauses (English)**

- a. She claimed [**(that)* soon Mary would arrive].
- b. She insisted [**(that)* most of the time they accepted this solution].
(Grimshaw 1997, 411, ex. (43a))
- c. Mary is claiming [**(that)* for all intents and purposes John is the mayor of the city].
(Pesetsky and Torrego 2001, 375, ex. (37b))

The subject may of course precede these adverbials in a complementizerless embedded clause:

(136) **Adverbials may follow subject in complementizerless declarative clauses (English)**

- a. She claimed [Mary soon would arrive].
- b. She insisted [they most of the time accepted this solution].
- c. Mary is claiming [John for all intents and purposes is the mayor of the city].

These findings are predicted if the subject in a complementizerless embedded declarative clause has moved to the specifier of CP₁, above any position that an adverbial can occupy. This means that the adverb is itself excluded from occupying a specifier position in CP — a fact independently shown by examples like (134) (also discussed by Doherty):

(137) **Adverbial impossible as specifier of CP**

- a. *She claimed [soon that Mary would arrive].
- b. *She insisted [most of the time that they accepted this solution].
- c. *Mary is claiming [for all intents and purposes that John is the mayor of the city]

Doherty also notes that certain adverbials may precede *that*, and these same adverbials are also acceptable when *that* is omitted:

- (138)
- a. She says [when we get home (that) things will be different].
 - b. I believe [next year (that) she'll be fine].
 - c. I suppose [ordinarily (that) you would go somewhere else].
 - d. He thinks [in some circumstances (that) things would be better].
(Doherty 1997, 203, ex. (16)-(17))

This observation, if correct, is compatible with the proposal developed here, if these adverbials, unlike others, may move (or are externally Merged) so as to form a specifier of CP. When *that* is present, the adverbial is a specifier of the higher C in a double-CP structure, and the overt *that* is the lower C. When *that* is absent, the adverbial is a specifier of CP in a single-CP structure, with the C silent in accordance with the Exposure Condition.

Now recall from section 5.2 that when two complementizers are string-adjacent, the C Identity Avoidance Rule in (81) marks them with an asterisk that yields a sensation of deviance if present at PF. As discussed in that section, because the first of a pair of adjacent complementizers receives this mark the moment it is adjacent to the second complementizer, the sensation of deviance remains even when the second complementizer has been deleted by Exfoliation. That was the reason why the end run around the complementizer-trace effect offered by such structures requires the presence of material that separates the two complementizers pre-Exfoliation.

Why do we not observe a similar adverb requirement in complementizerless sentences? Why is a structure like (134) acceptable even when the parenthesized adverbial is omitted? The very complementiz-

erlessness of the structure provides the answer. Since neither complementizer is visible at PF (C2, because it has been eliminated by Exfoliation⁵⁵; and C1, because it has been silenced by the Exposure Condition), the asterisk added by the C Identity Avoidance Rule yields no sensation of deviance.⁵⁶ When a subject is extracted from CP2 in a double-CP structure, and CP1 retains its specifier, the Exposure Condition silences C1 and nothing is required to intervene between the two complementizers. If the specifier of CP1 moves on, however, (as in the complementizer-trace paradigm) the Exposure Condition does not silence C1, and adverbial intervention is therefore necessary. Our proposal for complementizerless clauses thus causes no problems for our account of complementizer-trace effects.

I conclude the discussion of complementizerless declarative clauses with several further observations concerning the proposed analysis.

First, though I will not offer specific proposals here, the current proposal might be extended along lines earlier pursued in Pesetsky and Torrego (2001, 2007), so as to predict the restrictions on the external syntax of complementizerless clauses in English, including the fact that a complementizerless clause may not appear as the subject of a higher clause:

(139) **Complementizerless clause impossible as subject (English)**

*[The world is round] is a tragedy.

(cf. ✓[*That the world is round*] is a tragedy.)

Both the current proposal and Pesetsky and Torrego's proposals posit movement of the subject to a higher position in complementizerless declaratives — responding to the EPP property of a semantically uninterpretable probe with which the subject underwent the operation Agree. Pesetsky and Torrego adopt Chomsky's (1995a, 2000, 122 ff.) proposal that an instance of an uninterpretable feature that has successfully entered an Agree relation with an interpretable counterpart (cf. Pesetsky and Torrego 2007) obligatorily deletes. They then note that if the raising of the subject to a higher head H of a constituent HP triggers the deletion of the feature F on H that attracted it, the resulting absence of F on H might prevent HP itself from undergoing any movement that is crucially triggered by a higher F-probe. In particular, if subject-forming movement is triggered by a probe that searches for the very same feature that triggers raising to specifier of C1 in (134), the deletion of this feature on C1 will prevent CP from undergoing subject-forming movement. For reasons connected with their proposal for complementizer-trace effects, Pesetsky and Torrego proposed that the relevant feature is tense-related, but in the present framework, we might equally well identify it as an uninterpretable ϕ -feature (or ϕ -feature bundle).

Additionally, note that successive-cyclic \bar{A} -movement of a non-subject from an embedded complementizerless clause must be permitted to create a second specifier of CP2, given the analysis in (134). McCloskey (2000) has shown that West Ulster English provides a probe into the landing sites of successive-cyclic *wh*-movement in the form of a pluralizing *all*, which may be pronounced in any intermediate CP-peripheral position where a plural single-word *wh*-phrase has stopped in the course of long-distance \bar{A} -

55. There is actually no argument supporting the addition of an asterisk to C2 in these constructions. The result would be the same if the rule were written so as to stigmatize only C1, but in the absence of deciding evidence, the formulation adopted here may be the more parsimonious option.

56. Recall that the inability to find an acceptable exponent for a morpheme later deleted by Exfoliation does produce a sensation of deviance detectable by at least some Icelandic speakers, even when that morpheme is later deleted as a by-product of Exfoliation, as discussed in section 4.4.2. In footnote 33, we noted that the sensation of deviance produced by non-satisfaction of EPP followed a different logic, in that deletion of the head bearing an unsatisfied EPP requirement eliminated the effects of failing to satisfy the requirement. We speculated there that the deviation attributable to not finding an exponent represents a failure of *process* (the search for an exponent failed to terminate) rather than a property of the representation rejected by PF or LF — as is arguably the case with failure to satisfy EPP. Our treatment of the problem created by adjacent complementizers places it in the same category with respect to this issue as EPP satisfaction.

movement. (See footnote 42 for how this phenomenon must be analyzed in light of the Exposure Condition.) Crucially, pluralizing *all* is not only found to the left of an overt complementizer *that*, but also to the left (and not to the right) of the subject of an embedded complementizerless clause. This makes it clear that \bar{A} -movement into the CP1 domain must form a specifier higher than that created by the A-moved subject. I will leave reasons for this open, but the observation itself will be important in the next subsection.

(140) **West Ulster *all* stranding with and without overt *that***

What did he say all (that) he wanted ___ ?

‘What (pl.) did he say that he wanted?’

Finally, let us return to the topic of cross-linguistic variation, since many languages, such as French, do not allow complementizerless embedded declarative clauses. Clearly, some key ingredient of the English construction must be unavailable in such languages. One contender is the null predicate that permits the double CP structure in the first place.⁵⁷ Another is the ϕ -probe on C that permits the subject of CP2 to raise into CP1. Crucially, the factors that permit or disallow English-style complementizerless clauses are distinct from the selectional factors that permit or disallow a bare TP to result from Exfoliation when the subject is extracted from an embedded clause in a given language. We thus expect to find dissociations: languages in which a complementizerless finite clause is possible *only* under subject extraction, and not more generally. As already noted in the previous section and documented in example (122), Igbo is just such a language.

One complication, also relevant to the next section, is the fact that complementizerless declarative clauses in Kreyòl (assuming the same analysis as that suggested for English) require Exfoliation to TP, and not ALIQUIP, since *ki* does not appear following the subject. Though we should seek a deeper explanation, this can be viewed for now (at least as a stop-gap) as a selectional property of the null predicate — i.e. rejection of ALIQUIP as a complement, and acceptance of TP (and perhaps CP).

6.7.2 *Contact relative clauses in English*

Let us turn now to English contact relative clauses. I propose that the key to predicting the existence and properties of these complementizerless relative clauses is the choice of a particular analysis for English *non*-contact relative clauses introduced by an overt *that*:

(141) ***That*-relative clauses (English)**

a. I met a person that Bill knows well.

b. Mary wrote the book that Sue praised to the skies on her blog.

In particular, if we adopt a head-raising analysis for examples like (141a-b), the same double-CP structure posited for complementizerless declarative clauses in the preceding subsection will also provide an analysis for contact relative clauses. Furthermore, this proposal also predicts the so-called “anti-*that*-trace effect” for English relative clauses — a puzzle whose analysis has bedeviled most previous proposals advanced to explain complementizer-trace effects of the non-“anti” variety.

57. If double CP structures are impossible in French, it is predicted that complementizer-trace effects in French will not be ameliorated by the intervention of adverbs as they are in English — if the amelioration effect in English relies on the double CP structure, as argued in section 5.2. This prediction is correct, as noted by Rizzi 1997, 320:

| | | | | | | |
|-----------------------|----------------|--------------------|-----|--------------|------|---------|
| l’homme que je crois | ✓qui/*que, | l’annee prochaine, | ___ | pourra | nous | aider |
| the.man who I believe | ✓ALIQUI/*COMP, | next year, | | will.be.able | us | to.help |

‘the man who I believe (that) next year will be able to help us’

We therefore begin with English *that*-relatives. Since the relation between the nominal head of these relative clauses and the relativization gap obeys island conditions and other characteristic properties of \bar{A} -movement, we may assume that some element has been attracted to C in this construction (Chomsky 1977). Holding constant the (mostly uncontroversial) claim that *that* in such examples is a complementizer, the field has explored two main options concerning the identity of the moving element.

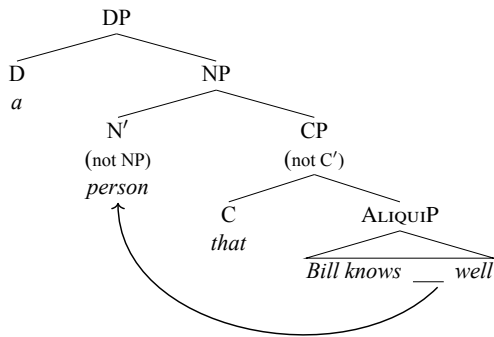
One option, which we may call the “*wh*-movement hypothesis”, proposes that a *wh*-phrase moves to the specifier of C in a *that*-relative, much as an embedded question. The clause in which *wh*-movement has taken place then externally merges with the nominal head with varying proposals concerning the syntactic and semantic connection between the relative clause and the nominal head. A *wh*-relative on this view differs from a *that*-relative mainly in the overtness of the *wh*-phrase (Keyser 1975, 17-22; Chomsky 1977, 98; Chomsky and Lasnik 1977, 434 ff.).

(142) ***Wh*-relative clauses (English)**

- a. I met a person who Bill knows well.
- b. Mary wrote the book whose plot Sue praised to the skies on her blog.

An alternative family of proposals, which I will call “the head raising hypothesis” posits that it is the head nominal itself that undergoes \bar{A} -movement. On one simple version of this proposal, the head nominal raises to a position homologous to that targeted by overt *wh*-movement, except that it is the moved nominal that projects, rather than C, satisfying a selectional requirement of D:

(143) **Head-raising hypothesis for *that*-relatives (English)**



Áfarli (1994), Aoun and Li (2003, 110-123) and Szczegielniak (2004) (as noted by Salzmann (2017, 145)) have argued that this simple version of the head-raising hypothesis is correct for English *that*-relatives and their counterparts in certain other languages (a point to which I return below) — but incorrect for *wh*-relatives, which do involve *wh*-movement and external Merge of the nominal head. This mixed picture turns out to be supported for English by the proposals advanced here.

Of course, head-raising proposals have been advanced for *wh*-relatives as well, as well as more complicated variants for *that*-relatives. In many of these proposals, a complex constituent containing both the ultimate head nominal and a (possibly silent) *wh*-word moves to form the specifier of CP, often with sub-extraction of the nominal forming a projecting head at a higher structural level. This is the research tradition launched by Brame (1968), Schachter (1973, 33 ff.), Vergnaud (1974), and Kayne (1994) among others — and is the family of proposals most commonly discussed under the rubric of “head raising analyses”. While some variants of these proposals are probably compatible with what follows, I will not explore them here. The number of analyses that have been proposed for relative clauses (even just within English)

is vast, as are the issues relevant to adjudicating among them (see Bianchi 2002 and Salzmänn 2017, chapter 2 for surveys). My brief discussion of relativization overall will be incomplete and cursory, limited to a few points closely connected to preceding discussion.

The head-raising analysis interacts with the Exposure Condition and LAAC in ways that predict the salient puzzles of English *that*-relatives. First, although the movement of the relative-clause head under the analysis in (143) is triggered by features of C, just like standard instances of \bar{A} -movement, the position to which the nominal moves ends up external to CP. Consequently, *that* counts as exposed, and is therefore pronounced. In addition, because the moved nominal is not a specifier of CP in its new position, LAAC does not block a configuration otherwise identical to (143) in which the moving element is the subject. In other words, there should be no antilocality restriction on short-distance subject complementizer relativization. This correctly predicts that the complementizer is overt, and remains overt when the local subject is relativized:

- (144) **No Antilocality restriction in *that*-relativization of the local subject (English)**
- a. I met a person that knows French well.
 - b. Mary wrote the book that impressed Sue so much.

Now let us turn to contact relatives. The same kind of movement that forms a *that*-relative should be able to raise a nominal to the higher CP of the double-CP structure discussed in the previous section. As noted there, McCloskey's (2000) findings concerning *all*-stranding in West Ulster English provided evidence that \bar{A} -movement in such structures must target a specifier position higher than that occupied by the raised subject, as seen in (140). All things being equal, we expect the same to be true of the kind of \bar{A} -movement that produces *that*-relative clauses. Once again, because the \bar{A} -moved element projects, the moved material does not prevent C from counting as exposed. The raised subject, however, *does* protect C from exposure, just as it does in the embedded declarative clauses discussed in the previous subsection. Consequently, *that* is not pronounced, and the result is a contact relative, as seen in (145) for non-subject relativization:

subject in a double CP structure to head a contact relative itself — assuming that English requires the moved nominal to project in head-raising relative clauses. For that to be possible, it would need to count simultaneously as a retained specifier of C1 (so *that* will be unpronounced) and as a projecting phrase external to CP1 (satisfying the requirement imposed on English relative clauses) — a contradiction. If the raised subject were permitted to merge for a second time to CP1, it could project — but then CP1 will not have retained its specifier, leaving *that* exposed and therefore pronounced. Furthermore, even if we were to redefine the notion of specifier retention to permit *that* to count as unexposed in this configuration, it has been argued by Abels (2003, 91-113) Ko (2007, 62 ff.; 2014, 21 ff.), and others on independent grounds that a head does not license movement of its own specifier. We therefore conclude that there can be no relative clause in which the subject both protects the highest complementizer from exposure and projects as the head of the relative. Consequently, a subject contact relative should be impossible in English, a correct prediction for standard varieties:

(148) **Subject contact relatives (English)**

- a. *I met a person knows French well.
- b. *Mary wrote the book impressed Sue so much.

The fact that the usually optional *that* becomes obligatory in English when the highest subject is relativized is a mirror image of the complementizer-trace effect, and has proved to be a thorn in the side of most analyses of that effect (e.g. Pesetsky 1982a, 305 ff., Chomsky 1981, 245-246, and Pesetsky and Torrego 2001, 411 fn 38, among many others). If the head raising analysis just discussed is correct for English, however, this “anti-*that*-trace effect” follows in its entirety from the same considerations that yield the *that*-trace itself and its cross-linguistic congeners, and needs no special explanation. The English anti-*that*-trace effect looks exotic in the present context only insofar as it is the first construction considered here in which the moved element projects.

We should now, however, be puzzled by the existence of languages whose complementizer-introduced relative clauses show a complementizer-trace effect, rather than an anti-complementizer-trace effect. In French and Kreyòl, for example, the left periphery of corresponding relative clauses looks just like a clause from which long distance extraction has taken place. In French, relativization of the local subject triggers Exfoliation, yielding a clause obligatorily introduced by *qui* (i.e. by ALIQUI), while relativization of any lower element yields a relative clause obligatorily introduced by *que* (i.e. by C). As noted above, French lacks the double-CP option that yields complementizerless declarative clauses. Consequently there are no instances of long-distance extraction from complementizerless declarative clauses, and correspondingly, there are no contact relatives:

(149) **Relativization of lower nominal vs. local subject (French)**

- a. une personne [*(que) Marie a invité ____] *lower nominal*
 a person COMP Marie AUX invited.PTCP
 ‘a person who Marie invited’
- b. une personne [*(qui) connaît bien le français] *local subject*
 a person ALIQUI knows well the French
 ‘a person who knows French well’

Kreyòl behaves like French plus the additional possibility of contact relatives. As noted in the previous subsection, it differs from French in permitting complementizerless declarative clauses, and extraction

from a complementizerless clauses is possible. Correspondingly, Kreyòl does show contact relatives in addition to non-subject relatives introduced by a complementizer.⁵⁹

(150) **Relativization of lower nominal vs. local subject (Kreyòl)**

a. Annou vote pou kandida [(ke) nou vle ___] a. *lower nominal*
 let's vote for candidate we want DEF
 'Let's vote for the candidate we want.'

b. Moun [*(ki) pa travay p ap touche]. *local subject*
 people ALIQUI NEG work NEG FUT get.paid
 'People who don't work won't get paid.'

(DeGraff 2007, 110 ex. 58, 55))

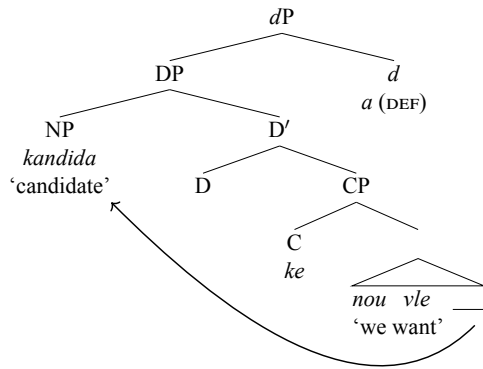
The behavior of these French and Kreyòl relative clauses suggests that the nominal head is indeed extracted from its clause by an external probe, in contrast to their English counterparts.⁶⁰ One possible trigger for this movement might be a feature on D itself, which could satisfy by internal Merge the same selectional requirement for an NP that English D satisfies by external Merge (of the relative clause in which the moved nominal projects). One version of this analysis might posit distinct *d* and D heads analogous to *v* and V (with *d* moving to D to place the actual determiner outside both the NP and its relative clause), as shown in (151) for Kreyòl. French may be analyzed the same way, except that the possibility in (151c) is unavailable:

59. The possibility of overt complementizer *ke* introducing a relative clause is not discussed in linguistic literature, as far as I can tell — and is apparently stigmatized as a French-ism, like the use of *ke* in declaratives. As Michel DeGraff (personal communication) notes, however, actual usage differs, examples of relative clauses introduced by *ke* are common in speech and widely attested on the internet, even in seemingly informal contexts. Fattier 1998, 863 likewise observes that what she calls "le pronom relatif objet" (presumably *ke*) "is not always deleted in basilectal [Kreyòl], contrary to what is written in most descriptions" (translation mine).

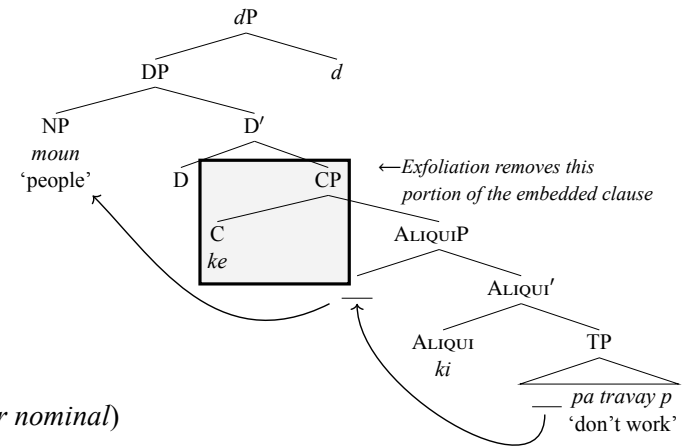
60. Other possible analyses of relative clauses of the Kreyòl/French type can be envisioned consistent with our overall picture, which I will not explore here. For example, in the spirit of original formulations of the Doubly Filled Comp filter, one might posit movement of a silent *wh*-phrase to the specifier of CP, rather than raising of the nominal head — with the notion "retaining a specifier" reformulated so that a null specifier of CP does not count as retained.

(151) **Relative clause types (Kreyòl)**

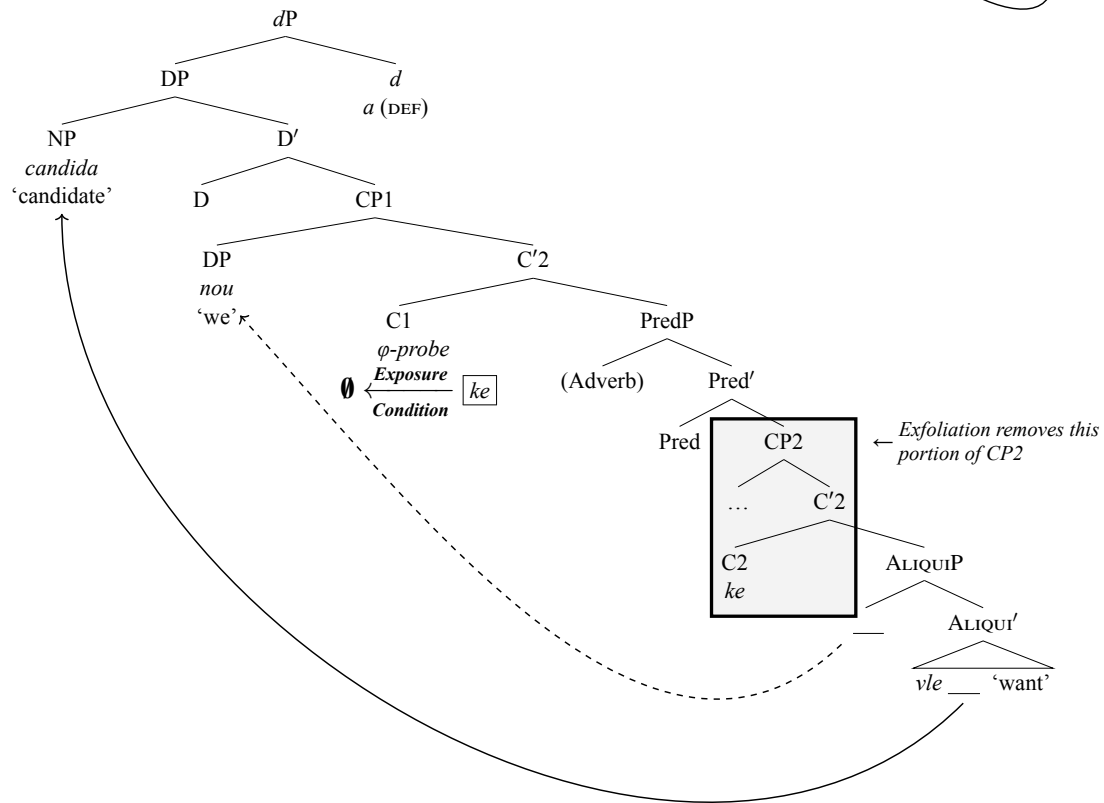
a. *Relativization of a lower nominal*



b. *Relativization of the local subject*



c. *Contact relative (relativization of a lower nominal)*



Note that if a language whose relative clauses are formed as in Kreyòl and French permits Exfoliation down to the TP level, eliminating ALIQUIP as well as CP, it may appear to permit contact relative clauses when the local subject is relativized. Candidates for such a construction are widely attested in non-standard dialects of English, including Belfast English (Henry 1995, 124-135) and African American Vernacular English (AAVE; see Green 2002, 90 and Sistrunk 2012), exemplified in the following examples:

(152) **Contact relative clauses with local subject extraction (AAVE)**

a. You the one [come telling me it's hot]. I can't believe you got your coat on.
 'You're the one who had the nerve to tell me that it's hot...'

b. We got one girl [be here every night].
 'There is one girl who is usually here every night'

(Green 2002, 90 ex. (24f,j))

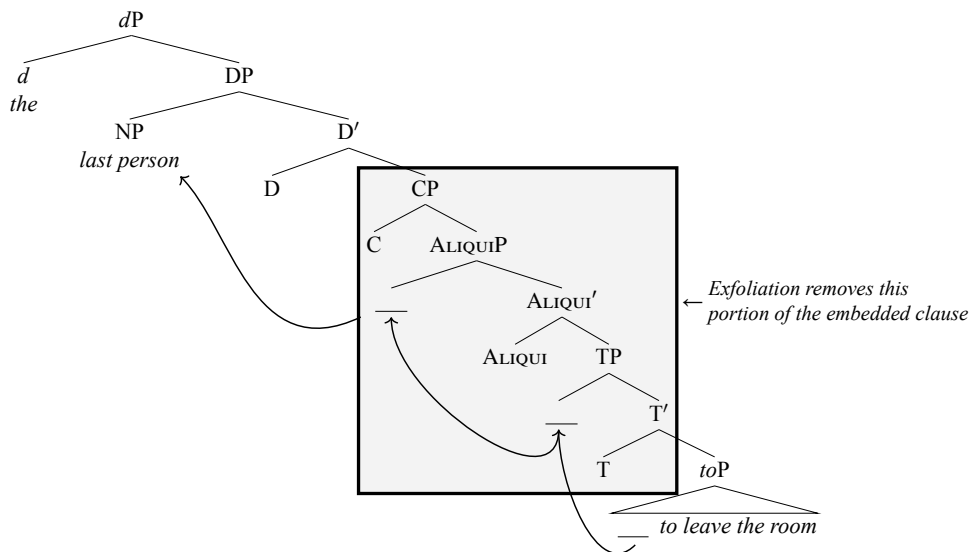
The analysis of this construction is, however, a topic of some controversy, including whether it is perhaps restricted to copular and existential sentences (where it is the most common), and even whether it is a true example of clausal subordination. (See McCoy 2016 for a general survey of the issues.) If a contact relative is a true option for relativization of the local subject in English dialects, one might propose that these dialects permit both the structures described for English and the structures described for French and Kreyòl, with Exfoliation exposing T, rather than ALIQUI.

What if Exfoliation were permitted to eliminate TP in addition to ALIQUI and C under extraction of the local subject in a Kreyòl/French configuration like (151b)? The result should be an infinitival relative clause limited to local subject extraction. As has been often noted, one particular reading for infinitival relative clauses in English has exactly this property. When a position other than the local subject is relativized, an English infinitival relative clause obligatorily receives a modalized, often irrealis reading, a topic to which we return in section 8. When the local subject is relativized, however, a non-modalized realis reading is also available, so long as uniqueness of a particular sort is asserted of the nominal with a lexical item such as *only* or a superlative adjective (Kjellmer 1975; Bhatt 1999, 42 ff.; Pesetsky and Torrego 2001, 398 ff.):

- (153) a. We invited the only person to have written a dissertation in less than four years.
 vs. ... **We read the only dissertation to write ___ in two years.*
 b. The last person to interview Mary gave her a good recommendation.
 vs. ... **The last person to interview ___ received a good recommendation.*

The uniqueness restriction remains an open puzzle that the present discussion does not illuminate. The restriction to the local subject, however, immediately suggests the possibility that even standard varieties of English may permit a Kreyòl/French-type relative clause, so long as the complement to D is a *toP*. Because D will only acquire a *toP* complement as the result of Exfoliation, the availability of this kind of (essentially) contact relative will be limited to environments of local subject relativization:

(154) **Relativization of the local subject yielding a non-modalized infinitival relative (English)**



Finally, relative clauses with overtly moved *wh*-phrases or relative pronouns in English, French, and Kreyòl behave, unsurprisingly, just like other clause-types with retained specifiers of CP in the language.

The moved *wh*-phrase or relative pronoun is linked to the nominal head in one of the various ways that have been proposed in the literature — such as application of a predicate modification rule to the relative clause (Heim and Kratzer 1998, 86 ff.) and an externally merged NP, or alternatively to the result of subextracting the nominal head from the *wh*-phrase itself (Kayne 1994, 86 ff.; Bianchi 2011, 71 ff.; among others). In many languages, the *wh*-option is often available only to PPs and oblique nominals, especially in restrictive relative clauses⁶¹ — but where available, the syntax of *wh*-relatives appears to be the syntax familiar from questions. For example, to the extent that French speakers permit a nominal *wh*-phrase to introduce a non-restrictive relative clause (Kayne 1977, 270, ex. (73)-(74); Sportiche 2011, 91, ex. (17)), non-standard varieties that permit *wh* + complementizer sequences in questions show the familiar *que/qui* contrast:

(155) **Relative clauses with WP (Non-standard French)**

- a. la voisine de ces hommes, laquelle ?(que) j'ai rencontrée hier... *lower nominal*
 the neighbor of these men, REL COMP I AUX met yesterday...
- b. la voisine de ces hommes, laquelle (qui) avait dit que... *local subject*
 the neighbor of these men, REL ALIQUI AUX said that...

(François Beauséjour, personal communication via Jillian Mills)

There are many further issues to be resolved concerning relative clauses, which I will not deal with here (for lack of expertise). The limited goal of this section has been the demonstration that the anti-*that*-trace effect found in English is in fact predicted by one plausible analysis of English *that*-relatives, and that a family of similarly plausible analyses can predict the absence of such an effect in Kreyòl and French. Much work remains to be done, however, before concluding that these proposals fit smoothly into a broader analysis of relativization in these languages and beyond.

7 Finiteness and extraction: some issues

The central empirical claims of the Exfoliation theory of clause size can be summarized with two slogans:

- (a) Extracting the subject shrinks the clause it is extracted from.
- (b) Only subject extraction can produce a smaller-than-full clause.

As we have seen, these claims allow us to pursue a unified answer to two sets of research questions that might otherwise appear to be independent:

- What explains the special internal and external syntax of infinitival clauses, and why do such clauses exist in the first place?
- What accounts for complementizer-trace effects and allied phenomena cross-linguistically?

The first set of questions concerns scenarios in which the subject of an embedded clause has raised only as far as *toP*, while the second second set of questions concerns scenarios in which it has raised higher —but in both scenarios it has been extracted from its clause in response to a higher probe, triggering Exfoliation of just enough clausal layers to place the goal at the edge of the resulting structure.

61. This is the transparently the case in French (Kayne 1977, 257-259) and Kreyòl (Koopman 1982a, 176; DeGraff 2007, 121, §17.9), and arguably (though less obviously) in Dutch and English as well (Pesetsky and Torrego 2006, 17 ff.) — in addition to unrelated languages such as Yucatec Maya (Gutiérrez-Bravo and Monforte 2011, 7-8).

The question of which clausal layers are lost and which are preserved when a subject is extracted from a complement clause is a matter on which languages differ, reflecting the selectional properties of the head that selects that clause. A stronger theory than ours might link variation in selectional properties to other properties of the individual languages, but that is not a result we can produce at present. We have, however, seen how the *logic* of selection predicts a range of variation in complementizer-trace phenomena that may be representative — or at least constitutes a first step towards correctly modeling the full range of cross-linguistic variation. Note that if the subject remains as the specifier of *v*P, however, and is extracted from its clause directly from that position (as in the “skipping” strategy for \bar{A} -extraction of the subject available to languages like Italian, discussed above), the structural description of Exfoliation is not met, so the clause will not be reduced. Consequently, the output of Exfoliation always preserves one or more *v*P-external functional layers, their identity regulated by selection — a substantive restriction on variation that may match reality.

The previous section also provided a list of the elements that head these layers: *to*, T, ALIQUI, and C. This list will remain our working hypothesis, to keep further discussion manageable. If this roster should prove incomplete, the result will simply be a larger set of possibilities for clause shrinkage motivated by subject extraction — and a correspondingly wider range of selectional options for higher heads.

7.1 *Anti-agreement*

The phenomenon dubbed *anti-agreement* by Ouhalla (1993) may point in this direction. In many unrelated languages, from Berber dialects to Bantu, apparent short-distance \bar{A} -movement of the subject results in the obligatory loss of ϕ -featural agreement morphology from the highest verb — while tense, mood and aspect morphology is retained. The examples in (156) illustrate this for Tamazight Berber. Person, number, and gender agreement between the verb and the subject, otherwise obligatory, disappears under short-distance \bar{A} -extraction, resulting in a verb form traditionally labeled “participial”, a phenomenon also observed in relative clauses and clefts. When a non-subject is extracted, full agreement remains obligatory:

(156) **Anti-agreement (Tamazight Berber)**

- a. *thamttut thɣla araw*
 woman 3SG.F.SEE.PRF boys
 ‘The woman saw the boys’ (VSO also possible)
- b. *mani thamttut ag ɣlan araw* (anti-agreement)
 which woman AY SEE.PRF.PTCP boys
 ‘Which woman saw the boys’
- c. **mani thamttut ag thɣla araw* (*full agreement)
 which woman AY 3SG.F.SEE.PRF boys
 ‘Which woman saw the boys?’ (Ouali 2006, 5, ex. (10)-(12))

In other dialects of Berber, some but not all ϕ -featural agreement morphology disappears under short-distance \bar{A} -extraction of the subject. As Ouhalla notes: "in some varieties [of Berber], e.g. Tarifit...the participle does not inflect for any agreement features. In other varieties, e.g. Tamazight, it inflects for NUMBER. In a third group of varieties, e.g. Ouargli and Tahaggat...the participle inflects for both NUMBER and GENDER" (Ouhalla, 2005, 665 fn. 5). A pilot survey of 22 languages from 9 distinct families by Baier (2016) suggests that the pattern of variation found across Berber holds cross-linguistically. In some languages, PERSON is omitted under subject extraction, while NUMBER and GENDER are retained. In others, PERSON and GENDER are omitted, while NUMBER is retained. No other patterns were found in Baier’s pilot study.

The proposals advanced here immediately suggest an analysis. Let us suppose (in common with most recent work) that ϕ -featural agreement morphology may reflect agreement processes that involve distinct NUMBER, GENDER, and PERSON heads. Now suppose that these heads are merged in accordance with a universal ordering (from lowest to highest): NUMBER < GENDER < PERSON. Anti-agreement can now be understood as the consequence of obligatory Exfoliation under subject extraction in a clause that is the complement of W. The Berber morpheme glossed as AY above (the default form of *ag*) and as COMP in the literature, can now be analyzed as W.⁶² The selectional properties of W in individual languages will determine which of these elements may head its complement post-Exfoliation — but since Exfoliation of a lower clausal layer entails the elimination of all higher layers, Baier’s hierarchy is respected.

On this view, the term “anti-agreement” becomes a bit of a misnomer. If Baier’s findings are incorporated into the framework developed here, the functional sequence (Starke 2001) within the clause above ν P consists of the following heads: *to* < NUMBER < GENDER < PERSON < T < ALIQUI < C. In our discussion of *wager*-class verbs and the Kayne paradigm, we observed \bar{A} -extraction of the subject triggering “deep” Exfoliation down to the *to*P layer. In our discussion of complementizer-trace effects, we saw \bar{A} -extraction of the subject triggering shallower instances of Exfoliation that left behind the ALIQUIP and TP layers. If this section’s conjecture concerning anti-agreement is correct, it represents an instance of Exfoliation intermediate in depth between the two sets of cases examined earlier in this work, not a special phenomenon in its own right.

I will leave this proposal as a conjecture here, and will not explore it further or compare it to alternative accounts. The phenomena that have been grouped under the rubric of anti-agreement are complex, and there are lively current debates concerning the correct analysis that I will not attempt to discuss here (e.g. Baier 2018, who argues that the claimed link between anti-agreement and movement of the subject is illusory, in light of comparable phenomena involving direct objects).

7.2 *Short-distance \bar{A} -extraction leaving a clause non-finite*

If short-distance \bar{A} -extraction of the subject accompanied by Exfoliation may leave in its wake an ALIQUIP or TP, and perhaps also a NUMBERP, GENDERP, or PERSONP, the question naturally arises: why not *to*P? This is not an option in English interrogatives:

(157) **Short-distance extraction of the subject leaving *to*P behind**

- a. *Which student to see Mary?
- b. *I was curious how many packages to arrive each day.

Common accounts of this fact attribute the impossibility of short-distance subject extraction in such examples to a case-licensing problem. These accounts, of course, presuppose a lexicalist view of non-finite clauses that permits the subject of a non-finite clause to be identified as a position to which case is not assigned. Section 4, however, provided numerous arguments against this proposal. In section 4.2, the Kayne paradigm provided a particularly explicit argument against the claim that \bar{A} -movement from the subject position of an infinitival clause poses a special case-licensing problem — since *long*-distance movement from this position is acceptable whenever selectional properties of the higher predicate do not interfere. No detectable case-theoretic obstacle stands in the way of this movement. (See our discussion of examples (46) and (47).) The problem with examples like (157a-b) must therefore involve some factor particular to *short*-distance \bar{A} -movement of the subject in English. The obvious culprit is W, which we

62. Since W retains a specifier, it should not be overt, all things being equal, since it is not exposed. Ouhalla (1988, 254) describes AY in Tarafit Berber as “affixal”, unable to define its own stress domain, and attracting object clitics to it whenever possible (though see Ouali (2011, 178 fn. 2) for a complication). Much as I tentatively suggested that the affixal properties of T might be responsible for its pronunciation even in the presence of a retained specifier, a similar proposal might be entertained for Berber AY, if the properties identified for Tarafit hold for their cognates in other dialects.

have already argued selects TP but rejects CP and ALIQUIP as its complement. Add *toP* to that list, and the contrast between short-distance and long-distance subject extraction is correctly predicted by the theory:

(158) **Selectional property (Standard English and ...)**

*[W {ALIQUIP, CP, *toP*}]

At the same, however, there might be cause for concern. The contrast between short- and long-distance subject extraction from *toP* argues against subsuming (157) under the broader umbrella of case-licensing theory. Attributing the contrast to the selectional properties of W in English, however, suggests that this contrast will turn out to be language-specific, like the other differences attributable to selection that have been discussed. At the moment, however, though we have seen many examples of short-distance subject extraction limited to reduced clauses, I am unaware of a language in which this clause can be maximally reduced to *toP*. If no language exists that permits this option, we must worry about a purely selectional account of (157), unless we can provide some reason why W should reject *toP* complementation universally.

A similar question arises in connection with our discussion of English complementizerless embedded clauses in section 6.7, where what looks on the surface like a simple complementizerless finite clause was argued to actually represent a double-CP configuration in which the higher C attracts the subject of the embedded CP from the specifier of TP position, as an instance of A-movement — triggering Exfoliation that leaves the embedded clause finite but complementizerless. Can the subject also be attracted in this configuration directly from the specifier of *toP*? If so, the result would look like an R2 construction, except that tests should show the subject remaining within the embedded clause. Branigan (1992, 60 ff.) and Lasnik (2003), among others, have argued that such cases exist in English. Lasnik, for example, argued that when the verb-particle idiom *make+out* takes an infinitival complement, true R2 is found only when the subject of the embedded clause precedes the particle as in (159a). When the subject of the embedded clause follows the particle, as in (159b), Lasnik suggests that it remains in the embedded clause:

- (159) a. The mathematician made every even number out to not be the sum of two primes. (cf. (10))
 b. The mathematician made out every even number to not be the sum of two primes.

His principal argument relies on the claim that only the alternant in (159b) permits *every even number* to scope under negation in the embedded clause. On the assumption that only this alternant has an analysis in which *every even number* remains within the embedded clause, that negation takes that clause as its scope domain, and that reconstruction from the R2 position is impossible, the conclusion follows. If it is correct, this kind of construction might instantiate a double-CP configuration in which the higher C attracts the embedded subject and ends up taking *toP* as its complement post-Exfoliation. Because the judgments are murky and the necessary background assumptions complex (especially the ban on reconstruction; see also Iatridou and Sichel 2011), I will leave the matter open. An additional complication arises from the fact that if English C does tolerate *toP* as its complement after Exfoliation, we do not expect the construction to be limited to environments in which the higher predicate bears an R2 probe. We might imagine limiting the availability of the construction in some fashion, but the fact that we do not find R2-mimicking constructions as complements to unaccusative or passive verbs suggests that this is the wrong approach, and that constructions that look like R2 truly must be R2. In that case, English C must have a selectional property that prevents its complement from being a *toP*, and data such as Lasnik's, if correct, must be accorded some different account:

(160) **Selectional property (Standard English and ...)**

*[C *toP*]

This conclusion once again leaves open the question of whether other languages might show the possibility that English lacks. R2-like constructions in which the raised element remains in the embedded clause have been argued for in a number of languages, including Passamaquoddy (Bruening 2001) and Tsez (Polinsky and Potsdam 2001), which may instantiate this possibility or something similar.

7.3 Hyperraising

Sections 4, 5, and 6 dealt with subject extraction from the specifier of ALIQUIP or TP, which triggers an application of Exfoliation that leaves the embedded clause finite — but this discussion was limited to \bar{A} -movement of the subject and the classic paradigm of complementizer-trace effects. Does R1 or R2 movement ever participate in the same paradigm? For example, do we ever find the subject extracted to form a specifier of V or v (with A-movement properties) from a clause that remains finite, but crucially must lack a complementizer? That is, do we find what has been called “hyperraising” (Ura 1994) with a complementizer-trace effect?

At least three languages have been reported that appear to instantiate this possibility. One is Lusaamia, as described by Carstens and Diercks (2009). In this language, the complementizer *koti* introduces the clausal complement of a verb such as ‘appear’ when R1 does not occur, as illustrated in (161a) below — but is obligatorily absent when the subject undergoes R1 movement, as illustrated in (161b). Crucially, the embedded clause remains finite and shows subject agreement. The scenario described below was devised by Carstens and Diercks to test for true R1 (as opposed to copy raising, which does not involve movement, and here yields the contextually inappropriate reading noted below):

(161) **Raising requires Exfoliation: Lusaamia (Bantu, Kenya/Uganda)**

Scenario: You find that the watering hole is empty. Though there are no cows on site, you can say:

- a. Bi-bonekhana **koti** eng’ombe chi-ng’were amachi. *no R1*
 8_{SA}-appear COMP 10_{cow} 10_{SA}-drink 6_{water}
 ‘It appears that the cows drank the water.’
- b. Eng’ombe chi-bonekhana (**#koti**) chi-ng’were amachi. *R1 entails *C*
 10_{cow} 10_{SA}-appear (**#COMP**) 10_{SA}-drink 6_{water}
 (without *koti*) ‘The cows appear to have drunk the water.’
 (with *koti*) ‘#The cows appear as if they drank the water’ [inappropriate in context provided]
 (Carstens and Diercks 2009, 103, ex. (10a-b),(11a))

Carstens and Diercks (p. 109) propose that the embedded clause in the R1 version of (161b) is a bare TP. This is just what we expect as a consequence of Exfoliation — if R1 in this language can attract a subject from the specifier of TP, leaving behind a clause that remains finite after Exfoliation.

A second language that appears to show hyperraising with a complementizer-trace effect is the Kordofanian language Moro, as explored by Jenks and Rose (2017). Though they do not offer a non-raising minimal pair, examples like (162a) exhibit the acceptable use of the complementizer *tá* in a non-raising environment. By contrast, examples (162b-d) show that R1 from a fully finite clause is possible, but incompatible with an overt complementizer. The use of idiomatic expressions for “it rains” and “fire the gun” (here passivized) helps ensure that this is genuine R1:

(162) **Complementizer-trace effect with hyper-R1 (Moro, Kordofanian)**

- a. é-g-a-lónét-a [tá Kúk:u ká-g-Λ-tund-ú] *no R1 (shows COMP)*
 1SG-CLG-RTC-KNOW-IPFV COMP1 Kuku PST-CL-RTC-COUGH-PFV
 ‘I know that Kuku had coughed.’

- b. kúk:u g-a-rámáǵ-iə [(*tǵ) g-é-^lʃəð-á ugi] *R1 entails *C*
 Kuku CLG-RTC-continue-IPFV COMP1 CLG-DPC1-chop CLj.tree
 ‘Kuku kept chopping the tree.’
- c. ɲáw ɲ-a-rámáǵ-iə [(*tǵ) ɲ-é-^lǰón-éə]
 CLɲ.water CLɲ-RTC-continue-IPFV COMP1 CLɲ-DPC1-rain-IPFV
 ‘It keeps on raining.’
- d. ís:iə j-a-rámáǵ-iə [(*tǵ) j-í-p-ón-iə]
 CLj.gun CLj-RTC-continue-IPFV COMP1 CLj-DPC1-beat-PASS-IPFV
 ‘The gun kept being fired.’ (lit. ‘...being hit’)
 (Jenks and Rose 2017, 214-216, ex. (14b),(16a),(18a),(19a))

In the examples above, the gloss DPC1 (‘dependent clause 1’) indicates a so-called *clause vowel*, also used when relativizing the local subject. RTC (‘root clause’) indicates a clause vowel used in finite root clauses with no extraction. The fact that the DPC1 clause vowel is used with both subject relativization and R1 provides further evidence for a unified theory of clause size that covers both A and \bar{A} -extraction of the subject. The DPC1 clause vowel might be an instance of ALIQUI exposed by Exfoliation of the C layer, i.e. a Moro counterpart to Bùli *āli*, Kreyòl *ki*, and French *qui* (though of course further investigation would be necessary to test this conjecture). Indeed, the same morphology and the same complementizer-trace effect characterize a Moro construction arguably analogous to either R2 or the pseudo-relative constructions seen in (104) above, as discussed by Jenks (2016):

(163) **Complementizer-trace effect with hyper-R2/pseudo-relativization (Moro)**

- a. oraǵ g-a-n:-ó kúk:u-ɲ [(*tǵ) g-é-land-ó ʒwúr]
 CLG.man CLG-RTC-hear-PFV Kuku-ACC COMP1 CLG-DPC1-close-PFV CLj.door
 ‘The man heard Kuku close the door.’
- b. é-g-a-n:-á ɲáw [(*tǵ) ɲ-é-^lǰón-éə]
 1SG-CLG-RTC-hear-IPFV CLɲ.water COMP CLɲ-DPC1-rain-IPFV
 ‘I hear it raining.’
- c. é-g-a-n:-á ís:iə [(*tǵ) j-í-bug-ón-iə]
 1SG-CLG-RTC-hear-PFV CLj.gun COMP CLj-DPC1-beat-PASS-IPFV
 ‘I heard the gun be fired.’ (lit. ‘...be hit’)
 (Jenks and Rose 2017, 215-216, ex. (16b),(18b),(19b))

The third language that has been described as permitting hyperraising crucially blocked by an overt complementizer is, perhaps surprisingly, English — more precisely, the English of certain speakers in a specific syntactic context. Before discussing this finding, however, we must come to grips with the fact that in English and many other languages, R1 and R2 constructions generally ban hyperraising:

- (164) a. *Mary seems [___ has solved the problem]. *hyper-R1*
 b. *Mary proved Sue conclusively [___ deserves the prize]. *hyper-R2*

Sadly, I will not be able to offer any actual explanation for the ban on hyperraising illustrated by examples like (164). I will, however, suggest that there is a logic to the ban that (even in the absence of an explanation) makes sense of the observation by Danckaert and Haegeman (2017) that a small corner of English permits hyperraising for some speakers. What will be exciting about this corner of English, in the context of the discussion above, is the fact that it reveals a complementizer-trace restriction on hyperraising like that observed above in Lusaamia and Moro.

Early approaches to the general impossibility of hyperraising in English assumed that the ban is universal. Rooted as these approaches were in the standard lexicalist approach to clause size, they attributed the ban to the “last resort” property of movement discussed briefly in section 2. These proposals relied on Vergnaud’s claim that finite and nonfinite clauses differ in their ability to case-license a nominal subject, a claim that presupposed the lexicalist approach to the finite/infinitival distinction that we have argued against throughout the present work:

(165) **A-movement as a last resort** (*background assumption: lexicalist*)

A-movement of a nominal (including R1 or R2 movement) is possible only if failure to move would leave the nominal unlicensed. (=15)

One of our earlier arguments against Vergnaud’s claim concerning the subject of infinitives extends rather directly to argue against a last-resort account of the ban on hyperraising. In section 4.1, for example, we saw that clausal subjects, subjects in locative-inversion and predicate-inversion constructions, and expletive subjects in R1 and R2 environments show exactly the same correlation between raising and non-finiteness as nominal subjects — despite the absence of independently demonstrable case needs on the part of these non-nominal elements. This uniformity of behavior extends to the ban on hyperraising seen in (164). Once again, there is no correlation between the laws governing raising and independently demonstrable case properties of the subject:

(166) **Ban on hyperraising extends to elements that do not need case-licensing (English)**

- a. *[That the world is round] seems [___ is a tragedy].
- b. *[In this room] are likely [___ are found the finest examples of Athenian sculpture].
- c. *[Even more important than linguistics] appears [___ is the fate of the planet].
- d. *There appears [___ is a riot in progress].

We might take the fact that the ban on hyperraising is not universal to suggest instead that it reflects language-particular selectional properties interacting with the aftermath of extraction-triggered Exfoliation. For example, if we propose that R1 and R2 predicates do not select for TP (or ALIQUI) complementation post-Exfoliation, hyperraising will be blocked:

(167) **Possible selectional property (English and ...) [replaced by (172) below]**

*[{unaccusative, R2 predicate} {ALIQUIP, TP}]

Note that English complementizerless declarative clauses, which may serve as a complement to the higher predicates under discussion, do not pose a problem for proposals that restrict ALIQUIP and TP complementation — if they are actually double-CP structures rather than smaller-than-CP clauses, as argued in section 6.7.1. The higher predicate takes the higher CP as its complement, and thus does not run afoul of the selectional properties of the predicate itself. If we assume that the lower CP is not a complement of a predicate that falls under (167), it will pose no problem either when it is exfoliated to TP or ALIQUIP:

(168) **Complementizerless clause as complement to R1 or R2 predicate**

- a. It seemed [the world was particularly round] that day.
- b. Mary believes [the world is round].

Other observations, however, do pose seemingly insuperable difficulties for such an approach. Though hyperraising A-movement is correctly blocked by (167), \bar{A} -extraction of the subject from a clause that remains finite is also predicted to be blocked in the same contexts — a problematic prediction. In particular, consider the consequences of \bar{A} -movement of the embedded subject in an English R1 environment where

the matrix subject is expletive *it* (because the embedded subject has not undergone R1 movement). I use the diamond diacritic to indicate that I reserve discussion of the acceptability of (169a-c) for the text that follows:

- (169) a. \diamond Who does it seem [___ wouldn't bother wearing gloves]?
 b. \diamond Who is it likely [___ will forget the beer]? (Haiman 1974, 79, ex. (12)-(13))
 c. \diamond These students, who it was rarely believed [___ had understood anything]...

Interestingly, these examples do not merely violate the proposed selectional property in (167). They also violate the Economy condition in (56), repeated below. Recall that this Economy condition was crucial to the exclusion of structures that are identical to (169a-c), except that the embedded clause is left *nonfinite* after Exfoliation, repeated as (171) below:

- (170) **Economy condition on multiple probe satisfaction [= (56)]**
 When two probes can satisfy their requirements with a single operation (in (55), movement of *who*), this option blocks any alternative derivation in which the same pair of requirements are satisfied with two distinct operations (in (55), movement of *who* and merge of *it*).
- (171) **Kayne-paradigm \bar{A} -extraction impossible with an R1 predicate and expletive *it* [= (50)]**
 a. *Mary, who it seems ___ to be the best candidate ...
 b. *Mary, who it is likely ___ to be the best candidate ...
 c. *Mary, who it was believed ___ to be the best candidate ...

Comfortingly, therefore, some speakers actually do judge examples like (169a-c) to be unacceptable to some degree. Haiman (1974), for example, reports both (169a-b) as unacceptable (prefixing them with an asterisk). Kayne (1980, 77) cites Haiman's claim approvingly, but describes the full asterisk as "perhaps [...] overstated". An informal social media survey of native speakers revealed some sentiment along the same lines. Nonetheless, many speakers judge as mild at best the contrast between subject and non-subject \bar{A} -extraction from extraposed clauses like those in (169). A probably universal judgment regards such examples as significantly better than the infinitival counterparts in (171) as well as finite counterparts in which the complementizer *that* is not omitted. These structures thus present a genuine problem for a derivation of an English-particular ban on hyperraising from the selectional claim in (167), as well as a challenge to the Economy condition proposed to exclude the configuration in (171).

Unfortunately, I have no general solution to offer. Nonetheless, I can show that if we provisionally accept a stipulative ban on hyperraising that applies only to A-movement, the logic by which this stipulation interacts with the Economy condition in (170) makes an interesting and possibly correct additional prediction concerning variation in the ban's coverage. This will be the promised corner of English with properties reminiscent of Lusaamia and Moro.

Van Urk (2015) has argued that the properties of A-movement are the properties of movement resulting from the interaction of a ϕ -probe with its goal (rather than the properties of a particular position). With this proposal as background, we may state the ban as (172), in full awareness that this formulation merely states the facts, and the problem of bans on hyperraising await a more serious resolution. The feature [\pm HR] marks a head as permitting or blocking hyperraising triggered by a ϕ -probe on that head, and the repertoire of [-HR] heads may be understood as differing from language to language:⁶³

63. Whatever probe is responsible for rightward Heavy Shift in English (see footnotes 14 and 19), it too must have the [-HR] property, since the subject of an embedded clause may not be extracted into the higher verbal domain by this process, unless Exfoliation leaves behind an infinitival clause (Postal (1974, 84)):

(172) **Ban on Hyperraising [to be explained someday]**

A finite clause blocks interaction between a φ -probe on an [-HR] head and its goal.

(A clause α is *finite* iff it contains TP after Exfoliation.)

The ban as stated correctly excludes canonical examples of A-movement hyperraising like (164a-b), while not excluding \bar{A} -movement of the subject. As before, this selectional statement permits extraction of the subject to the higher of two CPs in the complementizerless declarative construction — on the assumption that the predicate that embeds the lower CP is [+HR]. Now note that the examples in (171a-c) satisfy (172) in the only manner possible, given a derivation that has already raised the embedded subject as far as TP or ALIQUIP within the embedded clause: by violating the Economy condition. The \bar{A} -probe on the same head has chosen the subject as its goal (as it must, since it is the closest bearer of φ -features). The φ -probe on v has chosen the complement CP rather than the subject. This avoids a violation of the Ban on Hyperraising, at the cost of violating Economy. If Economy is a *soft constraint* outranked by the Ban on Hyperraising, the violation of Economy is permitted under these circumstances:

(173) **Constraint ranking**

Ban on Hyperraising (172) » Economy (170)

This predicts acceptability for examples like (169), a correct prediction for some (perhaps most) speakers. The judgments of speakers such as Haiman and Kayne, who report such examples as less than fully acceptable, can be viewed as reflecting a sensitivity to licensed violations of Economy that other speakers fail to perceive.

Infinitival examples like (171a-c) continue to be blocked on this proposal, because the violation of Economy is not necessary in order to avoid the Ban on Hyperraising. In these examples, the subject of the embedded clause has raised only as far as *toP*. If both the φ -probe and the \bar{A} -probe on v target the embedded subject, the result obeys both constraints. The result is (52a-c), as discussed in section 4.3. The examples in (171), in which the complement clause rather than its subject was picked as the goal for the φ -probe on v , satisfy selection, but violate Economy, and are excluded for that reason:

(174) **Alternative to (50a-c) [= (52)]**

- a. Mary, who ___ seems ___ to be the best candidate ...
- b. Mary, who ___ is likely ___ to be the best candidate ...
- c. Mary, who ___ was believed ___ to be the best candidate ...

Whenever two ranked soft constraints are proposed, as in (173), it is natural to ask whether the opposite ranking is also an available option for speakers of some language or language variety. If the answer is

-
- (i) a. Sue proved ___ to be prime [every number on this list].
 - b. *Sue proved ___ was prime [every number on this list].

This fact is particularly interesting if Heavy Shift has \bar{A} -movement properties (or, as seems likely, a union of A and \bar{A} -properties, responding to a composite φ - and \bar{A} -probe like Dinka C as analyzed by Van Urk 2015). Heavy Shift in examples like (ia) appears to license parasitic gaps, which may diagnose an \bar{A} -property (cf. Overfelt 2016 vs. Postal 1994):

- (ii) Sue proved ___ to be prime [without thinking about ___ for more than a second] [every single number on the list we gave her].

If \bar{A} -movement may be blocked from finite domains by [-HR], one might speculate further that languages like Russian and dialects of German that permit processes like *wh*-movement to extract freely from non-finite domains, while restricting comparable movement from finite clauses, might owe this property to a [-HR] feature associated with the \bar{A} -probe on v . Once again, I emphasize that the HR-feature is not an explanation, but a place-holder for a future explanation. Nonetheless, discovering that its purview includes all types of movement — not just R1 and R2 — might count as an advance relevant to figuring out why such restrictions hold in the first place.

yes (and if completely unpredicted outcomes are not also found), the overall approach is supported. In the present case, we should therefore ask what is predicted if the ranking in (173) is switched as in (175):

(175) **Alternative constraint ranking**

Economy (170) » Ban on Hyperraising (172)

This ranking permits hyperraising — but only when necessary in order to avoid violating Economy. This situation will arise only when three conditions are met:

- (a) an R1 or R2 predicate takes a CP complement;
- (b) the subject of this CP bears \bar{A} -features; and
- (c) the subject of this CP has raised to form the specifier of TP or ALIQUIP within the embedded clause, before being extracted.

In fact, a pattern of R1 extraction possibilities that can be explained in exactly this fashion has been reported for some speakers of English (and explored in depth) by Danckaert and Haegeman (2017), who provide a number of internet examples:

(176) **Hyperraising in English**

- a. %McDonald's has also seen an increase in the standard of hygiene across restaurants which ___ is felt ___ is attributable to the fact that the programme is now specifically about McDonald's restaurants.
- b. %A recording was also made of each School and was then used to transcribe the minutes and any quotes which ___ were felt ___ were relevant to the process.
- c. % [The church leaders] disagreed as to which books ___ were thought ___ were "Godly inspired". (Danckaert and Haegeman 2017, 27-28, ex. (1), (4), % added)

While examples like those in (176a-c) are judged as acceptable by some English speakers, R1 hyperraising in any other structural environment is uniformly rated as unacceptable, as Danckaert and Haegeman document at length — despite occasional attestations, such as the following, which was judged as unacceptable by Danckaert and Haegeman's consultants:

(177) **Unacceptable but attested hyperraising (English)**

(*)However, IT spending rates are expected will bottom out in 2013 and will be resilient over the long run[...]

(Google search Jan 18, 2014; <http://www.gartner.com/newsroom/id/2238915>)

(Danckaert and Haegeman 2017, 30, ex. (7))

Of the greatest importance to our discussion in this section, Danckaert and Haegeman also note (p. 30) that the inclusion of *that* to the left of the gap in examples like those in (176) renders the sentence unacceptable. These speakers thus show a complementizer-trace effect that constrains English hyperraising, just as observed in Lusaamia and Moro above:

(178) **Complementizer-trace effect with hyperraising (English)**

These organisations will now have the opportunity to bid for the new city funds, which are hoped (*that) ___ will help up to 150 families facing eviction.

(Danckaert and Haegeman 2017, 30, ex. (9))

Danckaert and Haegeman offer an account of their findings rooted in Rizzi and Shlonsky's (2007) analysis of complementizer-trace effects, adding several innovations to that approach that I will not discuss here.

Of course, the account suggested here required an innovation of its own, the Ban on Hyperraising, which we hope will prove explainable in more general terms. Nonetheless, I will take it as a significant encouraging sign that the existence and distribution of English hyperraising follows so straightforwardly from an interaction between this stipulation and the Economy condition motivated earlier in this work. While this result should not set our minds at ease concerning the reasons for the ban itself, it does suggest that we have at least correctly characterized the problem to be solved — an advance, if true. Where English does tolerate hyperraising, the CP layer is obligatorily absent, just as it is under \bar{A} -extraction (the more familiar complementizer-trace effect) — as predicted by the Exfoliation approach.

Let us now address an additional complication to the picture: the fact that some languages permit hyperraising but do *not* show a complementizer-trace effect. In these languages, hyperraising co-occurs with an overt complementizer. The existence of such languages should not come as a surprise, since we have already discussed languages that fail to show a complementizer-trace effect with \bar{A} -movement, and (all things being equal) we expect the same variation for A-movement. In Italian, for example, we noted that the “skipping” strategy first identified by Rizzi (1982) permits long-distance \bar{A} subject extraction to sidestep the complementizer-trace effect. The subject in a skipping language may move to the specifier of CP position directly from the specifier of vP , without stopping off in any intermediate position (which would cause the next movement step to trigger Exfoliation) — presumably because the EPP property is optional on the heads between v and C in these languages (or satisfiable by some other element). All things being equal, the skipping strategy should be available for A-movement as well, yielding hyperraising with no complementizer-trace effect — so long as A-movement is independently permitted from the specifier of CP without running afoul of any ban on “improper movement”. This will be the case if C bears a ϕ -probe, as we have assumed, and if the head triggering hyperraising is [+HR] (a point of variation among heads within and across languages).

This possibility is strongly supported by Fong’s (2019) study of hyperraising in Khalkha Mongolian. Fong shows first that in this language, the subject of a complement CP may remain clause internal and bear NOM case, as seen in (179a); or it may move to the specifier of CP position as seen in (179b), and remain there. In that position it may behave as an A-binder for processes within the embedded clause and behaves for NPI licensing like a permanent resident of the embedded clause — while nonetheless receiving ACC case from the higher clause (which overwrites NOM). Fong shows that the subject remains within CP in this construction by noting, among other things, that the CP including the ACC subject may front as a unit. She further demonstrates that the subject has raised within the embedded CP to its periphery by observing that when marked ACC it must precede possessor arguments, while the other order is possible when the subject bears NOM.

Crucially, the subject may also undergo R2 movement into the higher verb phrase, raising over higher-clause adverbials (like the subject in English R2), as seen in (179c) — while retaining the binding properties and NPI licensing properties already found to characterize nominals in the specifier of CP.

(179) **A-movement to spec,CP — and hyperraising from that position (Mongolian)**

- a. Bat chang-aar [CP **nokhoi** gaikhal-tai gej] khel-sen.
 Bat loud-INS dog.NOM wonder-with COMP say-PST
- b. Bat chang-aar [CP **nokhoi-g** [C' — gaikhal-tai gej]] khel-sen.
 Bat loud-INS dog-ACC wonder-with COMP say-PST
 ‘Bat said loudly that dogs are wonderful.’
- c. Bat **nokhoi-g** chang-aar [CP — [C' — gaikhal-tai gej]] khel-sen.
 Bat dog-ACC loud-INS wonder-with COMP say-PST
 ‘Bat said loudly that dogs are wonderful.’ (Fong 2019, ex. (5a-b))

Fong provides a variety of arguments that which make it clear that the ACC argument in such examples has indeed undergone R2-type movement from the embedded clause, i.e. that examples like (179c) do not instantiate prolepsis or object control. These include idiomatic reading preservation, scope reconstruction, and difficulties with remnant movement of the embedded clause. She also shows that both movement to specifier of CP and further movement into the higher VP have the properties of A-movement — and thus must be responding to ϕ -probes, if Van Urk’s proposals are correct.

No evidence available to me bears directly on the question of whether the initial movement to the specifier of CP involves the skipping strategy (i.e. direct movement from the specifier of vP), since it is not clear at present whether Mongolian subjects in general must raise out of the vP or may remain vP-internal as in Italian. Nonetheless, it is at least plausible to propose that Mongolian subjects show Italian-like behavior, in which case we have an explanation for why Mongolian differs from Lusaamia, Moro, and (varieties of) English in permitting hyperraising to co-occur with an overt complementizer.⁶⁴

In this connection, it is important to check that Mongolian also permits \bar{A} -movement of the subject to exit its clause without a complementizer-trace effect, i.e. without triggering Exfoliation (again, arguably due to the skipping strategy). Though fully convincing evidence is not available, what is known from the literature is consistent with a positive answer. Oseki and Miyamoto (2014) note the possibility of an embedded subject gap in the long-distance comparative in (180a) — a relevant example if Mongolian comparatives involve \bar{A} -movement of the comparative operator, like their English counterparts (Chomsky 1977). Interrogative *wh*-elements are generally pronounced in situ in Mongolian, but the possibility of a subject *wh*-phrase cooccurring with an overt complementizer in (180b) is also relevant, if it can be shown that Mongolian questions involve covert *wh*-movement rather than some strategy of in-situ interpretation such as focus alternative computation (Beck 2006; Cable 2010; Kotek 2014a; among others).⁶⁵

64. The possible relevance of skipping is the only aspect of our discussion of Mongolian that is original here. All other aspects of the discussion are summarized from Fong.

65. Example (180b) was designed by Fong to show a weak crossover effect with *wh*-movement (the pronoun may not be bound by the *wh*-phrase), irrelevant to our discussion. Though I have not had independent access to a speaker with whom I might check, there is no reason to believe that replacing ‘his/her mother’ with a pronoun-less subject would alter the acceptability of the example.

(180) **Absence of complementizer-trace effect in Mongolian (available evidence)**

- a. \downarrow
OP [John- \emptyset [— Mary-tai üge_kelelče-jei gejü] bodu-γsan eče] qola olan
 John-NOM Mary-with talk-PST COMP think-PST than far many
 toγan-nu kümün- \emptyset Suzie-tai kelelčeγü bai-jai.
 number-GEN people-NOM Suzie-with talk be-PST
 ‘More people wanted to talk with Mary than John thinks talked to Mary.’
 (Oseki and Miyamoto 2014, ex. (23))
- b. \downarrow
 — Tüünii eej [khen geriin daalgavar-aa khii-sen gej] khel-sen be?
 3SG.GEN mother who homework REFL.POSS do-PST COMP say-PST Q
 ‘Who did her/his mother say did/his homework’
 (Fong 2019, ex. (105a))

Fong provides two arguments in favor of covert *wh*-movement in Mongolian: sensitivity to adjunct and *wh* islands; and interactions with the locality condition on reflexive binding that diagnose covert movement into a higher clause. We may thus tentatively conclude that \bar{A} -movement behaves uniformly with A-movement in Mongolian in failing to show a complementizer-trace effect.

Though I do not have an independent argument that hyperraising proceeds via the specifier of CP in other languages, the proposal just discussed for Mongolian might also be the right explanation for the languages of the Balkan *Sprachbund* that also appear to permit R1 and R2 hyperraising from clauses introduced by a complementizer — and others as well, such as Brazilian Portuguese, for which a comparable analysis has been suggested by Fong (2018). Alexiadou and Anagnostopoulou (1999), for example, present arguments from reconstruction effects and idiom interpretation in Modern Greek in favor of the proposal that aspectual verbs license R1 in that language. Like other languages of the area, Greek systematically lacks infinitives, so the relevant examples instantiate hyperraising — and crucially co-occur with an overt complementizer:

- (181) **Hyperraising co-occurring with complementizer (Greek)**
 Ta pedhia arxisan na trexoun
 the children.NOM started.3PL COMP.SUBJ run.3PL
 ‘The children started to run’
 (Alexiadou and Anagnostopoulou 1999, ex. (11))

Since Greek permits subjects to remain *vP* internally, much like Italian, and thus permits a skipping strategy to side-step complementizer-trace effects with \bar{A} -movement, exactly this strategy should be available for A-movement, if A-movement through the specifier of CP is not deemed “improper” due to the presence of a ϕ -probe on C, and the relevant attracting heads count as [+HR] for the Ban on Hyperraising (172) (or whatever lies behind this ban).

Patterns similar to these may have multiple sources. Zulu also shows hyperraising without a complementizer-trace effect. Though it is not inconceivable that the same analysis motivated for Mongolian could also account for Zulu hyperraising, Halpert (2018) has argued for a different analysis that does not require the specifier of CP to serve as an intermediate landing site. As we shall see, Halpert’s proposal (like Fong’s) is also compatible with our overall approach, and could be adopted into the framework developed here virtually without alteration. I will leave open the question of which approach is correct, including the question of whether they should be viewed as competitors or as complementary routes to a similar outcome across languages.

Zulu shows both R1 and R2 raising from clauses introduced with an overt complementizer. Examples (182a-b) show this possibility for R1, with the use of an idiom arguing for movement. Zulu R2 involves additional complications that I omit here.

(182) **R1 without Exfoliation (Zulu)**

- a. ku-bonakala [ukuthi iqhina li-zo-phuma embizeni] *no RI*
 17s-seem COMP AUG.5steinbok 1s-FUT-exit LOC.3cooking.pot
- b. iqhina li-bonakala [ukuthi ___ li-zo-phuma embizeni] *RI, overt C*
 AUG.5steinbok 5s-seem COMP 5-FUT-exit LOC.3cooking.pot
 ‘It seems that the steinbok will leave the cooking pot.’ (idiom)
 i.e. ‘It seems that the cat will be out of the bag.’ (Halpert 2018, 6, ex. (19a-b))

The higher verb in (182a) shows class 17 agreement, which Halpert argues reflects agreement with the nearest goal for a ϕ -probe on T: the embedded CP. Unsurprisingly for an R1 construction, the R1 verb in (182b) shows class-5 agreement with the class-5 raised subject. Significantly, however, this is not the only available agreement pattern in such constructions. The verb may also continue to agree with the embedded clause, in free variation with agreement triggered by the raised subject. The examples in (183b-c) show the two patterns:

(183) **R1 verb agrees with raised subject or with complement clause (Zulu)**

- a. **ku**-bonakala [ukuthi uZinhle u-zo-xova ujeqe] *no RI/CP agr.*
 17-seem that AUG.1Zinhle 1s-FUT-make AUG.1bread
- b. uZinhle **u**-bonakala [ukuthi ___ u-zo-xova ujeqe] *RI/subj. agr.*
 AUG.1Zinhle 1s-seem COMP 1-FUT-make AUG.1bread
- c. uZinhle **ku**-bonakala [ukuthi ___ u-zo-xova ujeqe] *RI/CP agr.*
 AUG.1Zinhle 17s-seem COMP 1s-FUT-make AUG.1steamed.bread
 ‘It seems that Zinhle will make steamed bread.’
 (Halpert 2018, 14-15, ex. (35a-b),(36); citing Halpert 2012, 2016)

Abstract verbal agreement with a complement clause has already been invoked twice before: in section 3.2.1, where it provided an explanation for the apparent optionality of R1 and R2 constructions even when raising is otherwise available; and in section 4.3, where it interacted with the same Economy condition that played a key role in the discussion of English hyperraising just concluded. If Halpert is correct, Zulu constructions like (183a) and (183c) instantiate the same kind of agreement overtly, with class-17 verbal morphology.

Halpert’s most important claim relates the free variation in agreement patterns to the derivational history of R1 constructions. She notes first that the probe relevant to subject agreement morphology has an EPP requirement — which a full finite CP is not able to satisfy:

(184) **Finite CP may not function as a preverbal subject (Zulu)**

- *[ukuthi w-a-thatha umhlala phansi] ku-ya-ngi-mangaza
 COMP 1S-PST-take AUG.1sit down 17S-YA-1SG.O-surprise
 Intended: ‘That he retired surprises me.’ (Halpert 2018, 19, ex. (47),(36))

Consequently, if the EPP-bearing ϕ -probe responsible for subject agreement chooses a complement CP as its goal and agrees with it, the derivation will fail because of the unsatisfied EPP property — unless the probe is able to try again, searching inside CP for a goal that *is* capable of satisfying its EPP property. (A similar connection was made by Nunes 2008, 99 ff.). Halpert proposes that this is exactly what happens in

Zulu R1 constructions, and that the alternative morphological agreement patterns seen in (183b) and (183c) reflect a free choice as to whether it is the first or second instance of agreement that gets reflected morphologically. Crucial to Halpert’s analysis is a proposal by Rackowski and Richards (2005) (with arguments from Tagalog) that agreement between a probe and a CP or DP phrase renders that phase transparent, by eliminating its phasal status. In the Zulu scenario summarized above, agreement between the R1 ϕ -probe and the complement CP “unphases” the interior of the CP. Consequently, when the probe agrees for a second time, with the subject of the embedded clause, its goal can be extracted from the clause without needing to occupy its edge.

Halpert’s proposal can be incorporated wholesale into the derivational theory of clause size developed here, offering a second way in which hyperraising might take place without a complementizer-trace effect. If agreement between the R1 probe and the embedded CP removes the phasal status of that CP, Exfoliation will not be triggered when the embedded subject is raised, since the probe and goal are no longer separated by a phase boundary. Consequently, the pattern in (183b) and (183c) can be explained in an Exfoliation approach exactly as Halpert explains it (presupposing a lexicalist approach to clause size). As predicted, \bar{A} -movement of the embedded subject is also possible in Zulu without a complementizer-trace effect, showing that the puzzle of Zulu subject extraction is not particular to A-movement:

(185) **\bar{A} -movement shows no complementizer-trace effect (Zulu)**

ubani uSipho o-cabanga ukuthi u-zo-fika?

AUG.1who AUG.1Sipho 1REL-think COMP 1SG-FUT-arrive

‘Who does Sipho think will arrive?’

(Claire Halpert, personal communication; field notes)

Furthermore, not only does the theory predict the absence of a complementizer-trace effect with R1 hyperraising, it also predicts the impossibility of R1 from a nonfinite clause, if CP is always targeted first for agreement. No extraction from a CP that has been targeted by agreement will ever trigger Exfoliation, if the CP has been unphased. This prediction solves the central puzzle of Halpert’s paper: why Zulu exclusively permits *hyperraising*, and never permits English-style raising from a nonfinite clause — and has an immediate explanation in an Exfoliation variant of her proposal as well. If an infinitive can only be created by Exfoliation, and the structural conditions on Exfoliation are as stated here, dephasing will always bleed Exfoliation and block the formation of an infinitival clause.

Finally, with our adaptation of Halpert’s proposals, the absence of R1 in examples (183a) could be attributed to the optionality of the EPP property on the R1 ϕ -probe. The existence of languages like Lusaamia and Moro in which hyperraising does show a complementizer-trace effect could be understood as reflecting an absence of agreement with the object CP (or perhaps the inability of agreement to dephase the CP as it does in Zulu). I will leave these issues open.

The Exfoliation version of Halpert’s theory makes an additional interesting prediction. All things being equal, we never expect to find R1 co-occurring with CP agreement rather than subject agreement under any circumstance other than hyperraising across an intact CP. As it happens, there is a small literature that cites some examples of this agreement pattern outside Bantu, all compatible with this prediction. Fernández-Salgueiro (2005, 2008), for example, observes that several Romance languages (Spanish, Galician, European Portuguese, Italian and Catalan) allow R1 hyperraising with one of the two patterns observed in Zulu: invariant 3SG agreement on the higher verb, which we might plausibly analyze as agreement with the embedded clause. He cites Spanish, Galician, European Portuguese, Italian and Catalan as showing this construction. Simonović and Arsenijević (2014), building on observations by Klajn (2007),

note a similar possibility in Serbian with the modal verb *trebati* 'ought/need' — proscribed by the normative tradition, but described by Simonović and Arsenijević as “not problematic for most speakers”:⁶⁶

(186) **Hyperraising with 3SG agreement on the raising verb**

- a. Estes nenos parece [que son moi listos]. *Galician*
 these kids seem.3SG COMP are.3PL very smart.M.PL
 ‘These kids seem to be very smart.’ (Fernández-Salgueiro 2008, 299, (5))
- b. Mi ne treba [da dodemo], ali ipak dolazimo. *Serbian*
 we NEG should.3SG COMP come.1PL but nevertheless come.1PL
 ‘We shouldn’t come, but we’re coming nevertheless.’
 (Simonović and Arsenijević 2014, 6, (3b); translation mine)

As far as I can tell, the examples of this agreement pattern attested in the literature are limited to hyper-raising environments, as predicted.⁶⁷ Should this correlation hold up across a wider range of languages, it provides an additional argument for Halpert’s proposal in an Exfoliation setting.

66. As Simonović and Arsenijević (2014) discuss, in the compound past tense (formed with a copula and past active participle), speakers prefer uniformity in agreement pattern, with both auxiliary and participle showing 3SG.N agreement. This raises a locality question if the subject stops in the specifier of the higher ν P on its way to the specifier of TP (since it should be the closest goal for T in that position), which I will not explore here. They do note that a mixed agreement pattern is also accepted by some speakers (though with some reluctance), in which the auxiliary verb agrees with the raised subject but the participle does not.

In addition, though the pattern described in the text is limited to the single raising verb *trebati* 'ought/need', Ilić (2015) notes a similar possibility for a range of other verbs that do not otherwise permit raising, with a twist: R1 is possible only if the raised subject is itself 3SG.N, so that it is ambiguous whether the verb has agreed with the embedded clause or the raised subject:

- a. To se ispostavilo da je bilo tačno.
 that.NOM.N.SG SE turn.out.PTCP.N.SG COMP AUX.3SG be.PST.N.SG true.N.SG
 ‘That turned out to be true.’
- b.*On se {ispstavilo/ispstavio} da je pao ispit.
 he.NOM SE turn.out.PTCP.{N.SG/M.SG} COMP AUX fail.PTCP.M exam.ACC.SG
 ‘He turned out to have failed the exam.’ (Ilić 2015, 72-73, ex. (13)-(15))

This is an observation strikingly reminiscent of the agreement behavior of Icelandic quirky subject/NOM object verbs as analyzed by Sigurðsson (2004) and Schütze (2003), discussed in section 4.4.2 above. Recall Sigurðsson’s proposal that the verbal morphology in such sentences must be ambiguous (or nearly so) between the neutral agreement expected of a quirky subject and the fuller agreement pattern expected of agreement with the NOM object.

I am grateful to Liljana Progovac for discussion of this work and the examples cited.

67. Nedžad Leko (personal communication) notes that the construction in (186b) accords with his Bosnian judgments as well, but the non-hyperraising option of replacing the finite complement with an infinitive (more common in Bosnian usage than Serbian) is available only if the higher verb agrees with the raised subject, supporting the generalization stated in the text:

- a. Mi treba [da pjevamo], a ne da plačemo.
 we should.3SG COMP sing.1PL, and not COMP cry.1PL.1PL
- b. Mi ✓trebamo/*treba pjevati, a ne plakati.
 we should.1PL/3SG sing.INF, and not cry.INF
 ‘We should sing, and not cry.’

8 Non-obvious subject extraction: English *for* and control

Crucial to much of our discussion has been the claim that every smaller-than-CP clause is the consequence of Exfoliation. This in turn entails that extraction has taken place from a high but initially non-edge position within the clause. Illegal infinitivization, for example, was argued to be the right diagnosis for the deviance of many examples of non-finite clause embedding previously analyzed as Case Filter violations, as discussed in section 4. In a similar vein, the English complementizerless finite declarative clauses discussed in section 6.7.1 were analyzed as a consequence of subject raising from a finite CP (triggering Exfoliation of the CP layer) into a higher CP superstructure whose complementizer is unpronounced (as a consequence of the Exposure Condition). Evidence from adverb ordering supported this analysis, which also dovetailed with the account of the amelioration of complementizer-trace effects in section 5.2.

The subject extraction posited as the trigger for Exfoliation is not always self-evident. The question of subject extraction in R2 constructions, for example, was the topic of controversy for many years because it is often string-vacuous, i.e. with no effect on word order. The subject extraction posited here as a crucial component of the analysis of complementizerless finite clauses (following Pesetsky and Torrego 2001, 2007) is similarly non-obvious.

Wherever we find a reduced clause whose subject does not appear to have moved, similar issues arise. That is the topic of this section.

8.1 English *for*-infinitivals

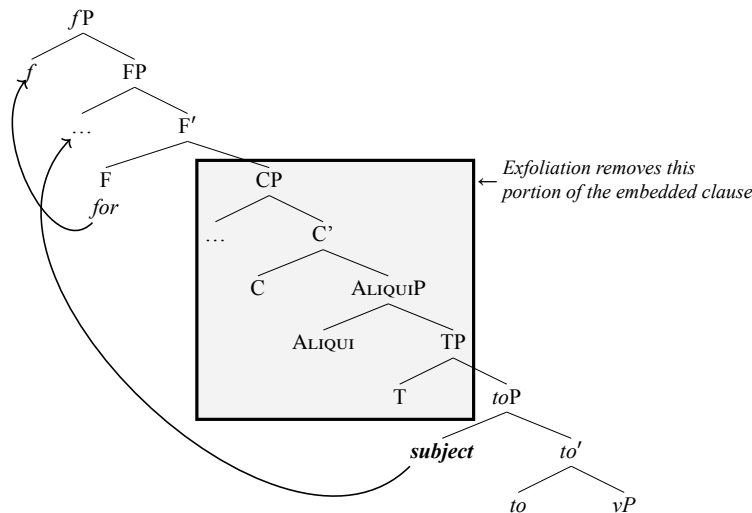
We first consider English infinitival clauses introduced by *for*, first described by Rosenbaum (1967, 24) as a type of complementizer:

(187) *for*-infinitives (English)

- a. Mary is eager [for Sue to talk as scheduled].
- b. [For the cat to be out of the bag already] would not be surprising.

The proposals developed in preceding sections permit only one analysis of this construction: an analysis in which *for* has the syntax of an R2 predicate. On this analysis, *for* belongs to a superstructure built above a finite CP as its complement, consisting of a lower head *F* and a higher head *f*, analogous to *V* and *v*. The lower head *F* bears an R2 probe with an EPP property and raises to *f*, just as *v* raises to *V*.

(188) R2 syntax of *for*



Drawing a connection between *for* and R2 is not new. It lies at the heart of the standard case-theoretic treatment of the subject of infinitival clauses, in the context of the lexicalist theory of clause size (Vergnaud 1976/2006; Chomsky 1980, 30 and 1981, 66). This approach posits that subjects are specially case-licensed in both the immediate environment of *for* and the immediate environment of an R2 verb. As noted above, it has been controversial whether the subject was extracted into the higher VP or remained in situ in the R2 construction (because ditransitive verbs are independently attested) — but it was taken for granted that the subject in a *for*-infinitive remains in situ (probably because ditransitive complementizers are not otherwise attested). The claim that the subject of a *for*-infinitival has been extracted from its original clause is thus a major novelty of the proposal sketched in (187) — as is, of course, the claim that the clause from which it is raised started its life finite.⁶⁸

The proposal that the subject has raised out of its clause is supported by an observation parallel to one that supported the subject raising analysis of complementizerless finite clauses in (135): the subject must appear to the left of adverbs associated with the embedded clause.

(189) **Adverbials may not precede subject in *for*-infinitival clauses (English)**

- a. Mary demanded [for (*sometimes) Bill to arrive on time].
- b. We would prefer [for (*most of the time) Mary to accept this solution].

In early case-theoretic approaches to the syntax of *for*-infinitivals, this fact, like its counterpart with R2 verbs in (9), was attributed to an adjacency condition on the relation between *for* and the embedded subject claimed to rely on it for case-licensing. In a derivationalist context like the one developed here, where the subject of an infinitival clause is not in any special need of licensing, it is noteworthy that an alternate explanation for these facts is not only available but directly entailed by the theory.⁶⁹

While I have no direct argument that *for*-infinitives embed an indicative CP before Exfoliation, modification and anaphora patterns do suggest the presence of an indicative core within such clauses. It has been observed since at least Bresnan (1972, 76 ff.) that *for*-infinitives have a characteristic (though poorly understood) semantics, adding an irrealis or generic component to the clause. By contrast, a *for*-infinitive may not have a factual, non-irrealis, non-generic use, as illustrated by (190c) below:

(190) **Semantics of the complementizer *for* (English)**

- a. [For it to rain] would be helpful. *irrealis*
- b. [For it to rain] is always helpful. *generic*
- c. #[For it to rain] was helpful last night. *non-irrealis/future, non-generic*

68. As Postal 1974, 85, ex. (5b) noted, one difference between *for*-infinitives and R2 constructions is that the former, but not the latter, permit rightward Heavy Shift of the embedded-clause subject:

*Mary is eager [for ____ to talk as scheduled] [all the speakers who arrived late because of the airline strike]. See footnotes 14, 19, and 63 for prior discussion of the probe that might trigger Heavy Shift of an embedded subject. I have no explanation to offer for the absence of such a probe in the *for*-domain short of stipulating its exclusion for now.

69. *For*-infinitives with non-nominal subjects are not possible in the first place — a fact that can perhaps be stipulated as reflecting a pickier R2 probe on *for* than is found on verbs. Nonetheless, to the extent they can marginally be accepted at all, the intervention of an adverb between *for* and the non-nominal subject increases the deviance substantially. This is expected if the marginal acceptance of these examples indicates a coercion of the ϕ -probe on *for* to accept a wider range of goals, but it is hard to imagine any tweaking of the adjacency requirement on case licensing that would yield a similar result on standard lexicalist approaches:

- a. *Mary is eager for (**sometimes) that the world is round to count for something.
- b. *We would prefer for (**most of the time) in this room to be held the open meetings required by law
- c. *John demanded for (**surprisingly) even more beautiful than the Taj Mahal to be the new city hall.

Let us focus our attention on the irrealis use of such clauses, where the argument in favor of a finite indicative core is easier to construct. Our starting point is the observation that a relative clause introduced by *as* or *which*, if added to a *for*-clause with irrealis/future semantics, may exclude the irrealis component entirely:

(191) **Relative clause modification of *for*-clause (English)**

I would have preferred for there to be ice-cream at the party,...

- a. *realis*: ...as/which Mary mistakenly reported. ...i.e. *that there was ice-cream at the party.*
- b. *irrealis*: ...as/which you would also have preferred. ...i.e. *for there to be ice-cream at the party.*

I propose that the realis-modifying relative clause in examples like (191a) is attached to the indicative finite CP layer, the clause with which F merges in a structure like (188), while an irrealis-modifying relative clause like that in (191b) merges with a higher layer, either *f*P or FP. This proposal predicts that if an irrealis-modifying and realis-modifying relative clause are stacked, the irrealis-modifying clause should always occur structurally higher than (i.e. to the right of) the realis-modifying clause. As (192) shows, this prediction is correct:⁷⁰

(192) **Irrealis-modifying relative clause must stack outside realis-modifying relative clause with *for* clause (English)**

- a. I would have preferred for there to be ice-cream at the party, as Mary mistakenly reported, which you would have preferred too.
(✓ *with the first RC modifying "that there was ice-cream at the party"*)
- a'. I would have preferred for there to be ice-cream at the party, which you would have preferred too, as Mary mistakenly reported.
(?? *with the second RC modifying "that there was ice-cream at the party"*)
- b. John would be happy for the reports to be false, as you claim, which we all want.
(✓ *with the first RC modifying "that the reports are false"*)
- b'. John would be happy for the reports to be false, as we all want, which you claim.
(?? *with the second RC modifying "that the reports are false"*)

The indicative layer also shows its presence when it functions as an antecedent for anaphora in examples like (193), where the antecedent for *it* on the analysis above is the indicative clause that F takes as its complement:

(193) **Indicative core of *for*-clause supports anaphora (English)**

I am anxious for her to finish her dissertation, so I can report it to the registrar.
i.e. ...so I can report [that she finished her dissertation] to the registrar.

One property that the present analysis cannot escape sharing with earlier approaches is the ability of *for* to assign a new case to the raised subject. Just as in a verbal R2 construction, NOM case on the subject is overwritten by case assigned by some element in the higher domain, with consequences not only for

70. I find stacked clausal relatives awkward if they are both introduced by the same element, whether *which* or *as*. For that reason, I have uniformly used *as* for the first relative clause and *which* for the second. I do not find the judgments alter if I make the opposite choice; and the contrast remains if the same element is used in both clauses as well.

Amy Rose Deal (personal communication) asks whether linear order, rather than structure, might be at stake in these judgments — and suggests that the result of replacing stacking with coordination might support this characterization of the data. In Deal's judgment, a similar restriction emerges, distinguishing "...as Mary mistakenly reported and which you would have preferred too" as more natural than the opposite order of coordination. I am not sure I share these judgments, but will leave this question open.

pronominal morphology but also for the availability of reflexive pronouns that might otherwise be excluded by the Anaphor-Agreement Effect, as discussed in section 4.4.1 in connection with example (64). I will assume, with Vergnaud (1976/2006) and others, that the prepositional history of *for* permits one of the superstructural elements in (188), perhaps F itself, to assign this new case to the raised subject by whatever process is responsible for case assigned by normal prepositions.⁷¹

On the face of it, *for* looks like an element whose selectional properties permit only *toP* complementation (post-Exfoliation), unusable except when the embedded subject raises from the specifier of *toP*.

71. The R2 analysis of *for* mirrors an analysis proposed by Merchant (2009, 151-156) for a comparative construction in Greek in which the subject raises from an embedded CP (the standard of comparison) into a higher prepositional domain. In the analysis Merchant proposes, the subject raises to form a specifier of the P that takes the CP as its complement, and the P then raises to *p* (followed by ellipsis of the remnant CP, yielding the false impression of a non-phrasal comparative). The case that surfaces on the raised subject is the case assigned by the P, assumed by Merchant to overwrite any case that was assigned earlier, as in our analysis of *for* (and R1 and R2 more generally). (I am grateful to Jason Merchant for bringing his paper to my attention.)

Preposition-triggered R2 might also be the right analysis for English examples like those in (i), claimed by Postal (2004, 83-108) to instantiate raising to the complement position of PP:

- (i) a. I depended on my car to start in the winter.
 b. I depended on the nurse to watch over my uncle.
 c. I depended on the alarm to go off at the right time. (Postal 2004, 91, ex.(13b-d))

As Postal notes, the ability of the post-prepositional DP to follow higher-clause adverbs as in (ii) shows that it is not located in the subordinate clause, while standard idiom and expletive subject tests as in (iii) show that these are not structures of control:

- (ii) a. One can count on the ex-president with a high degree of confidence to lie on most public occasions.
 b. They were depending on the monster, apparently, to rush back into the cave.
 c. Most staff members were relying on the director in a touchingly naive way to do the right thing. (Postal 2004, 90, ex.(11))
- (iii) a. They were counting on the shit to hit the fan when the new director arrived. (Postal 2004, 93, ex.(26d))
 b. I can always depend on it to rain on days when I forget my umbrella.
 (https://www.merriam-webster.com/dictionary/depend%20on/upon, accessed December 12, 2018)
 c. Mary is counting on lots of attention to be paid to this problem.

Postal proposes that these structures instantiate raising from the subject position of a clausal complement of the higher verb to the complement position within an independent PP complement of the same verb:

- (iv) ...depend [_{PP} on it] [___ to rain...]

Alternatively, however, we might give these examples an analysis modeled on Merchant's proposal and our analysis of clause-introducing *for*. On this view, the subject does not raise into a PP independent of its source clause — but rather forms the specifier of a P that takes the source clause as its complement, with subsequent P-to-*p* raising:

- (v) ...depend [_{PP} on + *p* [_{PP} it ___ [___ to rain...]]]

The proposals make different predictions concerning constituency. On the proposal sketched in (iv), the preposition and raised subject form a constituent, while on the proposal in (v), they do not. Examples like those in (vi) below favor (v) (unless some other factor is at work, such as an independent notion “unextractable PP” to which Postal (p.351-2, fn1) attributes such judgments):

- (vi) a.*On the shit they were counting to hit the fan when the new director arrived.
 b.*On it I can always count to rain on days when I forget my umbrella.
 c.*On how much attention is Mary counting to be paid to this problem?

For this analysis to be correct, however, higher-clause adverbs that one might expect to be dependents of the higher verb must be permitted to merge into the PP for which the verb selects, to derive example like those in (ii). This raises questions about the syntax and semantics of such subcategorized PPs that I will leave for further research.

Another open question concerns the question of whether “undermerge” derivations (complement-forming movement; Pesetsky 2013, 26 ff.) like (iv) are available to any language, or whether they are excluded in principle. McCloskey (1984) not only argued for raising to P in Irish, but also distinguished it behaviorally from an Irish counterpart to the English *for* construction. Yuan (2017b) presents forceful arguments for undermerge to Focus in Kikuyu; and Pesetsky (2013) proposed that head movement of the traditional sort be understood as an instance of undermerge. Thus this matter too remains open, as does the question of how the child acquiring language chooses the correct analysis.

Some uses of *for*, however, alternate with subjunctive clauses introduced by *that* — clauses that can be identified as subjunctive in modern English by the absence of 3SG agreement morphology. Significantly, these clauses disallow adverbs intervening between *that* and the embedded-clause subject — just like their counterparts with *for*, but unlike indicative clauses also introduced by *that*.

(194) **Adverbials may not precede subject in subjunctive clauses (English)**

- a. Mary demanded [that (*sometimes) Bill arrive on time].
like (189a) vs. *Mary said that sometimes Bill arrives on time.*
- b. We would prefer [that (*most of the time) Mary accept this solution].
like (189b) vs. *We know that most of the time Mary accepts this solution.*

Relative clause modification suggests that they include an indicative core inside the subjunctive layer, again just like *for*-infinitives:

(195) **Irrealis-modifying relative clause must stack outside realis-modifying relative clause with subjunctive *that* (English)**

- a. I would have preferred that there be ice-cream at the party, as Mary mistakenly reported, which you would have preferred too.
(✓ with the first RC modifying “that there was ice-cream at the party”)
- a'. I would have preferred that there be ice-cream at the party, which you would have preferred too, as Mary mistakenly reported.
(?? with the second RC modifying “that there was ice-cream at the party”)
- b. John demanded that the reports be falsified, just as you claim, which we all wanted.
(✓ with the first RC modifying “that the reports were falsified”)
- b'. John demanded that the reports be falsified, just as we all wanted, which you claim.
(?? with the second RC modifying “that the reports were falsified”)

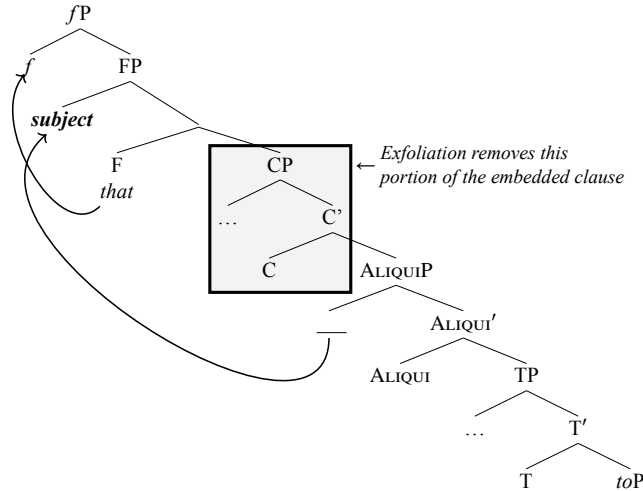
Anaphora to this layer is also possible:

(196) **Indicative core of subjunctive *that*-clause supports anaphora (English)**

- I demand that she finish her dissertation, so I can report it to the registrar.
i.e. ...so I can report [that she finished her dissertation] to the registrar.

These facts suggest that the subjunctive complementizer might be a hyperraising allomorph of *for* (without the prepositional property of assigning its own case), and that subjunctive clauses in English are therefore R2 constructions in which the subject raises from a finite indicative CP.

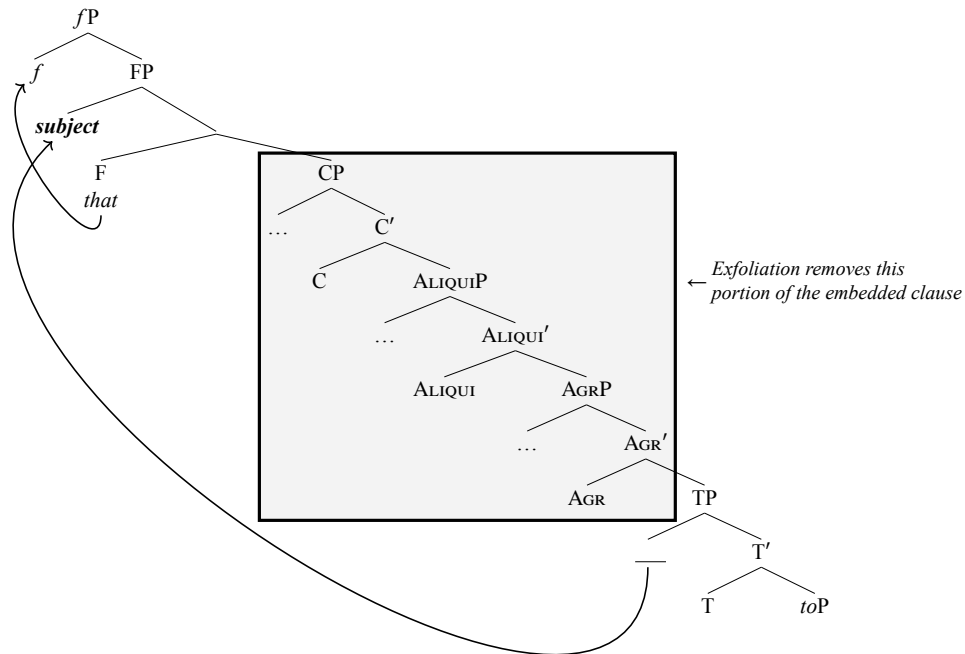
(197) **R2 syntax of subjunctive *that* (first proposal)**



I used the phrase “subjunctive complementizer” above, rather than “*that*”, because a question now arises concerning the pronunciation of this allomorph of *for*. The instance of *that* that we hear might be an allomorph of *for*, accidentally homophonous with the normal indicative complementizer. This is the simplest hypothesis, and the one diagrammed in (197). Alternatively, however, *that* might be the indicative complementizer itself, raised to F and then to *f*— thus escaping CP before Exfoliation eliminates its original position. In that case, the fact that *for* is unpronounced might be an expected consequence of the Exposure Condition, and what is special about *for* in derivations that yield a subjunctive complement is the twin property of attracting C and tolerating a complement larger than *toP* post-Exfoliation. I will leave this matter open.

Finally, though the structure in (197) somewhat conservatively presents CP as the only projection eliminated by Exfoliation (and shows the subject having raised as far as the specifier of ALIQUIP), this might not be accurate. The proposal needs a theory of subjunctive morphology, which consists of the absence of otherwise expected 3SG agreement. If (197) is correct, we might view this morphology as something directly imposed by F in some fashion when its complement remains finite post-Exfoliation. Alternatively, however, the absence of 3SG agreement morphology in the English subjunctive might be an anti-agreement effect of the sort discussed in section 7.1. If so, Exfoliation must be taken to eliminate somewhat more material than is shown in (197). On this view, the English clausal spine between *v* and C might include a head AGRP responsible for subject agreement, located between TP and ALIQUIP. If the subject moves to the specifier of TP (i.e. not as far as AGRP) and is then probed by F across the CP boundary, Exfoliation will remove CP, ALIQUIP, and AGRP — but *to* will not be exposed. The result would be an agreementless clause without overt *to*, i.e. the morphology of the English subjunctive:

(198) **R2 syntax of subjunctive *that* (antiagreement alternative)**



Let us assume that *fP* is phasal and now ask about extraction of the subject from this domain. If the embedded subject always raises to form a specifier of *FP* in the constructions discussed above, any movement of the raised subject to the specifier of *fP* will violate LAAC, and thus should be blocked as an anti-locality consequence of that constraint. As a result, the only way for the subject of a *for*-infinitive or *that*-subjunctive to be extracted is for a higher probe to find it across the *fP* boundary, which will trigger Exfoliation of the *fP* layer. We thus expect subject extraction to show an effect analogous to the complementizer-trace effect, i.e. a *for*-trace effect with irrealis infinitives and a *that*-trace effect with subjunctive clauses.

This effect can be seen for A-movement when an R2 predicate takes an infinitival *fP* as its complement. The repertoire of such R2 verbs in English (called “W-verbs” by Postal 1974) varies somewhat from speaker to speaker, but verbs like *want*, *prefer*, *like*, and *need* probably fall in this category for all speakers. They all permit *for*-infinitives as complements, but also can raise the embedded subject much like R2 verbs that take indicative *that*-clauses, in which case *for* is no longer present:

(199) **R2 from *for*-clauses (English)**

- a. Sue wants (for) Mary to win.
- b. Bill would prefer (for) it to rain tomorrow rather than today.
- c. We would like (for) John to listen to us.
- d. They need (for) the package to be delivered quickly.

That R2 has taken place can be seen in the fact that the subject in the *for*-less variant precedes higher-clause VP adverbs, as noted by Postal (1974, 186), among others:

(200) **R2 across VP adverbs from *for*-clauses (English)**

- a. Sue wants Mary a bit self-interestedly to win.
- b. Bill would prefer it quite strongly to rain tomorrow rather than today.
- c. We would like John with all our hearts to listen to us for a change.
- d. They need the package desperately to be delivered quickly.

For reasons that remain mysterious, however, R1 does not appear to be possible from a *for*-clause. This has been observed as a fact about passivization by Bresnan (1972, 156-157) (reporting joint research with Howard Lasnik):

(201) **R2 across VP adverbs from *for*-clauses (English)**

- a. *Mary is wanted ___ to win the prize.
- b. *It would be preferred ___ to rain tomorrow rather than today.
- c. *John would be liked ___ to listen to us for a change.
- d. *The package is needed ___ to be delivered quickly.

In fact, this generalization is not limited to the passive of R2 verbs. I am unaware of any plausibly unaccusative verb or adjective in English that shows an alternation between (a) an expletive as subject and a *for*-clause as complement and (b) raising of the embedded subject to the subject position of the higher clause — along the lines of alternations familiar from predicates like *seem* and *likely*. That is, there are no R1 counterparts to the W-verbs:

(202) **No R1 alternations from *for*-clauses (English)**

- a. It would be fun for Mary to win the competition. ✗ *Mary would be fun to win the competition.
- b. It would be useful for it to rain tomorrow rather than today ✗ *It would be useful to rain tomorrow rather than today.
- c. It would be desirable for John to listen to us. ✗ *John would be desirable to listen to us.

It looks like a ϕ -probe located anywhere other than V is simply incapable of extracting the raised subject from *fP*.

But this generalization as well may be too narrow, since the \bar{A} -probe on *v*, *a*, etc. appears subject to the same limitation. As is well-known, \bar{A} -movement of the subject from a *for* clause requires *for* to be missing: an effect that looks just like a complementizer-trace effect in a *for*-infinitival setting (i.e. a “*for*-trace effect”) (Ross 1967, 445; Bresnan 1977, 171; Pesetsky and Torrego 2001, 394 ff.; Pesetsky 2017, 8 ff.):

(203) ***for*-trace effects (English)**

- a. Mary, who Sue wants (a bit self-interestedly) (*for) ___ to win the prize, ...
- b. Who would you prefer (*for) ___ to meet Sue at the station?
- c. John, who we would like (*for) ___ to listen to us for a change, ...
- d. Which package do you need (*for) ___ to be delivered quickly?

The explanation for this observation is less straightforward than it might appear, however. One might imagine that the extractions in (203) could be attributed to an \bar{A} -probe on *v*. If this \bar{A} -probe found the raised subject in specifier of *FP*, it would trigger Exfoliation of the *fP* layer, explaining the obligatory absence of *for* in the output. In the context of the theory developed here, we must indeed attribute the absence of *for* to Exfoliation triggered by a probe-goal relation between some higher probe and the raised subject in *FP*. However, it looks like the \bar{A} -probe on *v* cannot be the probe in question, since the only higher predicates that permit \bar{A} -movement of the raised subject as in (203) are those that independently permit R2, i.e. the W-verbs.

(204) **No \bar{A} -extraction of embedded subject where higher predicate lacks the R2 probe (English)**

- a. Sue demanded *(for) Mary to win the prize.
- a'. *Mary, who Sue demanded ___ to win the prize,...
- b. Bill is anxious *(for) John to meet Sue at the station.
- b'. *Who is Bill anxious ___ to meet Sue at the station?
- c. We would be happy *(for) John to listen to us for a change.
- c'. John, who we would be happy ___ to listen to us for a change,...
- d. You asked Bill *(for) the package to be delivered quickly.
- d'. *Which package did you ask Bill [___ to be delivered quickly]?

We must therefore conclude that the only kind of probe that can extract the subject from an embedded *fP* and trigger Exfoliation is the R2 probe (limited to active verbs; cf. (35a)). Neither the R1 probe nor the \bar{A} -probe on a higher head such as *v* or *a* in (204) can do this.

Recall that the Kayne paradigm discussed in section 4.2 arose with predicates that take CP complements precisely because, even in the absence of an R2 probe, an \bar{A} -probe (or R1 probe) on *v*, *a*, or *n* could extract the subject from the embedded clause, triggering Exfoliation down to the *toP* layer. In effect, what we are observing in (204) is the absence of the Kayne paradigm with predicates that take an *fP* complement.

The Kayne paradigm also reared its head in Romance languages like French in which verbs that bear an R2 probe in English lack this probe entirely. Nonetheless, we saw in (41), repeated as (205) below, that an R1 or \bar{A} -probe on *v* could successfully extract the subject of an embedded clause, triggering an instance of infinitive-creating Exfoliation. As Pollock (1985, 309 and 314) notes, however, no such possibility is available for the French counterparts to the English W-verbs, as illustrated in (206):

(205) **Kayne paradigm with French verbs like ‘believe’ (= (41))**

- a. **R2:**
*Je croyais cet homme être arrivé.
‘I believed this man to have arrived.’
- b. **\bar{A} -movement:**
l’homme que je croyais ___ être arrivé...
the man that I believed AUX.INF arrived...
‘the man that I believed to have arrived...’ (cf. Kayne 1981, p. 357, ex. (65))
- c. **passive:**
%Marie a longtemps été crue ___ avoir résolu ce problème.
Marie AUX.3SG long.time AUX.PTCP believed AUX.INF solved this problem.
‘Mary has for a long time been believed to have solved this problem.’
(Pollock 1985, p. 307, ex. (56))

(206) **No Kayne paradigm with French W-verbs**

- a. **R2:**
*Pierre a longtemps voulue Marie avoir résolu ce problème.
Pierre AUX for.a.long.time wanted Marie AUX.INF solved this problem
‘Pierre wanted Marie for a long time to have solved this problem.’

b. **\bar{A} -movement:**

*la femme que j'aurais voulu ___ résoudre ce problème...
 the woman that I.would.have wanted solve.INF this problem
 'the woman that I would have wanted to solve this problem...'

(Pollock 1985, 314 adapted from (83))

c. **passive:**

*Marie a été longtemps voulue ___ avoir résolu ce problème.
 Marie AUX been for.a.long.time wanted AUX.INF solved this problem
 attempt at: '*Marie was wanted for a long time to have solved this problem'

(Pollock 1985, 309 ex. (62), (63))

These observations suggest that for both English and French (at least), the following generalization obtains:

(207) ***fP* Exfoliation generalization**

Only a probe on the nearest head can trigger Exfoliation of *fP*.

The generalization has been stated as a restriction on Exfoliation, rather than a general restriction on probe-goal relations across an *fP* boundary, because successive-cyclic \bar{A} -movement of a non-subject from a *for*-infinitive is possible. This means that a *fP*-external \bar{A} -probe may attract a goal across the *fP* boundary, so long as Exfoliation is not triggered (i.e. so long as the goal occupies the edge of *fP*):

(208) **Edge of *fP* accessible to external probes**

Who would Mary prefer [___ for John to invite ___]?

Subjunctive clauses appear to obey this generalization as well, albeit more weakly for \bar{A} -extraction of the subject. R2 leaving a subjunctive clause behind is completely impossible — perhaps as an instance of hyperraising, if *FP* headed by *that* (or *that*+F if *that* is a raised instance of C) counts as finite for the ban on hyperraising in (172). Not only is R1 also impossible, but \bar{A} -extraction of the subject with Exfoliation of *fP* is also felt to be deviant (though not as bad as failure to Exfoliate). The prefixed double question mark in (209a-b) below indicates this deviance, and the parenthesized star on *that* indicates further degradation (a complementizer-trace effect) when Exfoliation does not happen:

(209) **Complementizer-trace effect with subject extraction from subjunctive clause (English)**

a. ??The only person who it's not essential (*that) ___ talk to her is Bill.

(Kayne 1980, 77 ex. (25); Kayne stars the version without *that*.)

b. ??Who did Mary demand [(**that*) ___ arrive on time]?

c. ??Mary, who we would prefer [(**that*) ___ accept this solution],...

I have no explanation at present for why the *fP* generalization in (207) should hold, so it is possible that it indicates some deficiency elsewhere among our other proposals. I leave this as a topic for future investigation.

Our discussion of *for* lays the groundwork for a new approach to the syntactic side of control in the next subsection.

8.2 *PRO as a consequence of agreement with f*

It is highly unlikely that any reader of this work needs to be reminded that the proper analysis of control phenomena has been and remains a topic of considerable debate (Landau 2013). The short sections that follow do not even skim the surface of the phenomena that must be explained by an adequate theory of control. My only goal is a demonstration that the ideas developed in this work do not make it impossible to imagine skimming this surface (or better) in future work. To the extent that control in many languages is a phenomenon limited to non-finite clauses, the fact that we have posited Exfoliation as the sole means of deriving such a clause compels us to at least offer some comment concerning how the syntax of control might be approached under these strictures. We begin with some observations concerning NOC in English infinitival relative and interrogative constructions.

As noted in the previous subsection, the Exfoliation approach does not posit a crucial role for *for* in licensing the subject of the embedded clause, which is already licensed by T before Exfoliation applies in its original finite CP. Instead, *for* merely assigns a second case to the subject after it has moved from the embedded CP into the F/f domain. This property of the analysis has left unexplained a link between the availability of an overt subject and the overtness of *for* that provided one of several foundational empirical arguments for the development of Case Theory in the 1970s (Chomsky and Lasnik 1977, 460 ff.; Vergnaud 1976/2006, 23 ff.; Chomsky 1980, 28).

When an \bar{A} -probe on *for* attracts and retains a *wh*-phrase in specifier position, the Exposure Condition renders *for* non-overt. When this happens, an overt subject becomes impossible. Significantly, in exactly these circumstances, the null subject traditionally notated as *PRO* becomes possible. In the infinitival relative clauses of (210a-d) below, the Exposure Condition requires *for* to be unpronounced, since it retains a *wh*-phrase as its specifier. Correspondingly, the subject may not be an overt nominal, but may be unpronounced *PRO*. The same is true in the infinitival questions in (210e-h). If we analyze the infinitival relative clauses in (210i-j) along the lines of our analysis of *that*-relatives in section 6.7.2 (as illustrated in (143)) then these examples show movement of the nominal *topic* triggered by an \bar{A} -feature on *for* — but it is the raised nominal that projects, leaving *for* exposed and therefore pronounced. Once again there is a correspondence between the overtness of *for* and the overtness of the subject: overt *Mary* is possible, but silent *PRO* is not (though the second of these facts is dialect-specific, a point to which we return below).

(210) **Overt vs. non-overt *for* correlates with overt vs. *PRO* subject**

Infinitival relative clause with overt wh-phrase (for not exposed)

I'm looking for ...

- | | |
|--|--------------------------------------|
| a. * ...a topic [[on which] <i>for</i> Mary to work ___] | * (violates Exposure Condition) |
| b. * ...a topic [[on which] \emptyset_{for} Mary to work ___] | *silent <i>for</i> , overt subject |
| c. * ...a topic [[on which] <i>for</i> <i>PRO</i> to work ___] | * (violates Exposure Condition) |
| d. ✓ ...a topic [[on which] \emptyset_{for} <i>PRO</i> to work ___] | ✓ silent <i>for</i> , silent subject |

Infinitival question

I wonder ...

- | | |
|--|--------------------------------------|
| e. * ...[[which topic] <i>for</i> Mary to discuss ___] | * (violates Exposure Condition) |
| f. * ...[[which topic] \emptyset_{for} Mary to discuss ___] | *silent <i>for</i> , overt subject |
| g. * ...[[which topic] <i>for</i> <i>PRO</i> to discuss ___] | * (violates Exposure Condition) |
| h. ✓ ...[[which topic] \emptyset_{for} <i>PRO</i> to discuss ___] | ✓ silent <i>for</i> , silent subject |

Move-and-project infinitival relative clause

I'm looking for ...

- i. ✓ ...a topic [for Mary to discuss ___] ✓ *overt for, overt subject*
- j. * ...a topic [for PRO to discuss ___] **overt for, silent subject*

In older theories that credit *for* with the licensing of the subject, it has been suggested that the absence of overt *for* deprives the subject of its only possible source of licensing. All versions of this proposal, however, come with additional baggage and issues. Chomsky (1980, 28), for example, suggested that when overt *for* is absent, it has not been inserted in the first place.⁷² Consequently, there is no step in the derivation that contains *for*. If we are justified in attributing the modalized semantics of these constructions to *for*, it becomes problematic to assume that this lexical item is never inserted in the first place. Alternatively, we could imagine that it is inserted but not pronounced, as in analyses of ellipsis — but this raises the question of why other case-licensors do not yield Case Filter violations when some syntactic process such as ellipsis silences them. For example, when an inflected verb is silenced by Gapping, this does not interfere with the licensing of either the subject or the object, nor does sluicing deprive a nominal *wh*-phrase remnant of its ability to pass the Case Filter.

The proposal I will advance here also comes with baggage, so I cannot claim that it is conceptually superior to alternatives, but I also do not believe that it is obviously inferior. I propose that the correct generalization concerns overtness directly: *f* bears a ϕ -probe with *an attribute that requires the bearer of the probe and its goal to match in overtness*, i.e. to agree in value for $[\pm\text{PRONOUNCE}]$. When a nominal is marked $[-\text{PRONOUNCE}]$, it receives the “controllee” properties attributed by the literature to PRO, here understood as the set of rules that govern the semantic interpretation of an unpronounced nominal.⁷³ I will use the symbol \wedge (“control”) as a notation for this attribute:

(211) **The control (\wedge) attribute**

A probe with the \wedge attribute agrees in $[\pm\text{PRONOUNCE}]$ with its goal.

In the constructions surveyed in (210), it is \bar{A} -movement to *f* that causes *for* to be unpronounced. Recall that the Exposure Condition in its final form (108) is a biconditional. *For* should always be overt except when it retains a specifier. This raises a question concerning relative clauses like those in (212), which complete the paradigm of (210). These examples accord fully with the generalization that *for* and the subject must agree in overtness, but lead us to posit a retained specifier of *for*, in order to explain *for*'s non-overtness.

(212) **Overt vs. non-overt *for* correlates with overt vs. PRO subject [(210) continued]**

- k. * ...a topic [\emptyset_{for} Mary to discuss ___] **silent for, overt subject*
- l. ✓ ...a topic [\emptyset_{for} PRO to discuss ___] **silent for, silent subject*

I suggest that it is the raised subject itself that moves to the specifier of *for* in examples like (212l), in response to an EPP property of the $\wedge\phi$ -probe on *for*. Because the subject has raised to the specifier of *for* and remains there, *for* is silenced; and because the $\wedge\phi$ -probe on the silenced *for* has taken the subject as its goal, this specifier is itself silenced, i.e. behaves as PRO (as already posited).

72. More precisely, he describes such constructions as involving “the null COMP when the optional rule expanding COMP is not applied”.

73. Obviously the interpretation of a null subject of a finite clause (*pro*) follows different rules in languages that have this option, and must therefore receive a different analysis. I will not explore this question here.

We now examine how the proposal works in more detail. The following probes are present on *f* and *F* in (Standard) English:

- Both *f* and *F* have φ -probes that are optionally +EPP or -EPP.
- The φ -probe on *f* bears the \wedge attribute (as discussed above), that requires *f* and the goal of its $\wedge\varphi$ -probe to match in overtness.
- *F* also bears an \bar{A} -probe (like *v*, extending the parallelism between the pairs *v/V* and *f/F* noted in the previous subsection).

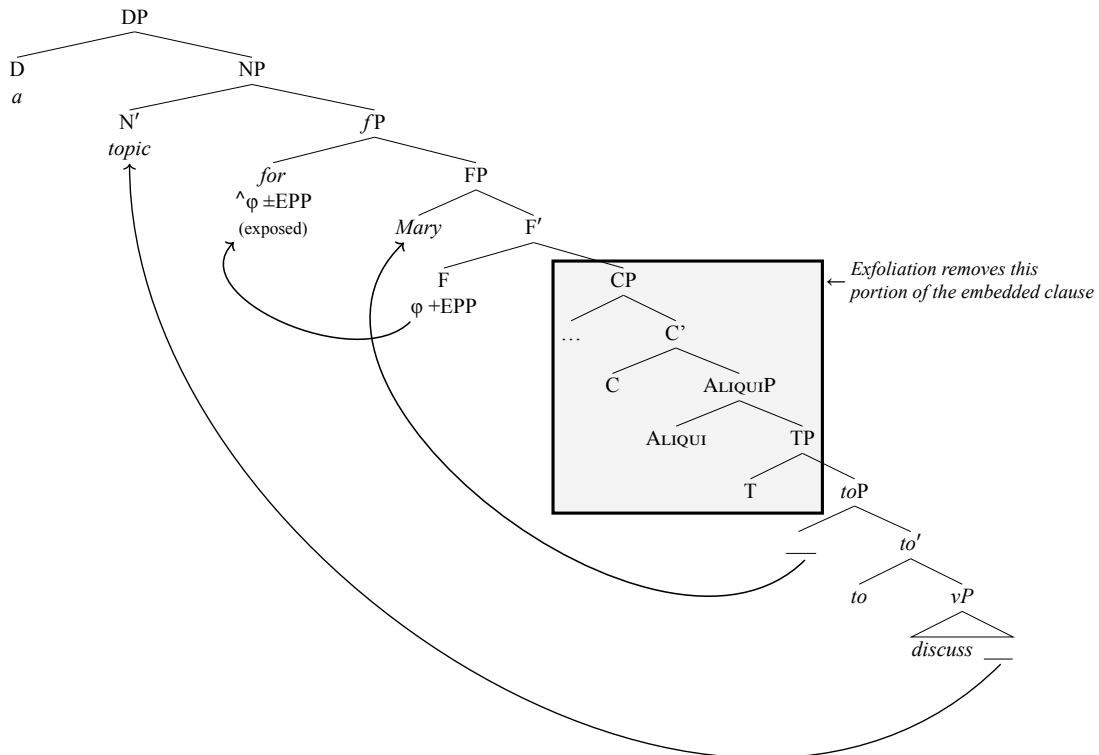
The $\wedge\varphi$ -probe on *for* might also be responsible for the assignment of oblique case by *for* to the subject raised from the CP complement to form a specifier of *F*. Crucially, as already noted in the previous section, *F* (more precisely, the non-subjunctive allomorph of *F*) selects *toP*, which means that either:

1. *F*'s φ -probe must be +EPP and attract the embedded subject; or
2. *f*'s $\wedge\varphi$ -probe must be +EPP and attract the embedded subject.

Let us consider each scenario in turn.

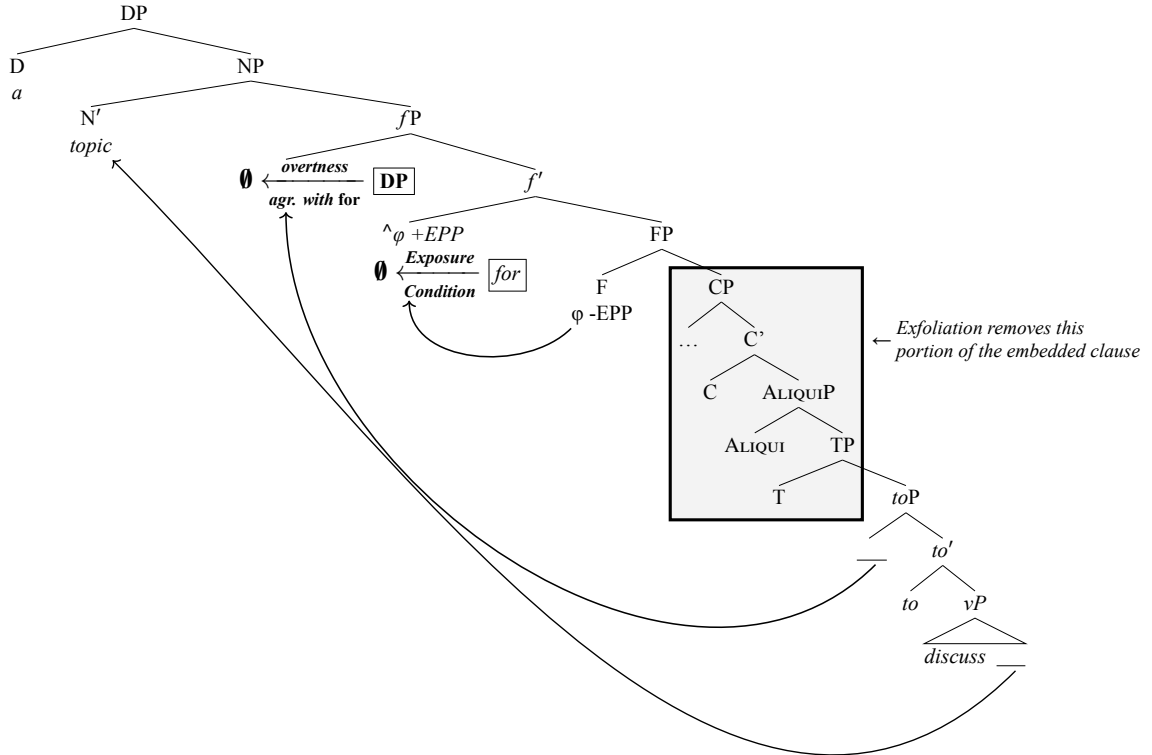
Scenario 1. If the φ -probe on *F* is +EPP, the $\wedge\varphi$ -probe on *f* can be either +EPP or -EPP — since the choice will make no difference, given LAAC. $\wedge\varphi$ on *f* will not be able to attract a goal from the specifier of *FP* regardless, as an antilocality effect of LAAC (since the goal will have raised to the specifier of *F* from the specifier of *toP*, and both positions are accessible to *f*). Since the EPP property of $\wedge\varphi$ on *f* will not be satisfiable, the subject will remain in the specifier of *F*, and the result will be a clause with overt *for* — and therefore with an overt subject. This scenario covers simple examples like (187) as well as infinitival relative clauses with overt *for* such as (210i).

(213) **Analysis of (210i)**



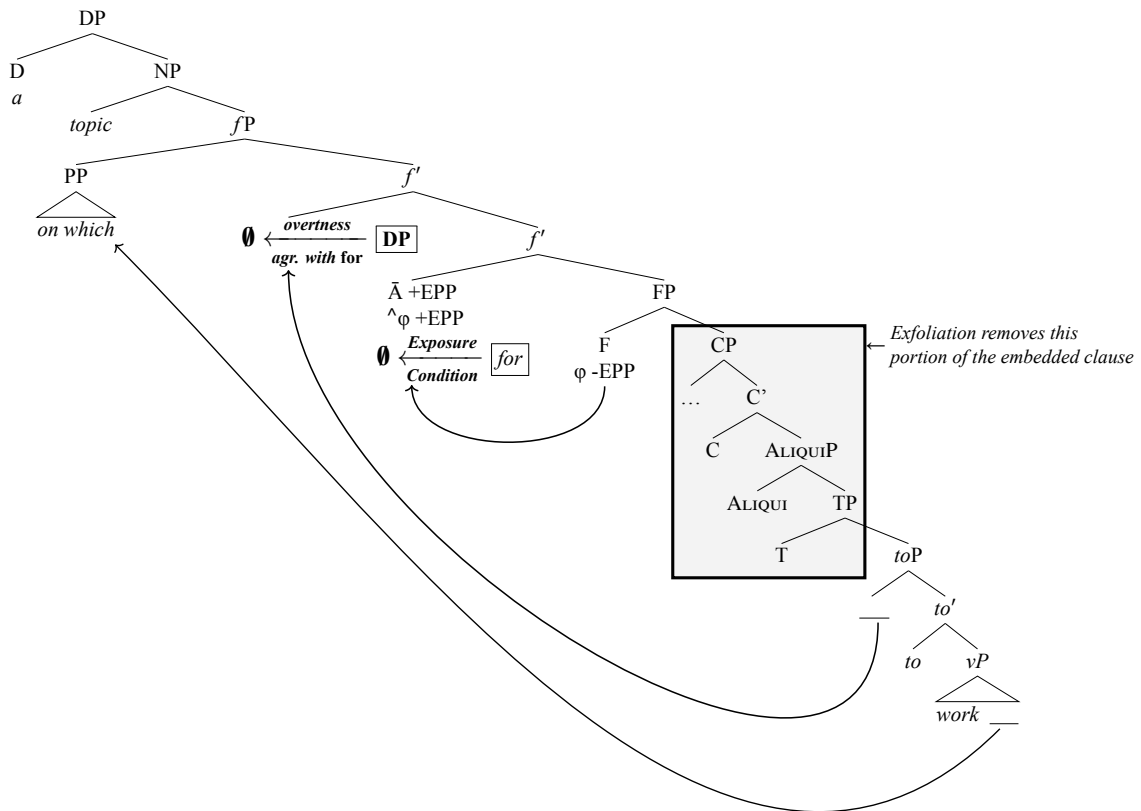
Scenario 2. If the φ -probe on F is -EPP and the $^{\wedge}\varphi$ -probe on *for* is +EPP, the subject will be attracted to *f* directly from the embedded CP — triggering Exfoliation to the *to*P level, as required by the selectional properties of F. Because the subject is a retained specifier of *f*, *for* will be silenced by the Exposure Condition, as will the subject (because of the $^{\wedge}$ attribute). The result is a clause in which *for* is silent and the subject is PRO. This scenario covers relative clauses like (212l).

(214) **Analysis of (212l)**



In addition, if the \bar{A} -feature on *f* successfully creates a retained \bar{A} -specifier by moving a constituent other than the embedded subject, *for* will be silenced by the Exposure Condition, as will the subject, because of the $^{\wedge}$ attribute on *f*'s φ -probe — regardless of the EPP value of the φ -probe on either *f* or F. All that is required is that one of them be +EPP — so the subject is extracted from its original location within CP, triggering the infinitivization of that CP by Exfoliation that F demands. This scenario covers infinitival relatives like (210d) and infinitival questions like (210h):

(215) **Analysis of (210h)**



What if the the \bar{A} -feature on f attracts the local subject itself, and this specifier is retained? If the subject is an interrogative *wh*-phrase, there is no acceptable outcome. This is unsurprising, since the same element must also be the goal for the $^{\wedge}\phi$ feature on f , and must therefore agree in overtiness with *for*. Since the Exposure Condition silences *for*, the *wh*-phrase must also be silenced — which quite generally appears not to be an option for any interrogative *wh*-phrase, at least in English. For that reason, neither variant of (216) is acceptable.

(216) **No infinitival question from local subject**

*I wonder [(who) to discuss this topic].

Note that because the ϕ -probe on F does not have to bear the +EPP attribute, the explanation for why a clause with *for* semantics cannot support a local subject question cannot be the same as our explanation in section 7.2 for why a CP with a WP superstructure fails to support subject \bar{A} -movement yielding an infinitive. It is possible that the need for distinct explanations for what seem like similar observations reflects some inadequacy in the proposals advanced here, but I will leave that possibility unaddressed.

If some other variety of \bar{A} -movement contrasts with interrogatives in remaining untroubled if the \bar{A} -element is silenced, it is predicted that infinitivizing \bar{A} -movement of the local subject should be possible. This might in fact be the explanation for the existence of infinitival relative clauses in which the local subject is the relativized position (a problem for traditional Case Theory in a lexicalist context, since the trace of \bar{A} -movement is not case-licensed in such examples; Chomsky 1981, 167):

(217) **Infinitival relative from local subject with silenced *for***

[Someone [\emptyset_{who} \emptyset_{for} to fix the sink]] would be useful right now.

This relative clause cannot be an instance of “move-and-project”, or else we expect *for* to be overt, since it would be exposed. At the same time, if a move-and-project derivation is correct for examples like (212l), as diagrammed in (215), we expect it to be equally available when the relativized element is the local subject — contrary to fact in Standard English:

(218) **Infinitival relative from local subject with overt *for***

*[Someone [for to fix the sink]] would be useful right now.

I will leave the account of the badness of (218) open. One possibility is that the overtness agreement imposed by the $\hat{\varphi}$ -probe of *for* will apply to the highest trace of the moved subject in a move-and-project derivation, rather than to the moved subject itself. This could be attributed either to the phase boundary that intervenes between *for* and the head of the relative after it projects, or to the non-maximality of the moved element when it projects after movement.

Another possible example of infinitivizing \bar{A} -movement of the local subject might be found in gapped degree clauses, which Chomsky (1977, 102) argued involve \bar{A} -movement when the gap is not the local subject. Example (219a) shows this for an object gap, which can be embedded (but not below an island boundary) and can license a parasitic gap in an adjunct clause, generally viewed as diagnostic of \bar{A} -movement. Following Chomsky, we posit a null element controlled by *this student* that has undergone \bar{A} -movement to form a specifier of *for*. Example (219b), from Brillman (2017), shows a gapped degree clause in which the null element appears to have moved from the local subject position. As Brillman notes, the fact that this movement has \bar{A} -properties is confirmed by the fact that it too may license a parasitic gap:⁷⁴

(219) **Gapped Degree Clauses**

- a. This student is too young for Mary to try to hire ___ [without us talking to ____{pg} first].
- b. ?This student is too young ___ to take the bar exam [without us talking to ____{pg} first].

(Brillman 2017, 131, ex. (69a))

Since we independently know from constructions like (219a) that the moved element may be null (and in fact most often is) for other reasons, nullness enforced by agreement with the $\hat{\varphi}$ -probe on *f* is not expected to pose a problem — and, as Brillman’s evidence suggests, it does not.

8.3 Extensions to NOC and OC

Crucial to our discussion of (212l) as diagrammed in (215) is the observation that movement of the subject to the specifier of *f*P renders both *for* and the moved subject null, to which was added the claim that a subject rendered null by its status as a goal for $\hat{\varphi}$ on *f* has the semantics of a controllee. This proposal extends beyond relative clauses and questions to provide a possible syntax for so-called *non-obligatory control* (NOC) in constructions like (220):

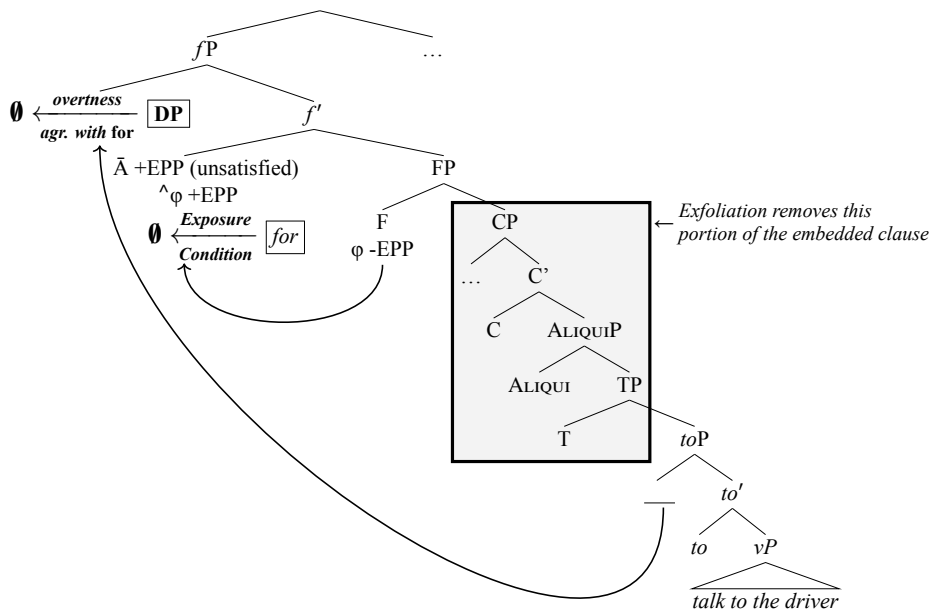
(220) **Non-obligatory control in clauses with the semantics of *for***

- a. [PRO to take the day off] would annoy our boss.
- b. [PRO to talk to the driver] is illegal.

It is conceivable that all instances of NOC can be analyzed in this fashion: as the consequence of raising the subject of a full finite CP to *f* in response to a $\hat{\varphi}$ feature universally present on this head:

74. As Brillman points out, example (219b) is perhaps not perfect, but contrasts favorably with subject-gap constructions where \bar{A} -movement is not independently diagnosable, e.g. **This student is eager PRO to take the bar exam [without us talking to ___]*.

(221) The syntax of NOC: analysis of (220a)



This proposal does not, of course, shed immediately light on other properties of NOC such as choice of controller and the semantics of the controlled element — but it does build on an independent evidence for overtness agreement between *for* and the subject to provide a niche for NOC in the theory.

An Exfoliation approach to NOC (and, as we shall see below, OC as well) resolves a long-standing puzzle that has been taken to concern the interaction of PRO with the theory of Case licensing. The limitation of PRO to the subject position of an infinitival clause and its general complementary distribution with overt nominals was often taken in work of the 1980s and 1990s to support a special exemption from the Case Filter for PRO (cf. Chomsky 1980, 27; 1981, 49) — attributed to different factors in different proposals. The background to the entire discussion, of course, was the lexicalist assumption that infinitival clauses are born, not made — and the further claim (made available by this assumption) that non-finite T differs from its finite counterpart in failing to assign case. Such proposals faced a challenge, however. Wherever such theories attributed obligatory or impossible A-movement by overt nominals to factors related to case, PRO shows the same behavior. If we use the binding-theoretic behavior of pronouns and reflexives, for example, as a probe for whether the embedded subject has raised in R1 constructions like those in (222a-b), it is clear that PRO raises just as obligatorily as overt *her*. Likewise, whatever factor blocks A-movement of the overt nominal from the object position of *to* in (222d) also blocks the comparable movement of PRO in (222c). If the relevant factor in (222d) concerns the case assigned to the two positions occupied by *her*, as argued by Chomsky and Lasnik (1995, 108 ff.), then once again PRO appears sensitive to case in a manner indistinguishable from overt nominals.⁷⁵

75. It is crucial to the Exfoliation proposal that A-movement not be blocked from a NOM position, which means that we must reject any general claim that A-movement is blocked from case-licensed positions, as embodied in the “Last Resort” principle of Chomsky and Lasnik (1995, 108 ff.) or the Activity condition of Chomsky (2000, 123). If the generalization relevant to (222d) does concern case as commonly, one obvious distinction between A-movement movement from a NOM position (which must be permitted) and movement from any other case-marked position (which must perhaps be blocked) might concern the presence of a case feature. If only dependent and oblique case involve actual case features, then it is the presence of a case feature on an ACC or oblique nominal that might be taken to block movement to a distinct case position. This raises obvious questions concerning raising from ergative positions, which I will not explore here.

(222) **PRO behaves like other nominals with respect to movement and Case**

- a. [PRO_i to seem to \checkmark herself/*her $_i$ [___ to be running late]] would annoy our boss $_i$.
- b. [For her $_i$ to seem to \checkmark herself/*her $_i$ [___ to be running late]] would annoy our boss $_i$.
- c. * [PRO to seem to ___ [that the problems are insoluble]] would be sad.
- d. * [For her to seem to ___ [that the problems are insoluble]] would be sad.

(Chomsky and Lasnik 1995, 108, ex. (314b))

Chomsky and Lasnik (1995, 108 ff.) respond to this puzzle by suggesting that PRO does receive case and must satisfy the Case Filter after all, just like other nominals. This explains why movement is obligatory or blocked for PRO in the same environments where it is obligatory or blocked for overt nominals. At the same time, they posit that PRO can only satisfy the Case Filter when it receives a special case limited to PRO , called *null case*, assigned by nonfinite T. Because only PRO can bear null case, overt nominals are excluded from the positions in which PRO may occur; and because PRO can satisfy the Case Filter only if it bears null case, PRO is excluded from the positions in which overt nominals may occur.

The present theory requires no such stipulation, and indeed does not face any puzzle concerning movement of PRO and case. Since infinitives are derived from full finite clauses by Exfoliation, and PRO is derived from a normal overt nominal by overtness agreement with f/F , we expect the behavior of both the nominal that ends up with the properties of PRO and the clause that ends up infinitival to be exactly the same as the behavior of nominals that never become PRO in clauses that never become infinitival. That is exactly what we observe.

I have cautioned that our proposals in this subsection do not constitute a full theory of NOC phenomena, but merely show that the theory offers an independently motivated niche for NOC. Is there also a niche into which the syntax of *obligatory control* (OC) might fit as well? Let us consider two possibilities.

First, whenever the semantics of an OC complement suggests the presence of *for*, we might imagine that the complement clause is essentially the same as that seen in (221) (with the same distribution of EPP on its probes, i.e. positive on f , and negative on F) — with the controlled subject null, and therefore susceptible to control, because it has silenced *for* and agreed with it in non-overtness.

Another possibility, however, is an analysis of OC along the lines of the *Movement Theory of Control* (MTC), according to which the embedded subject in OC constructions is moved to the position of its controller, and thus plays both the role of controllee and controller (Bowers 1973, 675 ff., 1981; Wehrli 1980, 115-131, 1981; Hornstein 1999). As is well known, OC constructions in languages like English involve an embedded clause with properties strongly reminiscent of R1 and R2:

- (a) The embedded clause is nonfinite.
- (b) A gap occurs instead of an overt subject in the embedded clause.

On an Exfoliation approach to finiteness like that developed here, property (a) diagnoses extraction of the subject from its clause. This in turn makes property (b) unsurprising — but raises the question of where the subject has been extracted to and why. If the complement clause in a control construction starts its life as a full finite CP, some clause-external probe must be responsible for extracting the subject of this CP, triggering Exfoliation. This probe could be the $\hat{\varphi}$ -probe on f just discussed, but it could also be a distinct probe in OC constructions.

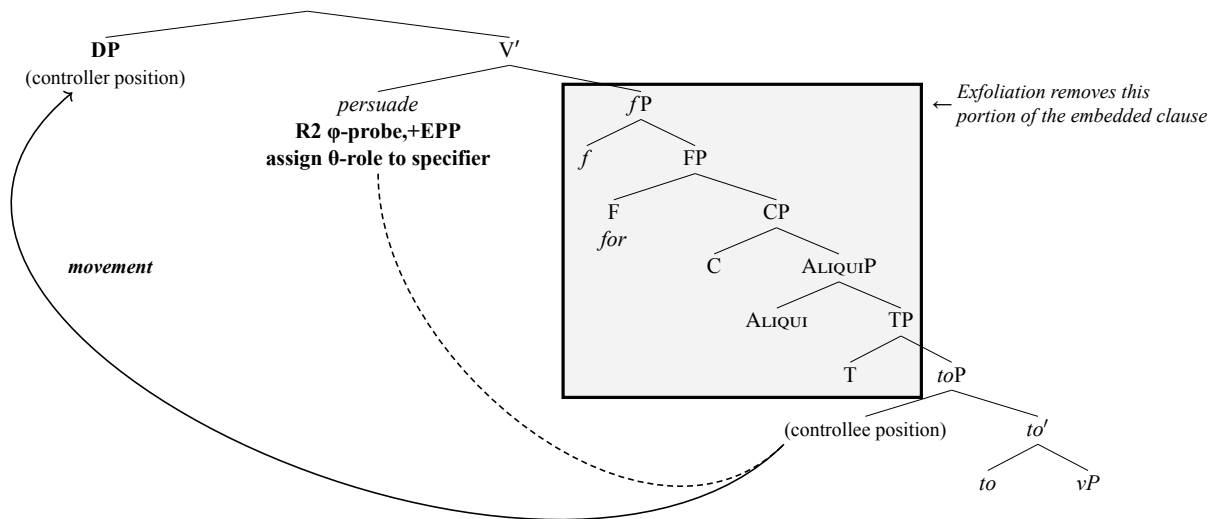
In OC, the gap in the embedded clause is controlled by an argument nominal in the embedding clause, yielding a structure that strongly resembles R1 or R2:

(223) **OC confusable with R1 or R2**

- a. Mary persuaded Sue ___ to talk to me. *object OC like R2*
- b. Mary condescended ___ to talk to me. *subject OC like R1*

On an MTC approach to OC, object control truly is an instance of R2, and subject control truly is an instance of R1. OC differs from standard R1 or R2 only insofar as a second θ -role is assigned by a higher predicate to the raised nominal. In Hornstein's (1999) well-known version of the MTC, movement to the position of the controller is triggered by the θ -assigning property of the higher predicate itself — not the ϕ -probe responsible for traditional instances of R1 or R2. Levin (2018), however, argues for a simpler variant of the MTC approach, according to which it is a normal EPP attribute on a normal ϕ -probe that is responsible for movement of to the controller position. On Levin's variant of the MTC, the assignment of the second θ -role is simply a secondary consequence of movement to that position (an idea first suggested in a slightly different context by Zubizarreta 1982, 71 ff.). On this view, an object OC construction with a verb like *persuade* could be analyzed as the result of R2 movement of the embedded subject to the higher little V, where it receives a second θ -role — the derivation proceeding just as described for R2 in section 3 (with V-to-*v* movement placing the verb to the left of the raised nominal). The pre-Exfoliation complement of the higher predicate could be *fP* or *CP*, with the same outcome. The tree below displays this proposal for object OC, assuming that the subject has raised only as far as *toP*, and assuming that the complement of *persuade* starts life as an *fP* (plausible, given its irrealis semantics). The EPP feature of the ϕ -probe on F is unsatisfied in this derivation, but that creates no sensation of deviance once Exfoliation eliminates *fP*:

(224) **Object OC as R2 (on an MTC approach), controllee initially raised only as far as *toP***



An alternative derivation in which the controllee initially raises to the specifier of *FP* before moving to the controller position yields a homophonous output, and is worth noting for reasons discussed below:

in NOC as analyzed here, however — a prediction that appears to accord with the cases reported in the literature.⁷⁷

Finally, it is important to note that OC is also found with factive and implicative predicates whose complements lack the characteristic semantics of *for*-infinitivals (i.e. lack the meaning associated with WOLL; Wurmbrand 2014). An MTC approach might analyze such predicates along the lines of R1 and R2 with verbs like *seem* and *believe*, as involving CP complementation without an *f*P superstructure. Alternatively, a superstructure with distinct semantics can be envisioned. A non-MTC approach along the lines of (221) could adopt the latter strategy as well.

I thus leave open the question of whether an MTC approach or one more like (221) offers the correct analysis of OC with predicates like *persuade*. An extremely important final task, which I also leave for future research, concerns variation in the syntax of the constructions discussed in this section. At a minimum, we should hope that sensible tweaks in tweakable aspects of the proposals advanced here can model correctly the variation that is observed (and in the ideal case, these tweaks would be predictable from other properties of the languages in question), but this is not a result that I can report at the present time. A few examples may illustrate the possibilities.

Consider again the variant of the MTC approach to object OC sketched in (225), and consider what would change if *for* did not move to *f* in a language otherwise identical. In English, on this derivation, *for* is unpronounced in its original position as the head of FP because it is a trace of overt movement, and is unpronounced in its higher position because *f*P is removed by Exfoliation. If the counterpart to *for* did not move in some language, in a derivation otherwise identical, it would be pronounced in situ — since it does not retain its specifier. This could be the proper analysis of clause-introducing particles in OC constructions such as French *à* or Dutch *om* that are traditionally classed as complementizers (with selection for post-Exfoliation FP vs. *to*P accounting for apparent language internal variation, including occasional optionality, in the use of these elements):⁷⁸

(227) **Clause-introducing particles in OC: instances of F when F does not move to *f*?**

Marie a persuaded Jean **de** partir.
 Marie AUX persuaded.PTCP Jean DE leave.INF
 ‘Marie persuaded Jean to leave.’

Alternatively, imagine a language identical to modern Standard English (including overt movement of F to *f*) except that the $\hat{}$ attribute on *f*'s ϕ -probe is optional. This would permit a subject to be attracted to *f*, silencing *f* by the Exposure Condition without being silenced itself. McFadden (2012) notes that Middle English (ME) permitted what look like Modern English *for*-clauses with an overt subject, except that no *for* is pronounced — which might instantiate this option:

77. Haddad (2011) reports backward control (and “full-copy control”) in an Assamese adjunct-like construction (the “conjunctive participle clause”) that clearly fails to resemble the complementation configurations more commonly discussed as OC — but nonetheless shares with such configurations the OC-like property of obligatory co-interpretation of two positions. Backward control is found in Assamese when what would otherwise be a null controllee position within the adjunct clause needs to bear non-nominative case morphology. This is a property shared cross-linguistically by many constructions that clearly involve movement (e.g. Slavic relative clauses with non-overt *wh*-phrases; Hladnik 2015), and therefore might receive a MTC analysis, as Haddad suggests.

78. Rizzi (1997, 228) observes that comparable elements such as Italian *di* appear to be located in a lower position than the normal indicative complementizer — because left-dislocated phrases precede these elements, but follow the indicative complementizer. Unless the indicative complementizer is located in a position analogous to *f*, this claim is not compatible with our proposal concerning such elements. One alternative might identify elements like *di* with *to* rather than C of F, but this leaves unexplained their general incompatibility with R1 and R2 with verbs such as *believe*, which motivated Huot (1981) and Kayne (1981) to identify them with a position higher than the position of English *to*.

(228) **Middle-English *for*-infinitives without overt *for***

- a. The thridde grevance is [a man to have harm in his body].
'The third grievance is for a man to be bodily injured.' (CTPARS, 310.C1.941)
- b. [A man to pride hym in the goodes of grace] is eek an outrageous folie.
'For a man to pride himself in the gifts he has received by grace is also an outrageous folly.'
(CTPARS, 302.C2.562) (McFadden 2012, 137, ex. (13),(14a))

The option under which the \wedge attribute is present would silence the moved subject, yielding NOC constructions like those of modern English.

In Belfast English, as described by Henry (1995, 81-104), *for* is possible in environments where Standard English never tolerates *for*: the complement to R1 verbs such as *seem* and R2 verbs such as *believe*. But with these verbs it is only found in constructions that actually show R1 and R2 movement, and follows the raised subject, so this use of *for* is clearly limited to derivations that involve Exfoliation down to the *to*P layer:

(229) ***for* with R1 and R2 in Belfast English**

- a. John seems *for* to be better.
- b. *It seems *for* John to be better.
- c. I believe them *for* to have done it.
- d. *I believe *for* them to have done it. (Henry 1995, 86, ex. (27)-(28))

Henry argues that Belfast English *for* in constructions like these is an instance of C that has lowered so as to cliticize to *to*. Her argument that it is an instance of C rests on its complementary distribution with *whether* (which Henry independently argues is an instance of C in Belfast English). She also notes that *not* always follows and never precedes *for to* (unlike its behavior with bare *to*). One possible adaptation of Henry's proposal to an Exfoliation context might analyze *for* as an allomorph of *that* that optionally lowers to *to* (in the spirit of Henry's proposal) — but subject to the condition that it be clause-initial post-Exfoliation. The (b) and (d) examples of (229) are then blocked as instances of illegal Exfoliation (since the subject has not been extracted) and illegal use of the *for* allomorph (because it has not lowered).

Both Belfast English and Middle English (along with other contemporary) dialects also permit overt *for* to co-occur with NOC with the semantics associated with *for* in Standard English (as far as I can tell). One might imagine that this too instantiates a lowered cliticized instance of *for* — this time lowering from *f* rather than C.

This discussion does not, of course, constitute an exhaustive or thorough account of any of this variation. In this subsection, I have merely noted some approaches one might investigate — leaving this topic (along with many other much-disputed questions concerning control) for future work.

9 Conclusions and Prospects: Passive as Exfoliation of ν P

In the initial sections of this work, I presented a number of arguments favoring a derivationalist approach to clause size over the lexicalist alternative that has dominated discussion since Kiparsky and Kiparsky (1971) and Bresnan (1972). These arguments focused first on R1 and R2 configurations, as well as their interaction with \bar{A} -movement; and then turned to complementizer-trace effects, as they arose with both \bar{A} and A-movement. Among the many questions that arise from this work, one salient question concerns the generality of Exfoliation. In particular, does Exfoliation remove layers of other phases, such as ν P, in circumstances analogous to those that remove clausal layers in the constructions discussed here? The answer should be yes, and there are possible examples.

One possible instance of Exfoliation at the ν P level might be the passive construction, which Müller (2016; 2017, 8 ff.) has argued involves “structure removal”, an operation similar, though not identical to Exfoliation. Müller’s notion of structure removal differs from Exfoliation mainly in its distinct assumptions concerning the trigger for structure removal (as briefly discussed in the concluding paragraph of section 3.1). Consequently, many analyses rooted in Müller’s overall approach can probably be imported and adapted into an Exfoliation framework, preserving all or most of their achievements (while interesting questions might well arise from the differences that motivate adaptation in the first place). In the domain of passive, the most obvious adaptation of Müller’s proposals also serves to show how Exfoliation might function in non-clausal domains.

At the heart of Müller’s proposal is the familiar observation that passive in a language like German or English may involve an implicit, phonologically absent external argument that is nonetheless syntactically active for certain processes, as illustrated in (230). As Müller points out, the processes that can access an implicit external argument all involve positions lower than the canonical location of the agent in an active sentence. He calls this property *downward accessibility*:

(230) **Downward accessibility of an implicit external argument**

(adapted from German examples in Müller 2016, 2-3)

a. *Control into adjunct infinitive*

The ship was sunk [in order ___ to collect the insurance].

b. *Control into secondary predicate*

The handout was written [___ tired].

c. *Obligatory control into argument infinitive*

It was decided [___ to leave].

d. *Binding of reciprocal*

(?) Even though this was a heartbreaking time [for my parents], much comfort was given to each other. (https://sasses.net/tag/prayer/, accessed March 16, 2019)

e. *Principle C*

Mary was seen in the mirror.

(* if the only seeing event involved Mary seeing herself)

Crucially, however, an implicit external argument is not accessible to processes that involve positions higher than the canonical location of the agent — an observation that Müller calls *upward inaccessibility*.

(231) **Upward inaccessibility of an implicit external argument**

(adapted from German examples in Müller 2016, 4-8)

- a. **Binding by a higher quantifier*
No woman_i admits that the book was stolen. (\neq ... *stolen by her_i*)
- b. **Control by a higher nominal*
Mary hopes [___ to be decided to leave]
(*intended meaning*: ‘Mary_i hopes that it will be decided by her_i to leave’)
- c. *No blocking of cross-clausal reflexive binding*
✓Mary_i considers herself_i to have been criticized.
(*compare*: ‘Mary_i considers Bill to have criticized herself_i’)

Also falling under the rubric of upward inaccessibility for Müller is the fact that the implicit agent cannot satisfy positional EPP-type requirements imposed by higher heads (such as the requirement that the specifier of CP be filled in a German verb-second clause).

Müller proposes that these contrasts are teaching us that when a passive clause is built, the external argument is merged in its normal position, where it is available for processes such as binding and control — for as long as it is present. At a very slightly later point in the derivation, however, it is removed, rendering it inaccessible for any later process. The contrast between downward accessibility and upward inaccessibility thus arises directly from the rule of structure removal applying in the midst of an otherwise structure-building derivation.

As discussed in the final paragraphs of section 3.1, Müller proposes that each head H bears an ordered stack of features that guide the Merge and Remove operations that build the maximal projection of H. Structure removal occurs in Müller’s framework when a head H that bears a feature motivating Merge of some constituent α with H also bears a feature motivating Removal of α from H. To build an active ν P, a ν is chosen whose stack contains a feature motivating Merge with VP and a feature motivating Merge with an external argument DP, in that order. As a consequence, ν merges first with VP, creating a head-complement configuration, and the resulting ν' merges with a DP, creating (in effect) a specifier-head configuration. To build a passive clause, a feature is added to ν that removes a DP, higher in the stack than the feature that motivated its merger in the first place. In the derivational interval between the merger of this DP and its removal, binding and control relations like those in (230) may be established and licensed (or blocked, in the case of (230e)). By the time the higher quantifiers, controllers, or antecedents relevant to (231) are merged, the external argument of the lower ν P is no longer present, and therefore unavailable for binding or control (or any other process).

These achievements can be imported in to an Exfoliation approach without Removal features if passive can be claimed to involve a relation between a ν P-external ϕ -probe and the highest internal argument within ν P that motivates Exfoliation of the ν P layer — and if passive morphology is a concomitant of this configuration, as in Müller’s approach. The most straightforward adaptation would posit (1) a VOICE head external to ν P that bears the crucial ϕ -probe and an EPP property; (2) some reason why in a passive construction this probe skips the external argument; and (3) a reason why the goal found by the VOICE head cannot move via a specifier position of ν P. Under these circumstances, extraction of the goal of this ϕ -probe will trigger Exfoliation of the ν P layer.

Let us tackle (1) and (2) first. Let us propose that the ϕ -probe on VOICE seeks an goal that is not assigned oblique case by a P or in any other fashion. Let us imagine further that the external argument of ν may be Merged as either a normal DP or as a *by*-phrase whose DP counts as oblique. If the former option is taken, VOICE will attract the specifier from the edge of ν P, not triggering Exfoliation. If the latter option

is taken, however, VOICE will skip the specifier and will find the highest argument within VP, which does not occupy the edge of its phase. If (3) (to which we turn shortly) is correct, this will trigger Exfoliation of ν P.

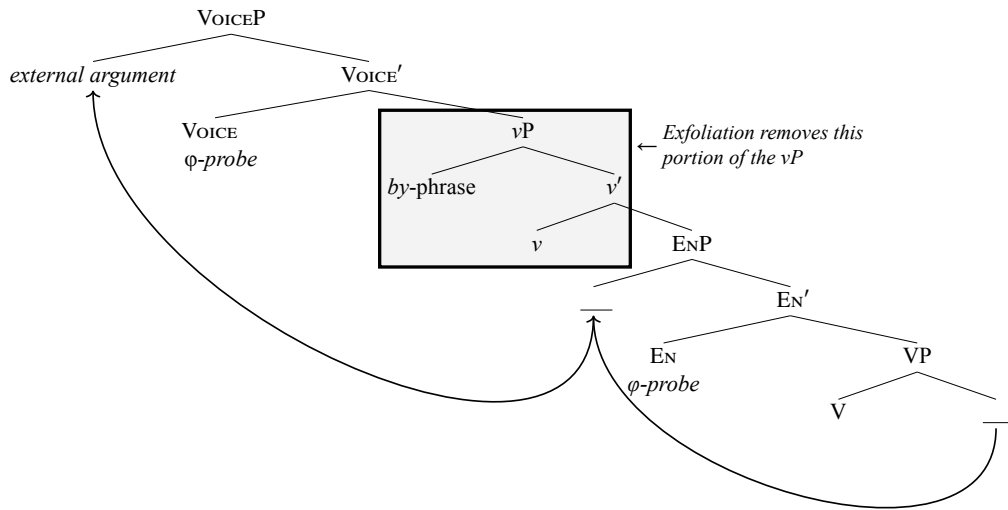
What happens to the oblique external argument when ν P is Exfoliated? In section 3.2.5, we saw that when XP is removed by Exfoliation, its former specifiers may reattach to the structure that remains. We suggested in particular that these elements reattach as specifiers of the subconstituent that replaces XP (here deviating from Müller’s solution to the same problem; see footnote 13). We also noted that reattachment, though required in certain instances, could be regarded as formally optional. We can then view the removal of the external argument described by Müller as a consequence of taking the non-reattachment option. If the reattachment option is taken instead, the result is an overt *by*-phrase, attached as a dependent of VP.⁷⁹

Let us now turn to (3), and ask why Exfoliation must take place when a *by*-phrase has been merged — that is, why the argument that does raise in passive cannot move first to the edge of ν P, obviating the need for Exfoliation. Since the sole argument of an unaccusative verb in a language like English must raise to T via the specifier of ν P (given Phase Impenetrability and the apparent absence of ν P Exfoliation), we know that ν bears a ϕ -probe with an EPP property, so it cannot be the absence of such a probe that prevents similar raising in a passive construction. Consequently, it must be an anti-locality effect that prevents movement through the specifier of ν P in the passive construction. If anti-locality effects follow from LAAC, the argument that raises in passive must have undergone movement within the ν P — creating the Lethal Ambiguity that blocks attraction by the phase head (as discussed in section 5.1). I will conjecture therefore that in a ν P with an external argument there is a projection between ν and VP whose head bears a ϕ -probe with an EPP property. When ν P undergoes Exfoliation, it is ENP that replaces it. Let us conjecture that this head, which I will call EN, is responsible for what we call passive morphology when exposed — which occurs only when ν P undergoes Exfoliation (which only happens when the oblique option is chosen for the external argument).

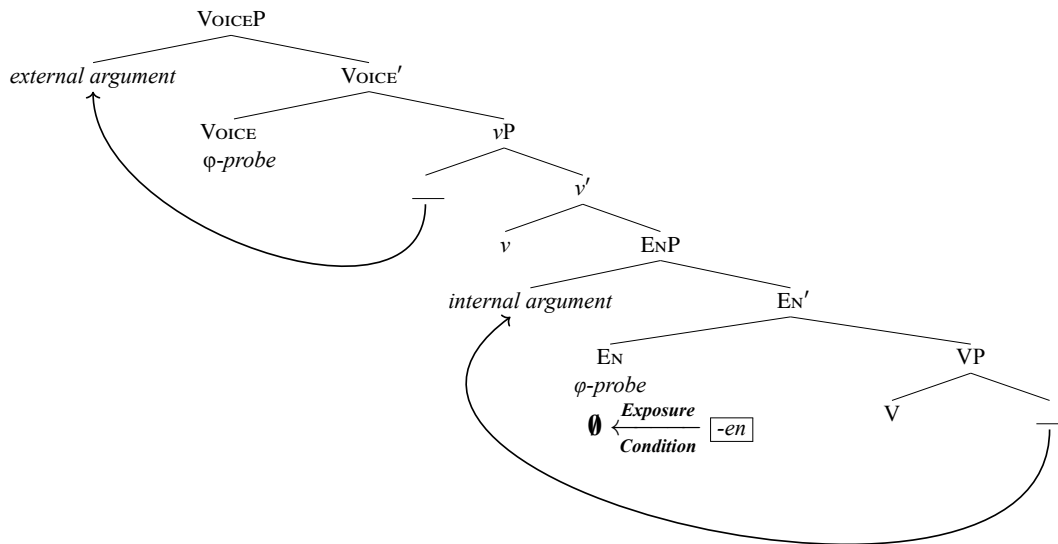
We now have in hand the pieces that permit an adaptation into the framework of this work of Müller’s analysis of passive. The key new proposals are an attracting head (VOICE) immediately external to ν P and another such head (EN) external to VP. Neither head is specific to passive or comes in distinct active and passive flavors — though EN is present only as the complement to a ν that introduces an external argument, and absent otherwise. The distinction between active and passive voice arises from the choice of a non-oblique (normal DP) or oblique (*by*-phrase) external argument.

79. In the English passive, the *by*-phrase appears postverbally, rather than to the left of V, as would be predicted if it linearized as a specifier of VP. I have no account of this fact (one respect in which the theory sketched here is inferior to the “smuggling” alternative proposed by Collins (2005), except to speculate that the righthand position of the *by*-phrase might somehow be a by-product of the fact that it is a late-attached specifier of VP.

(232) **Passive voice**



(233) **Active voice**



Many questions arise which I will not explore or answer here. Since our adaptation of Müller’s proposal relies on movement triggered by a higher head, one question concerns instances of passive that do not involve overt or obvious movement of any element from inside VP. Two cases are impersonal passives of the sort permitted by German and passive in languages like Italian or Spanish, where the argument that moves in English may remain VP-internal. For impersonal passives, we might borrow from work in Relational Grammar an analysis of this construction according to which impersonal passives involve a pleonastic object (null in German, when not occupying the specifier of CP) introduced within the VP — an “initial 2” in Relational Grammar terms — that raises just like its non-pleonastic counterparts (Perlmutter and Postal 1984, 106 ff.). For passives in which the nominal that raises in English appears to remain in VP-internal position, several analyses, the relevant nominal might be taken to raise covertly at least as far as VOICEP, or else we might expand the structural description of Exfoliation to permit instances of pure Agree without movement to trigger the process — a potential friendly amendment that I will leave for future work.

Another question concerns the claim that the presence of EN in passive but not active constructions is an effect of the Exposure condition, in view of the fact that EN is affixal. In section 6.4, we tentatively

excluded the finite tense and agreement morphology controlled by T from the effects of the Exposure morphology by stipulating that a head that assigns morphology may do so even when not exposed. If the comings and goings of voice-dependent EN morphology is attributed to the Exposure condition, some difference must be found between the two cases — which I also leave for future work.

The most salient questions perhaps concern the *raisons d'être* for the existence of VOICE and EN in the first place. Since EN must be stipulated to be present only when selected by an instance of *v* that assigns an external argument, it is possible that its *raison d'être* might be sought in a semantic role mediating between the external argument introducer and the predicate that introduces the internal argument — perhaps connected with aspect in some fashion. Though ours is far from the only proposal to posit a VOICE head, its reason for existence remains a mystery, in this context as well as others.

While our discussion of passive remains speculative, it is presented here as a possible instance of Exfoliation applying to domains other than CP, and also as a demonstration of the kinship and possibilities for cross-fertilization between the Exfoliation framework and Müller's work on structure removal.

In the concluding sections of this work, I have attempted to show how the approach might deal with a variety of issues beyond R1, R2 and \bar{A} -movement, which constituted the core of our discussion. Nonetheless much work obviously remains to be done to justify Exfoliation and to put it on a firm conceptual and empirical footing. At the very least, I hope that the discussion in this work can serve as a first step in the reopening of issues long considered closed — while simultaneously shedding light on other issues recognized as open, but unsolved. The Exfoliation proposal interacts with just about everything else in the domain of syntax, as we have seen, and the discussion in this work is clearly just a beginning.

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