Exfoliation: towards a derivational theory of clause size David Pesetsky (MIT)

- A fact about language that should strike us as strange: the menagerie of clause-types and sizes, categorized with ill-understood labels such as *finite/non-finite*, etc.
- **Standard approach**: a consequence **of lexical choice**, a legacy of arguments by Kiparsky & Kiparsky (1970) and Bresnan (1972) in the context of a now rejected model of grammar. In a modern context, these arguments no longer go through.
- **This talk:** For certain clause-type distinctions that can be argued to be matters of *clause size*: revive a proposal from the first decade of generative syntax that the distinctions are **derivationally derived**, and not a matter of lexical choice.
- **Relevance to a workshop on "quirks of subject extraction:** The rule that reduces a clause is triggered by extraction from the structural domain that includes the subject and is responsible for some of the key quirks that we have been (or should be) discussing.

1. Background: Raising to Object/ECM in English

Terminology:

R2 = the configuration in English variously analyzed as ECM or Raising to Object R1 = Raising to Subject

(1) postverbal element in R2 behaves like embedded-clause subject ...

- a. Mary judged there to be a good reason for the meeting.
- b. Bill believes the shit to have finally hit the fan. (*idiomatic reading*)

(2) ... but shares properties with higher-clause direct objects

- a. Mary believed me_{ACC} to have solved the problem.
- b. Sue_i proved herself/her_i to be a capable leader.

In favor of movement into the higher verbal domain (vs. in-situ ECM)

(3) R2 subject precedes higher-clause low VP-adverbs (Postal (1974, 146-7)

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

(4) Analysis (on semi-conventional assumptions)



(5) R2 subject precedes higher-clause adverbs

and particle (which marks original position of higher-clause verb)

- a. Sue made Bill recently out to be the best candidate.
- b. *Sue made recently out Bill to be the best candidate.
- c. ?Sue made out Bill to be the best candidate.

(6) **R2 subject c-commands low elements in the higher clause** (Lasnik & Saito 1991) *Principle C:*

- a. John believes that he_i is a genius even more fervently than Bob_i 's mother does.
- b. *John believes him_i to be a genius even more fervently than Bob_i's mother does. *Principle A*:
- c. The DA proved the defendants, to be guilty during each other,'s trials.
- d. *The DA proved [that the defendants_i were guilty] during each other_i's trials.
- If accusative case and binding conditions care about phase-mate status, R2 constructions differ from embedded finite clauses as required.

If R2 involves movement, it is a twin of R1, for which movement is not in doubt:

(7) Raising-to-Subject (R1)

- a. Mary appears to have solved the problem.
- b. The shit is likely to hit the fan.

Why is R1 from the infinitival complement of a raising predicate obligatory, in contrast to finite counterparts?

(8) a. *It appears Mary to have solved the problem.

b. It is likely that Mary will have solved the problem.

The now-standard proposal concerning Case in R1 ...

- The subject position of the infinitival clause is not case-licensed, which means that if the subject remains in situ, it violates the Case Filter or its descendants...
- ...unless it moves to a case-licensed position.
- ... is extendible to R2.

(9) **Two things this theory needs:**

- **1.** a repertoire of case vs. non-case positions, e.g. no case-licensing by an unaccusative/passive verb, by adjectives or by nouns
- 2. a principle that allows English R2 and R1 only from a reduced clause, i.e. one that lacks a CP layer and is infinitival.

2. Two approaches to clause type and size

Some presuppositions of the standard "lexicalist" approach

Standard lexicalist view of the past four decades (Kiparsky & Kiparsky 1970, Bresnan 1972)

- The finiteness of a clause and presence/absence of C is a result of the lexical items freely chosen to participate in the derivation that built that clause (the *Lexical Array*).
- For example: if [±Past] and C do not form part of the Lexical Array chosen to build a particular clause, the result will be a reduced infinitive. Conversely, if [±Past] and C are chosen, the result will be a full finite CP.

How the previous section's puzzles look from the standard lexicalist perspective

- Given that the derivation has built an infinitive, how does the system solve the problems that follow from having chosen to build an infinitive?
- *For example*: The subject of an English infinitive has a licensing problem that can be solved (only) if an R1 or R2 probe successfully locates it, so that that movement and case-licensing becomes possible. This is possible only across a reduced infinitival clause boundary (but not across an unreduced one), due to ...

An alternative "derivationalist" view

- Abandon the assumption that infinitives and reduced clauses are "born, not made".
- The interaction between a higher probe (R1, R2 or Ā) and an embedded subject *precedes* the differentiation of the embedded clause into finite vs. non-finite and *triggers* its reduction to an infinitive.
- Specifically, probing of an embedded subject by a clause-external probe *triggers the deletion* of the C and T layers of the clause, creating a reduced infinitive from what would otherwise be a full finite CP.

Premises of the alternative view

(10) Full CP hypothesis

Every embedded clause is built by Merge as a full finite CP, and may be reduced to a lessthan-full clause only as a consequence of later derivational processes. (plausible extension: each phase must be fully built)

(11) Nature of to

- a. English to heads a projection between T and vP
- b. English to is overt only when not c-commanded by T within its clause.

(12)



• (11) is an English-specific variant of a more general phenomenon cross-linguistically — crucial to the analysis of a variety of alternations found in languages such as Bùlì, French (*que/qui*) and West Flemish (*da/die*) — omitted in this talk.

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Exfoliation

Consider now a variant of (12) 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:



- Suppose *prove* in (13) bears an R2 probe with an EPP property, for which *Sue* is the nearest goal...
- (14) **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 CP.
- If (14) is correct, Sue in (13) can be located by the R2 probe on prove.
- But unless some operation places *Sue* at the edge of the embedded clause, it cannot satisfy the EPP requirements of the probe.
- One might imagine that the Ā-property of movement C prevents it from serving as an intermediate landing site for R2 movement of *Sue*. Alternatively:

(15) Anti-locality

Movement to the edge of CP must cross a phase boundary.¹ (cf. Saito & Murasugi 1998; Bošković 1994; Ishii 1999; Grohmann 2003, Erlewine 2015) $(\rightarrow \checkmark$ spec, vP to spec, clauseP, *movement to spec, clauseP from outside vP)

(16) Exfoliation²

- a. Structural Description:... β ... [YP (PHASE) ... [γP (NON-PHASE) ... α ...]], where
 - (i) YP is the only phase boundary between β and α ,
 - (ii) α occupies the edge of γP , and
 - (iii) a probe on β with an EPP property has located α as its goal
- b. Structural Change: Replace YP with γP .

(17) Example: infinitive-forming exfoliation triggered by an R2 probe on V



History

- The alternative view is actually a modernization of the one of the *oldest* proposals in generative grammar (Rosenbaum 1965, 1967) according to which the Raising rules are responsible for the infinitivization of the clause from which Raising applies.
- Model of grammar presupposed by Kiparsky & Kiparsky (1970)/Bresnan (1972)
 - basic structure-building (the *base component*) and *syntactic selection* precedes all instances of movement and deletion, yielding *Deep Structure*
 - o semantic interpretation applies to *Deep Structure*.
- K&K/B's arguments against the older proposal...
- **Predicates** *select for* **different clause-types**, so clause-types must already be differentiated at Deep Structure, and clause-type choice cannot be triggered by movement.
- Choice of clause type has *semantic implications*, so clause-types must already be differentiated at Deep Structure so the semantics can distinguish them.

² Exfoliation also bears a family resemblance to Ross's (1967, chapter 3) rule of Tree Pruning — and most significantly to Gereon Müller's (2015) recent work on "Structure Removal". Much more to say about this!

¹ *Improvement:* "Movement to the edge of a phase from a non θ -position must cross a phase boundary." — which reduces to a "lethal ambiguity" condition on probing.

"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." (K&K, 172)

• ... but these arguments no longer distinguish the proposals in a model without Deep Structure, where selection and semantic interpretation are interspersed with Internal and External Merge. So it worth reopening the questions generally considered to have been settled by K&K/B.

3. Argument 1: Surprising Case Filter-like effects on non-nominal subjects

• A case-theory puzzle: A CP that does not need case as the complement of A, N or an unaccusative/passive verb seems to need it in subject position. A CP (that has not undergone R1 or Ā movement) may be the subject of an infinitival (*for*-less) clause only in an R2 environment.

(18) A CP complement does not need to be case-licensed elsewhere...

- a. We are sure [that the world is round]. We are sure *(of) the world's roundness.
- b. my proof [that the world is round] my proof *(of) the world's roundness
- c. They assured us [that the world is round]. They assured us *(of) the world's roundness.
- d. It was proved [that the world is round]. **It was proved the world's roundness*.
- (19) ...but (viewed from a traditional perspective) a CP *subject* does ...
 - a. Bill considers [that the world is round] to be a tragedy
 - b. [That the world is round] seems to be a tragedy.
 - c. *It seems [that the world is round] to be a tragedy.
 - d. *It was believed [that the world is round] to be a tragedy.
 - e. *Mary is aware [that the world is round] to be a tragedy
 - f. *Mary's belief [that the world is round] to be a tragedy

(20) ... just like nominal subjects

- a. Bill considers Mary to have solved the problem.
- b. Mary seems to speak French well.
- c. *It seems Mary to have solved the problem.
- d. *It was believed Mary to speak French well.
- e. *Mary is aware Bill to be the best candidate.
- f. *Mary's belief it to have been raining

 Predicted in the Exfoliation approach: The embedded clause does not become an infinitive unless its subject raises out of it — regardless of its syntactic category.

(21) Probes that can extract 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**, *v***P**: 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. **Ā-probe** triggering movement to Spec, *v***P**: present on *v*, *a*, and *n*

In (19a-b), the embedded subject has moved in response to an R2 and R1 probe, respectively — but in (19c-f) it has remained in the embedded clause, for lack of a higher probe moving it out, so Exfoliation cannot apply.

• **Possible alternative lexicalist explanation for (18):** Subject clauses (or apparent subject clauses) are nominal or embedded in a nominal (Koster 1978; Alrenga 2005; among others), and show case-theoretic effects for that reason.

(22) ... but fronted predicates behave the same way...

- a. I consider [even more important than linguistics] _____ to be the fate of the planet.
- b. [Even more important than linguistics] seems _____ to be the fate of the planet.
- c. [Even more important than linguistics] I believe _____ to be the fate of the planet.
- d. *Mary was assured [even more important than linguistics] to be the fate of the planet.
- e. *It is likely [even more important than linguistics] to be the fate of the planet.

(23) ... and fronted locatives in Locative Inversion ...

- a. ?I consider [in this room] _____ to be found the finest examples of Athenian sculpture.
- b. [In this room] seem _____ to be found the finest examples of Athenian sculpture.
- c. [In this room] I believe to be found the finest examples of Athenian sculpture.
- d. *Mary was assured [in this room] to be found the finest examples of Athenian sculpture.
- e. *It is likely [in this room] to be found the finest examples of Athenian sculpture.
- **Exfoliation generalization:** Only when movement has taken place from an embedded subject or subject-like position is infinitivization possible. [Open question: Restructuring infinitives.]
- But you might still be a skeptical lexicalist: Maybe case must be assigned to the fronted predicate and locative in (22)-(23) so that it can be transmitted to the postverbal subject.

4. Argument 2: Surprising absence of Case Filter effects on nominal subjects

Case and the subject of infinitives:

• On an Exfoliation approach to clause size, **the subject of an embedded infinitive has no case-licensing problem** — since its clause was a full finite CP until Exfoliation applied.

Exfoliation as a last resort:

- Since Exfoliation is a last resort, Exfoliation *only* applies to a clause when its subject (or other element in the upper clausal domain) undergoes movement. Untriggered infinitivization will yield unacceptability
- The previous section showed non-nominals that behave under the standard theory as if they
 anomalously require case. This section shows nominals that behave under the standard theory
 (at first glance) as if they anomalously do *not* need case and argues against the proposal
 that case is assigned to them in a special way.

Setup: Configuration in which the subject σ of an embedded clause may not be accessed by an R2 φ -probe in the higher clause, either because:

(a) the higher clause lacks the R2 φ -probe, or

(b) an intervening nominal blocks contact between the R2 probe in the higher clause and σ .

From an Exfoliation perspective...

... the embedded clause in situations (a) and (b) may be infinitival only if a higher probe *other than R2* successfully extracts it from the embedded clause.

- In situation (a), the extractor could be either an R1 probe or an Ā-probe.
- In situation (b), the extractor could only be an \bar{A} -probe, since the same Minimality considerations that would block the φ -probe R2 should block R1.

From a Lexicalist perspective without Exfoliation...

... in which infinitives are born rather than made, situations (a) and (b) would both look like additional puzzles of case theory — case-licensing of the embedded subject only if it undergoes Ā-movement or R1.

Situation (a) instantiated (no R2 probe):

(24) English wager-class verbs (Postal 1974; Pesetsky 1991)

- 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.

also: 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, ...

The puzzle in a standard lexicalist world: How is the embedded subject licensed?

- (25) Agent stipulation (Pesetsky 1991) [lexicalist world] If α assigns the θ -role *Agent*, α Case-marks β only if $\alpha \theta$ -marks β .
- (26) The work-around for (25) [lexicalist world]
 - a. The subject of an infinitival clause not licensed in situ due to (25) be licensed (for some reason) only if it undergoes movement, and ...
 - b. ... an agentive verb does not bear an R2 probe that could cause it to move.

The puzzle in a derivationist world: Why did the embedded clause become an infinitive?

- Since an infinitival clause is *created* only when its subject is extracted...
- ... (26b) does all the work. Case issues concerning the embedded subject are irrelevant and we do not need the mysterious (26a).
- (27) **Agent-R2 stipulation** (=(26b)) An agentive verb does not bear an R2 probe.

Situation (a) instantiated in French and Italian

- (28) a. *Je croyais cet homme être arrivé. I believed this man AUX.INF arrived 'I believed this man to have arrived.'
 - b. l'homme que je croyais être arrivé... the.man that I believed AUX.INF arrived 'the man that I believed to have arrived...'
 - c. %Marie a longtemps été crue avoir résolu ce problème. Marie AUX long.time been believe.FEM have solved this problem (also 'consider', 'suppose', 'say', 'guess'...; Pollock 1984)

(29) French/Italian R2 stipulation

French and Italian believe-class verbs lack an R2 probe .

Situation (b) instantiated (intervener between R2 probe and subject): double-object ECM-ish verbs (assure etc.)

(30) Double-object infinitive-taking verbs

- a. *I assure you Mary to be the best candidate.
- b. *Mary was assured you _____ to be the best candidate...
- c. ✓ Mary, who I assure you _____ to be the best candidate... (Kayne 1984, xiii)

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In a lexicalist world:

- *Premise:* the infinitival clause in (30b) is non-finite from the beginning.
- *Easy examples:* In (30a), the embedded subject needs case-licensing and cannot receive it in the subject position of an infinitival clause because the indirect object intervenes (cf. **I assure you my sincerity*). In (30b), locality prevents the movement of *Mary* over *you*.
- *The challenging example*: In (30c), the moved embedded subject receives case in an intermediate landing site that it cannot receive *in situ*.

(Kayne 1984; Pesetsky 1991; Rezac 2013)

But the powers and non-powers of the putative higher case assigner would have to be extraordinarily peculiar — in two ways:

- (31) *Peculiarity 1:* The putative case assigner is insensitive to category distinctions that otherwise matter for case.
 - a. *passive*: Mary, who I've been assured to be the best candidate...
 - b. *adjective:* Mary, who I am positive to be the best candidate... Mary, who we're confident to be the best candidate...
 - c. *noun:* %Mary, who I have a hunch to be the best candidate...
- (32) *Peculiarity 2:* The putative case assigner saves *only* nominals that have been extracted from the subject position of an infinitive. Extraction of a complement from a non-case position cannot be saved by this case assigner.

a. *passive:* your honesty, which I've been assured *(of) ... b. *adjective:* Mary, who I am positive *(about)... Mary, who we're confident *(of)... c. *noun:* Mary, who I have a hunch *(about)...

The Exfoliation alternative

- (33) **Probes that can attract an embedded subject in English** (repeated)
 - 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**, *v***P:** 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
- Infinitivization is the issue: If movement from an embedded clause to one of the positions in (33) does not happen, no infinitivization is possible. The clause will remain a full finite CP.
- No puzzle for case theory: No need to worry about the licensing of the moved subject in the *wager*/French or *assure* paradigms. The subject is always licensed in the embedded clause

pre-Exfoliation.

In (34a-c), since movement of the embedded subject to an R2 position is impossible, **the embedded clause should have remained finite**, as in (35)

(34) Not a case problem, but an unlicensed Exfoliation problem

- a. *We wagered Mary to be the most likely winner.
- b. *Je croyais cet homme être arrivé. 'I believed this man to have arrived.'
- c. *I assure you Mary to be the best candidate.

(35) Example (34a-c) without Exfoliation

- a. We wagered that Mary was the most likely winner.
- b. Je croyais que cet homme est arrivé. 'I believed that this man arrived.'
- c. I assure you that Mary is the best candidate

Non-subject A-movement from embedded clause

- **Question:** Why does infinitivization due to CP exfoliation not accompany *object* extraction? In (36), the embedded subject is licensed by finite T before Exfoliation so why does extraction of the object not infinitivize the embedded clause?
- (36) **Non-subject extraction does not feed exfoliation of CP** *This book, which I assure you Sue to have read
- **Answer:** The *wh*-phrase in (37) originates within *vP*, and moves to its edge from where Anti-Locality does not prevent it from raising to the specifier of CP. The structural description of Exfoliation is not met at any point in the derivation.

5. Questions you might have at this point

Case morphology

- **Question:** Why is the R2 element morphologically ACC, if it is licensed in the embedded finite CP before Exfoliation?
- **Possible answer:** If ACC is a dependent case, ACC morphology reflects the final A-position occupied by the embedded subject, independent of where it was licensed.
- **Prediction:** A NOM in an embedded clause that does not raise into the higher VP will continue to show NOM morphology even if movement of another element out of the embedded clause triggers Exfoliation into an infinitive:

- (37) Evidence for raising in Icelandic R2 constructions
 - a. Þeir töldu Harald **allir** vera heimskan they(NPL.M) believed Harold(ASG.M) all(NPL.M) be.INF stupid.ASG.M 'They all believed Harold to be stupid.' (Thrainsson 2007, 455)
 - b. Jón telur mig í barnaskap sínum hafa étið hákarlinn. John believes me in foolishness his have.INF eaten shark.the 'John believes me in his foolishness to have eaten the shark.' (Thrainsson 1979, part II ex. 80)
- (38) Quirky subject + nominative object in a finite clause Jóni líkaði bókin ekki. John.DAT liked the.book.NOM not

Binding Theory

- **Question:** Why does the R2 element share binding-theoretic properties with main-clause objects, rather than embedded-clause subjects?
- **Possible answer:** The impossibility of nominative reflexives correlates with either surface agreement or surface case.

6. Exfoliated yet finite: the complementizer-trace effect

A fact not discussed so far

- Subject extraction in English does not require infinitivization. It is compatible with the retention of tense and agreement in the embedded clause. Is this unexpected?
- Famous property of English: Subject extraction from a finite clause may not obligatorily trigger infinitivization but it *does* trigger the absence of the complementizer. This is the complementizer-trace effect:
- (40)a. Mary, who I believe ____ to be the best candidate...
 - b. Mary, who I believe _____ is the best candidate...
 - c. *Mary, who I believe that ____ is the best candidate...

<u>Proposal</u>

- Both *to* and T bear φ -probes with the EPP property.
- Exfoliation that deletes TP and CP also deletes EPP on T, eliminating the violation if the subject never raised that far ("salvation by deletion").
- But the subject may alternatively move to spec, TP in which case subject extraction will only Exfoliate CP layer, leaving TP intact.

(41) Exfoliation of the C-layer, leaving TP behind



(42) **English clause sizes so far** finite *that*-clause > finite *that*-less clause > *to*-infinitive

Generalization: Subject extraction always entails a smaller-than-full clause.

Extension to anti-agreement:

- Claim (Baier 2016): PERSON is the first feature to be suppressed in anti-Agreement configurations, followed by GENDER and NUMBER
- "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, cited by Henderson)
- (43) The Feature Subset Hypothesis (Baier, 2016)
 - The ϕ -features expressed by agreement in an Anti-Agreement context are always a proper subset of the ϕ -features expressed by agreement in a Full Agreement context.

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- But perhaps the idea that anti-agreement always deletes person is the wrong way to think about it. It is when person (possibly plus other features) is absent that a linguist starts *calling* it anti-agreement. The story may begin earlier, if we include complementizer-trace effects in the picture, and end later, if we include infinitivization in the picture as well.

(44) Functional hierarchy

C > participant > gender > number > tense (Preminger (2011, 2014): opposite order of PART and NUMBER in Kaqchikel. Hmm.)

7. Superstructures: English for-infinitives as R2 constructions

• *For* infinitives in their Modern English form look like a counterexample to the strong version of the hypothesis that *all* infinitives derive from Exfoliation of full finite CPs.

(45)a. Bill would prefer for John to leave the room.

- b. Sue is eager for there to be a colloquium party.
- c. For the shit to hit the fan right now is desirable.
- But as the analysis of *for* in traditional case-theoretic discussion made clear, *for* has properties reminiscent of R2 verbs.

Conjecture: *for* has big-FOR and little*-for* variants³, embeds a finite indicative CP, and triggers raising of the subject of its complement CP to spec, FORP (like R2 verbs), with concomitant Exfoliation:

(46) Exfoliation triggered by R2 probe on FOR



³ Alternative (Esther Torrego, p.c.): big-FOR might be a flavor of T, with little-*for* as C.

Arguments that for-infinitives are Raising structures that embed an indicative clause

(47) **Relativization argument for a lower indicative layer**

- a. I would have preferred for there to be ice-cream at the party, as Mary mistakenly reported, which you would have liked too. (*switching the relative clauses)
- b. She wanted very badly for the solution to turn green, as/which her theory predicted, which is what we all wanted as well. (**switching the relative clauses*)

(48) Anaphora

Sue was so eager for Mary to finish her dissertation that she reported it prematurely.

8. Superstructures: English ACC-ing gerunds as R2 constructions

• General proposal:

- non-finiteness of the ACC-*ing* gerund results from **Exfoliation**: the gerund clause was a full CP, whose subject was contacted by an external probe (with an EPP property).
- *-ing* is morphology assigned in a normal Affix-Hopping-related fashion after exfoliation by GER. Several heads assign *-ing*, e.g. the R1 verbs *finish*, *keep*, and *continue*.

(49) Exfoliation triggered by R2 probe on GER



• GER can also take *for*P as its complement, with exfoliation both in CP triggered by FOR and of *for*P triggered by GER:

(50) Relativization argument for a lower indicative layer + higher irrealis layer

- a. We had worked hard on there being ice-cream at the party, as Mary mistakenly reported, which you would have liked. (**switching the relative clauses*)
 b. The solution turning green, as/which her theory predicted, which is what we all
- wanted as well, would have been a great result. (**switching the relative clauses*)

9. Superstructures: the control elephant in the room

• If obligatory control is analyzed as movement (Bowers 1973; 1981, Wehrli 1980; 1981; Hornstein 1999, *passim*), Exfoliation might explain the full range of infinitives.

R1 movement?

- (51)a. Mary tried to ____ read the book.
 - b. Bill persuaded Tom to read the book. R2 movement?
 - c. Bill promised Tom _____ to read the book. *wtf R1 movement?*
- (52)a. Mary wondered how _____ to get herself to the airport on time. *R1 movement*?
 b. Sue told Tom how _____ to get himself to the airport on time. *R2 movement*?
 c. Bill asked Sue how _____ to get himself to the airport on time. *wtf R1 movement*?
- (53)a. Mary bought a chair in which to seat herself during long concerts.b. Mary bought Tom a chair in which to seat himself during long concerts.
- (54) _____ to win the election will require lots of money. (what moved where?)
- Alternative: Control infinitives are finite CPs or *for*Ps with a superstructure that R2-moves a semantically vacuous empty element PRO, creating a predicate that can be interpreted as a control structure in accordance with a family of proposals that I am not semantically informed enough to discuss...

10. Adverb intervention in the *that*-trace paradigm (omitted today)

- (55) Adverb intervention effect (Bresnan 1977, 194 fn. 6; Culicover 1993, 1993)
- a. Robin met the man who Leslie said that for all intents and purposes ____ was the mayor of the city.
- b. I asked what Leslie said that in her opinion had made Robin give a book to Lee.
- (56) Nupe complementizer-trace (Kandybowicz 2006, 220-221)
 - a. Ke u: bè [ke Musa du _] na o? what 3.SG seem COMP Musa cook NA O 'What does it seem that Musa cooked?
 - b. *Zèé u: bè [ke __du nakàn] na o? who 3.SG seem COMP cook meat NA O

'Who does it seem cooked meat?'

... ameliorated by adverb intervention

c. Zèé Musa gàn [gànán pányi lèé ___ nì enyà] o?
 who Musa say C before PST beat drum o
 'Who did Musa say that a long time ago beat the drum?'

Proposal:

- The amelioration results from a double-CP structure, in which the adverbial material is a dependent of the higher C.
- The subject is probed by C1, and exfoliation deletes CP2. Movement from the edge of CP2 forming spec, CP1 does not violate Antilocality.



- (58) Double-that examples from McCloskey (2006)
 - a. 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.
 - b. He thinks that if you are in a bilingual classroom that you will not be encouraged to learn English.

11. Hyper-raising

So far: Subject extraction in English requires Exfoliation — which can involve

- both CP and TP, yielding an infinitive (and explaining believe, wager, assure etc.), or
- just CP, yielding a complementizerless *finite clause* (explaining complementizer-trace effects etc.)

Why does English not allow the same two options for A-movement?

(59) **R1: why is (b) unacceptable?**

- a. Mary seems _____ to be the best candidate.
- b. *Mary seems _____ is the best candidate.
- c. *Mary seems that ____ is the best candidate.

(60) **R2: why is (b) unacceptable?**

- a. Sue believes Mary quite sincerely _____ to be the best candidate.
- b. *Sue believes Mary quite sincerely _____ is the best candidate
- c. *Sue believes Mary quite sincerely that ____ is the best candidate

• An unimpressive proposal:

(61) **Ban on hyper-raising**

- a. The subject of a clause, whether it raises to spec, AGRP (spec, TP) or remains in spec, *to*P, shares all its φ -features with AGRP.
- b. A higher R1 or R2 φ -probe cannot distinguish AGRP from this subject (*note: an* \overline{A} -probe has no such problem) and thus (several versions of "thus" are imaginable) cannot raise the subject...
- c. ... unless AGRP is exfoliated away.

Presupposition: Relativized Minimality is relevant after, and not before exfoliation (compatible with "multiple Agree").

• I am not proud of (61), but it provides a platform for asking the following question:

If the ban on hyper-raising (whatever it is) is turned off, we expect a complementizer-trace effect with A-movement.

- Because AGRP must be exfoliated if a subject is to move to R1 or R2, a fortiori CP must also be exfoliated.
- If for some reason scenario (61) is inactive in a language, not only should we see raising from a domain that remains visibly finite (hyper-raising), but we should also see a *that*-trace effect.

Lusaamia shows hyper-raising with a *that***-trace effect:** "The reconstructed reading is blocked by the presence of a complementizer in the embedded clause" (Carstens & Diercks 2013)

- (62) Scenario: You find that the watering hole is empty. Though there are no cows on site, you can say:
 - a. **no raising** Bi-bonekhana koti eng'ombe chi-ng'were amachi 8sA-appear that 10cow 10sA-drink 6water 'It appears that the cows drank the water'

b. R1, no complementizer

Eng'ombe chi-bonekhana chi-ng'were amachi 10cow 10sA-appear 10sA-drink 6water 'The cows appear to have drunk the water'

... but not:

c. R1, complementizer

*Eng'ombe chi-bonekhana koti chi-ng'were amachi 10cow 10sA-appear that 10sA-drink 6water 'The cows appear as if they have drunk the water' (Carstens & Diercks 2013)

12. ... in Zulu

(63) Zulu: hyper-raising over the complementizer ukuthi

- a. ku- bonakala [ukuthi uZinhle u-zo- xova ujeqe 17S- seems that AUG.1Zinhle 1S- FUT- make AUG.1steamed.bread
- b. uZinhle u- bonakala [ukuthi __ u- zo- xova ujeqe AUG.1Zinhle 1S- seem that 1S- FUT- make AUG.1steamed.bread

(64) Raising preserves idiomatic subject readings

- a. ku-bonakala [ukuthi iqhina li-zo-phuma embizeni] 17S-seem that AUG .5steinbok 1S-FUT-exit LOC.3cooking.pot
- b. iqhina li-bonakala [ukuthi li-zo-phuma embizeni] AUG .5steinbok 5S-seem that 5S-FUT-exit LOC.3cooking.pot 'It seems that the secret will come out.' literal: 'It seems that the steinbok will get out of the cooking pot.'

(65) Optional matrix agreement with hyper-raised subject

- a. ku- bonakala [ukuthi uZinhle u- zo- xova ujeqe] 17S- seems that AUG.1Zinhle 1S- FUT- make AUG.1steamed.bread
- b. uZinhle u- bonakala [ukuthi u- zo- xova ujeqe AUG .1Zinhle i **1S**- seem that 1S- FUT- make AUG .1steamed.bread
- c. uZinhle **ku** bonakala [ukuthi u- zo- xova ujeqe AUG .1Zinhle **17S**- seems that 1S- FUT- make AUG.1steamed.bread 'It seems that Zinhle will make steamed bread.'

Borrowing from Halpert's proposal:

• The optional morphological agreement in (65) reflects the fact that the R1 probe (= T for Halpert) agrees *twice* (and which of these instances Agree is reflected morphologically is underdetermined).

- This does not happen in English if English CP lacks φ-features (McCloskey 1991; Iatridou & Embick 1997), in contrast to its Zulu counterpart.
- In Zulu, only the DP goal can satisfy EPP, so it is the goal that moves, regardless of verbal morphology.



Developing Halpert's proposal in an Exfoliation setting:

- Assume, following Rackowski & Richards (2005), that the successful contacting of CP by the R1 probe dephases that CP allowing subsequent interaction with the subject. This makes exfoliation of CP not only unnecessary but impossible.
- If the R1 probe in Zulu always successfully interacts with an *ukuthi*-clause before finding the subject within it, and if this interaction eliminates the phase-edge problem for the subject....
- ... then we expect that exfoliation will be not only unnecessary, but impossible ...
- ...which might explain why Raising from an infinitive is impossible.

(66) Zulu: no raising from infinitive

*uZinhle u- bonakala [uku- (zo-) xova ujeqe] AUG .1Zinhle 1S- seem INF- (FUT-) make AUG.1steamed.bread 'It seems that Zinhle will make bread.

• Of course, Zulu *has* an infinitive, used in control structures (and with a lexical subject, cf. English *for*). So these structures must involve a probe (in the Control superstructure) that cannot agree with CPs.