

Non-simultaneous spell-out in clausal and nominal domain*

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x.1 Introduction

Phases have interface realities, that is, they are propositional elements at the LF interface and have certain phonetic independence at the PF interface (Chomsky 2004, 2005a). These interface units are created by spell-out, the operation shipping syntactic structure to the two interfaces. Since according to the phase theory, spell-out applies cyclicly, we should have multiple interface units. Whatever gets shipped to the interfaces at one go is a unit at the relevant interface. By looking at the PF and LF properties of various syntactic objects and checking their composition (what kind of units we have), we can determine their phasal composition (cf. Matushansky 2003).

In this paper, I will show that apart from CP and ν P, other projections behave as phases as well. What interests us most is that certain projections behave as phases at one, but not both interfaces, that is, certain projections correspond to phonetic units, but are not propositional. There are also others that are propositional, while at the same time lack the expected PF independence. In particular, non-finite TP (or whatever is the top projection of an embedded non-finite clause) has no PF independence but is at the same time a propositional element. Unaccusative or raising ν P does not pass PF phase tests, but turns out to be a projection where a raised quantifier can get interpreted. In the nominal domain, DP/KP (or whatever is the top projection of the noun phrase) is not a propositional element but has very obviously PF independence (it is a most intuitive phase, yet most intuitive only in the PF sense). An internal projection of the noun phrase, e.g. NP or NumP, does not have PF independence but behaves as a projection where quantifiers get interpreted. It is therefore an LF phase.

Interestingly, this is exactly the phasal composition we need in order to derive the two most obvious phenomena where the locus of interpretation differs from the locus of

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pronunciation: total reconstruction (of indefinites in raising constructions) and quantifier raising. Namely, if at some point in the derivation, the structure built thus far gets spelled-out to one but not to the other interface, whatever was meant for the other interface but was not spelled-out to this interface remains in the derivation and can even move further as the derivation progresses. If a partially spelled-out constituent does indeed move further, it ends up being spelled-out to the other interface at a later point in some other position. As a result, the position of an element would differ from one interface to the other. In case of raising verbs, since they are phases only for the LF interface, the PF part of the embedded subject can move to the matrix clause (to get case etc.), but its LF part gets spelled-out inside the lower clause. This results in the subject being pronounced within the matrix clause yet at the same time interpreted inside the embedded clause, which is known as total reconstruction. The opposite is true of the DP/KP. The entire noun phrase gets spelled-out to the PF interface, but it does not get spelled-out to the LF interface. Thus the LF part of the nominal can participate in the derivation and LF related features can move from inside the DP/KP. This would give us a syntactic object pronounced at some low position while interpreted higher in the structure, which is what we call covert movement (quantifier raising being a very clear and uncontroversial case of it).

What we get is thus a completely derivational account of total reconstruction and quantifier raising, which explains the two phenomena with the same mechanism.¹

x.1.1 (Non-)simultaneous spell-out and phases

Phases are stages or cycles of the derivation at the completion of which the complement of the phase head is sent to the two interfaces. Spell-out is said to be simultaneous to the two interfaces. This is the most straightforward and the most restricted possibility. It is also the only symmetric possibility. However, if phases represent units at the interfaces, and if this is the only way units are created, then this answer is quite clearly wrong. We have on the one hand compounds, which are semantically complex but phonologically simple expressions, and on the other hand idioms, which are phonologically complex but semantically simple expressions (complexity is here measured in the number of internal units).

¹ Actually, this is already done by the copy theory of movement, but its explanation is not ideal for other reasons discussed below and in more detail in Marušič (2005).

I explore the possibility of having spell-out occurring independently to a single interface. This would mean that, at the point of spell-out, only some features of the structure built thus far would get frozen and shipped to an interface. Since lexical items are composed of three types of features, semantic, phonetic, and formal ($\{S,P,F\}$), if only one type gets frozen; the other two can still take part in the derivation. For example, if the complement of a certain head is only spelled-out to LF but not PF (let us call this an **LF-only phase**), its completion would freeze all the features that must end up at LF, but not those that are relevant for PF. Then, at the next (full) phase, when the derivation reaches e.g. νP , the structure ready to be shipped to PF would be twice the size of the structure ready to get shipped to LF, since part of the structure has been already shipped to LF at the earlier LF-only spell-out. Non-simultaneous spell-out to the two interfaces is not a new idea. It has already been proposed in Megerdooian (2003), Felser (2004), Wurmbrand & Bobaljik (2003) (an earlier version of Bobaljik & Wurmbrand 2005), and Marušič and Žaucer (2006). It is also hinted at in Sauerland & Elbourne (2002) and offered as a possibility but rejected in Matushansky (2003).

One obvious but so far unmentioned problem comes to mind if one accepts non-simultaneous spell-out. A phase boundary is not only the point where the completed phase is spelled-out, but also the point where a new phase starts. If the points of the LF and PF spell-out differ, does it mean the starting points of new phases also differ? Since a phase is defined as a complete cycle, including the subarray and the derivation, having completely independent phases would suggest completely independent subarrays consisting of PF-only or LF-only related material/features. But that would suggest the matching of PF and LF is a result of pure coincidence, which seems plainly wrong. After all, simultaneous spell-out is presumably the normal way things work; it is non-simultaneous spell-out that is exceptional. I am assuming that lexical items (and other elements in the numeration) comprise sets of the three kinds of features discussed earlier $\{S,P,F\}$. Therefore, all features enter the derivation at the same time, simply because of the nature of the lexicon. That is to say, if a lexical item consists only of semantic and formal but no PF features (e.g. the null verbs of e.g. Marušič and Žaucer 2005, see also reference cited there) or the other way around (having PF features, but no LF features), then the PF and LF numerations would indeed differ. However, this would not be through phase mismatch, but rather a consequence of the feature makeup of the specific lexical items. PF and LF portions of the structure would still both be shipped to their

respective interfaces at the point of spell-out; just that the amount of spelled-out material would diverge.

Assuming the lexicon consists of lexical items of the form {S,P,F}, as explained above, numeration and its subarrays cannot consist of exclusively LF/S or exclusively PF/P features. Every subarray of the numeration is both a PF and an LF subarray, and therefore starts both a PF and an LF phase.

It also seems natural to say that by the time the derivation reaches the point of spell-out, the subarray must be emptied. In other words, when new elements enter the derivation in a new subarray, no old ones should remain.² If, at the point of spell-out, the derivation is not shipped to both interfaces, one could say that the phase is not really completed. Perhaps in this case the lower subarray could still provide items for the derivation, but then the lower subarray also would not have been emptied. Thus, it seems that even at the point where only a partial phase is completed, the subarray must be completely empty. Assuming it is empty, then, of course, the new phase must bring in items relevant for both interfaces (both S and P features). Thus, any partial phase acts as a starting point for both phases.

Notice that it does not matter how much material is being shipped to the interfaces at the point of spell-out, since a phase regularly accepts items that joined the derivation in a previous phase and moved up. In the case of an LF-only phase, the next PF phase would spell-out structure constructed from two subarrays, corresponding to the two LF phases. Thus, if we accept non-simultaneous spell-out, phases still remain parallel and have a one to one correspondence; it is just that in some cases they do not spell-out to both interfaces simultaneously.³

In this view, when a phase is said to be either PF-only or LF-only, it is actually the spell-out mechanism that is non-simultaneous, so that at the point of spell-out the structure is only transferred to one of the two interfaces. Only the spell-out is LF or PF-only, not the entire phase.

² Assuming we have a single active memory location for subarrays, one might say that the old items from the previous subarray get simply overwritten.

³ See Marušič (2005) for a longer discussion of this mechanism and a detailed explanation of the workings of non-simultaneous spell-out. Various issues come to mind once we step off the beaten track, which is what I am doing here, but in the interest of space I cannot address all of them in this paper.

x.2 Phases in the clausal domain

In the phase theory (Chomsky 2004, 2005a,b), the standard idea is that the two phases in the clausal domain are CP and active ν P. I will show evidence that suggest unaccusative ν P is also a partial phase, one that spells-out only to LF. Another phase that spells-out to LF alone is non-finite TP (or whatever is the topmost projection in non-finite clauses). Whether non-finite TP is a phase because finite TP is also a phase or because of something else (e.g. some phase-sliding mechanism, as proposed by Gallego 2006) is a question I will not address here.

I am assuming a much richer clausal structure than just CP-TP- ν P. When I propose that some projection is a phase because it matches to a proposition at the LF interface, I am actually saying that there is some projection around TP that becomes a proposition when shipped to the LF interface. At the same time, when the interpretation of a quantifier reveals that some projection is a phase edge, I do not mean that the very same projection is headed by the phase head whose complement gets spelled-out to the LF interface. Rather, I want to say that there is a projection in the area whose complement gets spelled-out to LF and whose head attracts quantifiers so that they can get interpreted and possibly move further. The two projections should obviously be one above other. That is, the projection that is mapped to a proposition is the complement of the quantifier attracting head. The exact identity of such projections is not important for present purposes.

x.2.1 Non-finite TP

As shown in Marušič (2003, to appear), non-finite clausal complements lack a CP projection. Without a CP projection these constructions lack a strong phase between the two clauses. I will show here that the non-finite clausal complement is nevertheless a phase, but that it is only an LF/semantic phase. That is, the complement is spelled-out to LF once it is completed.

Then I will show that the same chunk of structure is not spelled-out to PF at the same time.⁴

(i) *LF phasehood*: Just like finite clausal complements, non-finite clausal complements denote propositions. Propositions are the LF reality of phases (Chomsky 2000, 2001 ...). Non-finite clausal complements are opaque/intensional – an indefinite inside a non-finite clausal complement can have non-specific interpretation, a non-denoting term would not yield falsity of the entire sentence, etc. (all these properties are obviously related to the semantic type of the non-finite clause). For example, there need not be any specific Finn that Vid decided to marry for sentence (1a) to be true; Vid simply decided that he will marry a Finn, but does not know yet whom. In addition, in (1b), a non-denoting term in the complement does not necessarily yield falsity. Similar examples can be given for every other type of non-finite complementation.

- (1) a. Vid se je sklenil poročiti z eno Finko.⁵
Vid REFL AUX decided marry_{INF} with a Fin
'Vid decided to marry a Finn.'
- b. Vid se je sklenil poročiti z vampirko.
Vid REFL AUX decided marry_{INF} with vampire
'Vid decided to marry a female vampire.'

We can also find supporting evidence for the claim that there is an LF phase under the matrix verb if we check the interpretation of universal quantifiers inside embedded non-finite clauses. Since the scope position of a universal quantifier is standardly taken to indicate the

⁴ I am ignoring the question of the exact identity of the topmost projection in non-finite clauses. Wurmbrand (2001) claims there are at least four different types of non-finite clauses. Following her, restructuring infinitives could be only VPs. I am simplifying and label the topmost projection a TP, even though Wurmbrand (2006) claims non-finite clauses specifically do not have TP at all. But TP is used only as a label. As I have explained above, I am assuming a richer structure, so that what I am talking about here is a projection in the TP/IP region. The projection we are talking about could also be the matrix verb taking a clausal complement and inducing a phase (cf. Wurmbrand and Bobaljik 2003), actually, it would be a projection below the matrix verb, the projection mediating between the clausal complement and the verb.

⁵ Examples that are not in English are in Slovenian.

edge of an (LF) phase (QR, being a syntactic movement, has to proceed through LF phase edges where it also takes scope), finding an example where the quantifier gets interpreted inside the scope of the matrix verb should show that the embedded clause is an LF phase, and that it has an LF phase edge (cf. Legate 2003, 2004, Sauerland 2003 among others). As shown in (2a), the universal quantifier can be understood inside the scope of the matrix verb, since the sentence has the interpretation under which Vid forgot to close all the windows, but did manage to close some. Similarly in (2b), the universal quantifier can take scope under negation, which is understood inside the scope of the matrix predicate *odločil* ‘decide’. What Janez decided is not to close all windows, but to leave some of them open. In this last case, the universal quantifier gets scope in between the matrix verb and negation (his decision is about every window, not about each individual one).

- (2) a. Vid je pozabil zapreti vsa okna. *forgot* > \forall
 Vid AUX forgot close_{INF} all windows
 ‘Vid forgot to close all windows.’
- b. Janez se je odločil ne zapreti vsa okna. *decide* > *not* > \forall
 Janez REFL AUX decided not close_{INF} all windows \forall > not
 ‘Janez decided not to close all windows.’

Since the universal quantifier in (2b) is understood inside the scope of negation, it might be argued that it is actually interpreted at the ν P phase rather than at the phase immediately under the matrix verb. But as said, (2b) also has the interpretation where the universal quantifier is inside the scope of the matrix verb but outside of the scope of negation. For this particular interpretation, the quantifier gets interpreted in between the verb and negation. This argues for the existence of a phase edge, in particular for the existence of an LF phase edge that closes off the embedded clause. We can also avoid the ν P phase, if we use an unaccusative verb in the non-finite complement. In this case the quantifier must be put in an adjunct position. Regardless of the lack of ν P, a quantifier can still be interpreted inside the scope of the matrix verb, as in (3). Since there is supposedly no other phase (assuming an adjunct by itself is not a phase), the non-finite TP (or some projection just above it) has to be the projection where the quantifier gets interpreted.

- (3) Meta je sklenila priti vsako soboto.
 Meta AUX decide arrive_{INF} every saturday
 ‘Meta decided to arrive on every Saturday.’ decided > all

In addition, if the lower clause consists of more than just the embedded VP and *v*P (which can easily be shown with adverbs that are part of the embedded clause, as in (4)), then it makes perfect sense to include all the functional projections of the lower clause in the semantic computation of the lower clause, rather than in the computation of the matrix clause. As mentioned, the entire complement clause expresses a proposition, not just the lowest *v*P inside. It expresses a proposition regardless of the type of verb inside the complement clause. Even if the complement has an unaccusative verb (which does not have a *v*P phase), the complement still corresponds semantically to a proposition, and as such is a perfect candidate for an LF spell-out unit.

- (4) Peter je sklenil (bolj) pogosto obiskovati babico.
 Peter AUX decided (more) often visit_{INF} grandmother
 ‘Peter decided to visit grandmother (more) often.’

ECM constructions, as in (5), are typically analyzed as not having the CP projection, since the subject from the embedded clause can get case from the matrix verb. Thus, if we can interpret a DP in the region between the verb and the embedded negation, it would have to be in SpecTP. To illustrate, in the crucial interpretation of (5), the embedded subject takes scope over the embedded object, which in turn takes scope over negation. This reading should be paraphrasable as ‘John expects that there is someone for whom it is true that for all classes, he will not attend them’. The embedded subject of the example (5) can definitely be understood *de dicto*, suggesting it is interpreted inside the lower clause. Since the embedded object can be interpreted inside the scope of the indefinite and outside of the scope of negation (assuming QR goes through phase edges), the embedded object must be in the phase edge in the lower SpecTP (in the lower specifier).

- (5) John expects some student not to attend all classes. $\exists > \forall > \text{not}$

There are arguments for claiming finite TP is also a phase (contra Chomsky 2000, 2001, etc, following Uriagereka & Martin 1999, and Sauerland & Elbourne 2002, cf. also Grohmann 2000). TP is a projection that maps to a proposition, which becomes quite obvious if one looks at modals. The sentences in (6) are ambiguous between root and epistemic interpretation of the modal.

- (6) a. You must be in the University Café right now.
b. Every Stony Brook student must be in the University Café right now.
c. A Stony Brook student must be in the University Café right now.

Root modal interpretation of (6a) is typically paraphrased as: ‘*you have the obligation to be in the University Café right now.*’ The epistemic modal interpretation, on the other hand, is commonly paraphrased as *it is a necessary assumption that you are in the University Café right now.* The two paraphrases already suggest a difference between the two modals with respect to the scope of the subject. Whereas the root modal takes narrow scope with respect to the subject, the epistemic modal takes wide scope. In simplified logical notation, (6c) would get the following two interpretations, $\exists x \Box [Px]$ —there is an x such that it is necessary that P(x) is true—for the root and $\Box \exists x [Px]$ —it is necessary that there is an x such that P(x) is true—for the epistemic reading. Assuming the subject is always positioned in SpecTP, the difference has to come from the position of the modal. Indeed, the two modals are argued to be located in two different functional projections, the epistemic ModP is higher than TP while the root ModP is lower (e.g. Cinque 1999, 2004, Butler 2003).

Kratzer (1981, 1991) analyzes both modals as propositional operators (they combine with a proposition to give a proposition) quantifying over possible worlds. This is most clearly seen for epistemic modals that are commonly said to take scope over the whole sentence. Butler (2003), building on Kratzer’s analysis, claims that modals scope over any propositional element. Thus, if we accept that there are two strong phases, we get two modals: root modals that scope over the νP proposition and epistemic modals that scope over the TP. Although Butler does not take TP to be a phase, it seems that he should, after all, he is paralleling TP and νP . He claims that (epistemic) modality is bound to the CP phase. The complement of C, for him the TP is the semantic unit. But instead of saying something similar is true for νP as well, he puts another CP between TP and νP . Whatever the exact

workings of his analysis are, the parallel we are seeking between vP and TP has been established. Both projections have the same status for Butler; neither is a phase, but they still both match to a proposition, which would mean they are both units at LF spell-out.

Thus we seem to have an LF phase where we would not expect any, since I have shown that there is no CP in non-finite complement clauses. Uriagereka & Martin (1999) and Sauerland & Elbourne (2002) claim that finite TPs are also phases. If this is true, arguing non-finite TP is a phase seems natural. Bobaljik & Wurmbrand (2005) claim verbs taking a non-finite clausal complement induce agreement domains, which are also loci of quantifier interpretation. In an earlier version of their paper (Wurmbrand & Bobaljik 2003) they call them LF only phases. Regardless of where the phasehood comes from, the crucial question now is whether these phases are really LF-only phases, or are they complete phases (both PF and LF). I will now look at PF phase diagnostics and show that these LF phases do not have the properties of PF phases.

(ii) *PF phasehood*: As mentioned earlier, following Marušič (2003), non-finite embedded clauses do not have a CP projection. This means that they lack a strong phase. However, we saw earlier that LF diagnostics showed there is nevertheless a phase in between the two clauses. We now turn to the phonological properties of non-finite complementation.

Assuming phonological positioning of clitics, clitics move to the second position inside the relevant prosodic unit. Clitics climb from non-finite clauses in Slovenian (cf. Golden 2003, Marušič 2003), therefore there is no PF boundary between the two clauses that would block their fronting. However, there are some refined tests available for PF phasehood. Matushansky (2003), following Legate (2003, 2004), gives three types of diagnostics for PF phases: *nuclear stress rule application*, *movement*, and *isolability*.

A PF phase, the point at which structure is sent to the PF component, should be the locus of the Nuclear Stress Rule application (cf. Cinque 1993). The Nuclear Stress Rule is a phonological rule that gives the nuclear stress to the right most lexical element in the structure. It is reasonable to assume it applies to a structure when it is shipped to PF; that is, at every (PF) phase. Thus every PF phase brings another application of the nuclear stress rule. Finite clausal complements seem to have two intonational phrases with a pause in between the two clauses and main stress on the right most lexical word of each clause, as shown in (7a) (sentences have to be pronounced with neutral intonation for this to be observable). This

is not the case in non-finite complementation, where the entire sentence is most naturally pronounced as a single intonational phrase with only one main sentential stress, (7b,c). Since non-finite clauses also lack CP, one could imagine this lack of nuclear stress is a direct consequence of the lack of a CP phase.

- (7) a. Peter je včeraj povedal **Meti**, da bo prišel na zabavo **sam**.
 Peter AUX yesterday told Meta that AUX come to party alone
 ‘Peter told Meta yesterday that he will come to the party alone.’
- b. Peter je včeraj sklenil priti danes k nam na **zabavo**.
 Peter AUX yesterday decided come_{INF} today to us to party
 ‘Peter yesterday decided to come today to us for a party.’
- c. Peter je včeraj Meti ukazal priti danes k nam na **zabavo**.
 Peter AUX yesterday Meta ordered come_{INF} today to us to party
 ‘Peter yesterday decided to come today to us for a party.’

If a phrase is a phase, then it should also be available for movement. In particular, it should participate in various types of (potentially) PF movements. Matushansky (2003) concludes that, according to this diagnostic, TP is not a PF phase. She notes that TP does not participate in ‘movement-like structures that may not involve purely syntactic movement’ (Matushansky 2003, p.10). As shown in (8a), CP can be extraposed, but TP cannot (8b). Similarly, (8c) shows that TP cannot be topic left-dislocated (while CP and DP can be). The same is true of pseudo-clefting, as shown in (8d). ((8) from Matushansky 2003, (19), (20), (23))

- (8) a. It surprised Ron [_{CP} that Hermione was interested in someone else].
 b. *It surprised Ron [_{TP}Hermione (to) be interested in someone else].
 c. *[Hermione (to) be interested in Viktor], who could imagine **it**.
 d. *What Goneril seemed was [_{TP}to fear King Lear].

Additionally, Slovenian sentences with non-finite complement clauses allow a kind of multiple scrambling presented in (9) (note that Slovenian is an SVO language). The kind of scrambling shown in (9) is only allowed within a sentence/clause. Normally, only one

element can scramble over a finite CP, but in cases where more than one can scramble, they must form a constituent and appear leftmost. Thus, both (10d), with the fronted constituent following the matrix subject, and (10e), with two elements from the embedded clause surrounding the intervening matrix subject, are bad. No such restrictions hold for scrambling within a single clause.

- (9) Medveda je že včeraj po gozdu brez puške iskal Peter.
 Bear AUX already yesterday around forest without gun search Peter
 ‘Peter looked for a bear in the forest without a gun already yesterday.’
- (10) a. Janez pravi, da je Meta pozabla iti včeraj domov
 Janez says that AUX Meta forgot go_{INF} yesterday home
 ‘Janez says that Meta forgot to go home yesterday.’
 b. Domov, pravi Janez, da je Meta pozabla iti včeraj.
 home says Janez that AUX Meta forgot go_{INF} yesterday
 c. Pozabla iti domov pravi Janez, da je Meta včeraj.
 forgot go_{INF} home says Janez that AUX Meta yesterday
 d. *Janez pozabla iti domov, pravi, da je Meta včeraj.
 Janez forgot go_{INF} home says that AUX Meta yesterday
 e. *Domov Janez včeraj pravi, da je Meta iti pozabla.
 home Janez yesterday says that AUX Meta go_{INF} forgot

Very clearly, the kind of reordering in (9) is not available in (10). This reordering or multiple scrambling is available in non-finite complementation basically to the same degree as it is in simple monoclausal sentences – anything can appear anywhere.⁶

(11a) is a basic sentence with neutral word order. The embedded clause (written in bold) follows the matrix verb. The other examples in (11) have scrambled word order, with the differences between them being simply stylistic.

⁶ I am not using any adverbs in these cases, since they have a more fixed linear order.

- (11) a. Peter je včeraj v gostilni pozabil **povabiti Vida na žur**.
 Peter AUX yesterday in pub forgot invite_{INF} Vida to party
 ‘Yesterday in the pub, Peter forgot to invite Vid to the party.’
- b. **Vida** je Peter **na žur** včeraj v gostilni **povabiti** pozabil.
 Vid AUX Peter to party yesterday in pub invite_{INF} forgot
- c. **Na žur** je **Vida** Peter včeraj v gostilni **povabiti** pozabil.
 to party AUX Vid Peter yesterday in pub invite_{INF} forgot
- d. **Na žur** je Peter **Vida** včeraj v gostilni **povabiti** pozabil.
 to party AUX Peter Vid yesterday in pub invite_{INF} forgot
- e. **Vida** je **na žur** Peter včeraj v gostilni **povabiti** pozabil.
 Vid AUX to party Peter yesterday in pub invite_{INF} forgot
- f. Peter je **povabiti Vida na žur** včeraj v gostilni pozabil.
 Peter AUX invite_{INF} Vid to party yesterday in pub forget
- g. **Povabiti** je **Vida na žur** Peter včeraj v gostilni pozabil.
 invite_{INF} AUX Vid to party Peter yesterday in pub forget
- h. **Povabiti** je **Vida** Peter **na žur** včeraj v gostilni pozabil.
 invite_{INF} AUX Vid Peter to party yesterday in pub forget
- i. **Povabiti** je Peter **na žur** včeraj v gostilni pozabil **Vida**.
 invite_{INF} AUX Peter to party yesterday in pub forget Vid
- j. **Povabiti** je Peter včeraj v gostilni pozabil **Vida na žur**.
 invite_{INF} AUX Peter yesterday in pub forget Vid to party
- ...

This largely unconstrained reordering is semantically vacuous, as shown (12), where the pronoun can be bound by the originally c-commanding quantifier regardless of where the pronoun ends up being scrambled to, even if it is pronounced in a position that should in principle be c-commanding the quantifier (that is, if this reordering is syntactic). Multiple scrambling is also insensitive to principle C (cf. Marušič 2005).

- (12) a. [Vsak bolan otrok]_i je ukazal sestri **prinesti kosilo v njegovo_i sobo**
 Every sick child AUX ordered sister bring_{INF} lunch in his room
 ‘Every sick child ordered his sister to bring lunch to his room.’

- b. **Kosilo** je ukazal sestri **v njegovo_i sobo prnesti** [vsak bolan otrok]_i.
- c. **V njegovo_i sobo** je sestri **kosilo ukazal prnesti** [vsak bolan otrok]_i.
- d. **V njegovo_i sobo** je [vsak bolan otrok]_i sestri **kosilo prnesti ukazal**.

...

Multiple scrambling could not be a simple syntactic left dislocation, since then we might expect it to be available out of non-finite clauses as well; in particular, we would expect sentences (10d,e) to be acceptable, just like the comparable (11d) and (11f), contrary to fact.

Multiple scrambling is acceptable only with special intonation, and is subject to total reconstruction. Sauerland & Elbourne (2002) (cf. Aoun & Benmamoun 1998) argue that only PF movements totally reconstruct. Following this view, multiple scrambling is not syntactic, but rather an instance of PF movement. If multiple scrambling is PF movement, it is most reasonably limited to a PF unit, and since PF units are created by (PF) phases, we can conclude that there is no PF-phase in between the matrix the embedded non-finite clause. If that is the case, then Slovenian non-finite clauses do not get spelled out to PF.

Matushansky (2003) also discusses isolability as a potential diagnostic for PF phases. If a certain phrase can be pronounced alone, outside of its proper place in a sentence, then it is a good candidate for PF phasehood. Following this diagnostic, non-finite clausal complements should be PF phases. As shown in (13), a non-finite clausal complement can be pronounced in isolation (both in English and Slovenian). However, as shown in (14) (from Matushansky 2003), this diagnostic does not always show PF phases. What is pronounced in isolation in (14) is neither *vP* nor *TP*, the two potential phases in the relevant region.

(13) a. (Peter ti je ukazal oditi v cerkev.) – oditi v cerkev?

*go*_{INF} in church

‘(Peter ordered you to go to church.) – to go to church?’

b. (Peter se je odločil kupit avto.) – kupit avto?

*buy*_{INF} car

‘(Peter decided to buy a car.) – to buy a car?’

(14) Alice didn’t leave. – Didn’t leave? What do you mean, didn’t leave?

In addition, TP is the typical locus of the EPP feature, also called by Chomsky (2005a,b) *the edge property*, allowing items from inside the phase to evacuate to its edge to remain active. TP is also the projection where agreement with *phi*-features takes place, again suggesting TP should be a phase, just like *v*P is the locus of Acc case assignment (and agreement with the object).⁷ These properties are all properties of finite T, but here, we are talking about non-finite TP; that is, a TP that does not assign Nom case⁸ and may not even have the EPP (its EPP is not visibly checked). In other words non-finite TP does not display two of the prominent features of a phase head. As discussed in Marušič (2005) (and also by many others), Case and (the standard) EPP are both properties associated with PF phases. Not having either suggests that the projection is not a phase for the PF interface. Since I have shown that non-finite complement clauses are propositional elements, and the location where quantifiers can take scope, I have argued that they are phases for the LF interface. Thus, we can conclude that non-finite TP is a locus of non-simultaneous spell-out, where structure only gets spelled-out to LF, but not to PF.

x.2.3 Unaccusative/raising vP

Active *v*P is standardly considered a phase. On the LF side, *v*P is considered a propositional element, since this is the projection where argument structure (which is clearly something relevant for the LF interface) is completed. Notice that argument structure is completed also at the level of raising and unaccusative *v*P. No projection higher than (unaccusative) *v*P introduces new arguments. Therefore, clearly in terms of the LF interface, both active and unaccusative *v*P are comparable. However, in terms of Case assignment, things are different. Case is a condition for the PF interface, and therefore case assignment could be seen as a property of PF phase edges (edges where structure gets spelled-out to the PF interface). With respect to Case assignment, the two *v*Ps have an obvious difference. Active *v*P assigns accusative case to the internal argument, while unaccusative *v*P does not.

⁷ Chomsky (2005b) acknowledging these properties claims they are all inherited from the phasal C.

⁸ For the Icelandic facts from Sigurðsson (1991) and Slavic facts from Franks (1995) and Marušič *et al* (2002, 2003) I want to say that (at least) the Nominative case on the depictives and floating quantifiers in these cases is actually an instance of default case.

(i) *LF phasehood*: Sauerland (2003) argues for the existence of an intermediate scope position in raising constructions, claiming the matrix ν P in raising constructions is a phase (contra Chomsky 2001). His claim is based on sentences like (15), where the universal quantifier falls under the scope of negation yet still binds the pronoun. This shows that it has to be interpreted higher than the internal object of the raising verb, and at the same time lower than negation. According to Sauerland, the only such position is ν P of the matrix raising predicate. Positions where raised quantifiers can take scope are phase edges, since quantifiers, when raising from within a lower phase have to move through them. Assuming that reconstruction does not involve a special operation like LF lowering (as in May 1985), every position through which a quantifier is moved is an edge position of the lower phase.

(15) Every child_i doesn't seem to his_i father to be a genius. *not* > \forall > *his*

A slightly different test can be constructed that seems to work also with other raising predicates like *likely*. Notice that the test also works without a universal quantifier binding a pronoun if we use floating quantifiers. The presence of the floating quantifier between negation, shown in (16a), and the raising predicate already suggests that the DP has moved through a position in that area (following Sportiche 1988), suggesting there is a phase edge position in between negation and the matrix verb; i.e., raising ν P. In addition, the universal quantifier in (16b) is also interpreted under negation and has wide scope with respect to the raising predicate, so it is interpreted in the Spec ν P position. The same is true of (16c). This should mean that the ν P above *likely* is indeed a phase edge for the LF interface. This means that structure gets spelled-out to the LF interface at the (unaccusative) ν P stage.

- (16) a. Children_i don't all seem to their_i parents to be smart.
 b. Our children don't all seem to be in the room.
 c. Austrians aren't all likely to be placed among the top 10.

On the basis of reconstruction facts, Legate (2004) also claims that passive, unaccusative, and raising ν Ps are phases, since *wh*-movement proceeds through them, allowing parts of the *wh*-word to be interpreted in ν P. Thus we have another reason to posit

LF phasehood of the raising ν P.

These arguments are not flawless. E.g. if one accepts Zanuttini's (1997) analysis that negation raises to a position above TP where it gets interpreted, then the position where the universal quantifier gets interpreted to get the desired reading of (15) and (16) need not be Spec ν P. Consequently, we do not have any reason to posit the intermediate position in the specifier of the raising ν P through which the quantifier moved. Nothing of what I want to show here depends on the raising ν P having or not-having the status of a non-simultaneous phase. I will continue to assume raising ν P is a partial phase, but it might as well be different.

(ii) *PF phasehood*: The preceding arguments have all been arguments for an LF spell-out, since they are concerned with the positions at which items get interpreted. As the first evidence against a simultaneous PF spell-out, I submit cases of long-distance agreement in English raising constructions. As shown in (17), the DP inside the embedded non-finite clause agrees with the matrix T. We have seen that there is an LF phase boundary between the position of a DP inside the lower clause and the matrix T, namely the embedded TP, and therefore there cannot be any agreement with LF related features. But since the DP has also PF related plural features, and since agreement is indeed observed, we can conclude that the DP and T must be PF phasemates.

(17) There seem to be mosquitoes all around me.

Raising ν P does not have the typical properties of PF phases. Of the three tests for PF phases, I will only use (PF) movement tests here, since the other two are more controversial. Taking Matushansky's (2003) paradigm of not clearly syntactic movements, we can test each type of movement with raising verbs. Doing so, we see that raising ν Ps cannot participate in pseudo-clefting, (18b-d), predicate fronting, (19b-e), or though constructions, (20b).

- (18) a. What Goneril did was [ν P blind Gloster]
b. *What there was was [ν P seem to be a man in the garden].
c. *What there was was [likely to be a man in the garden].

d.*?What somebody was was [likely to be in the garden].⁹

- (19) a. Mary said she would kick her, and [kick her] she did.
b.*Jill said John'd be likely to be inside and [likely to be inside] he was.
c.*John said Bill'd seem to be tired and [_{vP} seem to be tired] Bill did.
d.*John said Bill'd be believed to be able to drink 4 beers in 10 min., and [_{vP} believed to be able to drink 4 beers in 10 minutes] he was.¹⁰
e.*Bill said someone'd be likely to be inside and [likely to be inside] somebody was.
- (20) a. [_{vP} Marry her lover] though Juliet did, the results were disastrous.
b.*[_{vP} Seem to be tired] though Mary did, she still had to work.

These data show that raising *v*P's are not units at the PF interface, and that nothing gets spelled-out to the PF interface when a raising *v*P is completed. Accepting the arguments suggesting raising *v*P's are LF interface units, we have found another case of a non-simultaneous spell-out.

x.3 Phases in the nominal domain

x.3.1 DP/KP (the topmost nominal projection)

It is commonly assumed that DP is a phase. Upon closer examination however, it turns out that it is actually a deficient phase, since it clearly represents a unit at the PF interface, but it at the same time does not represent a proposition, and thus does not constitute a semantic (LF) phase. A quantifier does not constitute a natural semantic constituent with the NP restriction alone regardless of the way we analyze quantification. In both the relational (Larson 1991) and the clausal (Sportiche 1997) views of quantifiers, the semantic unit of the quantifier includes both its restriction (the NP) and its scope (the rest of the clause). Unless we put a pronominal representing the scope in the specifier of the DP, as in Larson (1991),

⁹ (20d) is said to be marginal in case there is a definite *somebody*. With wide scope of the indefinite, (20d) might be a case of a control equivalent of the raising construction.

¹⁰ There is some disagreement regarding the ungrammaticality of this example.

the top level projection of the quantified noun phrase does not form a semantic phase/unit.¹¹

(i) *LF phasehood*: Matushansky (2003) cites two tests for LF phases: (a) *phases have the status of a 'proposition'*, and (b) *QR and successive cyclic wh-movement can target edges of phases*. The first test is fairly clear and easy to make. Propositions are syntactic objects with the semantic type $\langle t \rangle$, while DPs are never of the semantic type $\langle t \rangle$. Lack of an LF phase/spell-out with the second test was most clearly shown by Sauerland (2005). He claims DP is not a scope island, and that quantifiers from inside the DP in inverse scope linking constructions never end up taking scope at the DP level (cf. e.g. Larson 1985). If quantifiers never take scope at the DP edge, then this should mean DP is not an appropriate scope position for quantifiers, which in turn means DP has no LF phase edge.

Sauerland's arguments come from Inverse scope linking constructions in which a quantified noun phrase (QNP) that is embedded inside another QNP takes scope higher than the QNP it is embedded in. So, although the structure is something like [QNP1 [QNP2]], the interpretation ends up being QNP2 > QNP1. To give an example, the embedded QNP *every linguist* in (21) can take scope over *one book*, which results in the interpretation that Tom read not only one book, but several. In other words, for every linguist, Tom read one book by this linguist.

(21) Tom read [_{DP} one book by [_{DP} every linguist]].

The main question at this point in these examples is, where exactly does the embedded QNP *every linguist* take scope, outside or inside the DP? The standard answer so far (e.g. Larson 1985) has been that it always takes scope inside the DP, but just outside of

¹¹ A reviewer points out that deverbal nominals clearly involve argument structure and are typically argued to be propositional. If the completion of argument structure and propositionality is evidence of LF phasehood, then noun phrases like 'John's paintings of Mary' should be LF phases. But notice that as shown in section x.3.2, there is evidence for a DP internal LF phase that could possibly be equated with the one just mentioned. Note further that DP's LF phasehood is challenged not by the semantic properties of the noun inside DP, but rather by the semantic properties of the quantifier. If 'John's' is the determiner in 'John's picture of Mary', then the issue remains, but since nominals like 'all Leonardo's paintings' are also available, we can still argue the entire DP is not a phase in these cases for the same (quantification related) reason just like any other quantified noun phrase.

the quantifier. Sauerland (2005) argues against this view, and shows that an embedded QNP can indeed take scope outside the main DP. But before we go into his main arguments, let us first review his main background assumptions. Sauerland looks at inverse scope linking constructions in the object position of an intensional verb. Since there are three quantificational elements, great care is needed to determine which element takes scope over another one. As Sauerland points out, indefinites are good for testing narrow scope with respect to an intensional verb. A sentence like (22) has two readings, corresponding to the two relative scopes of the indefinite and the intensional verb.

(22) Jon wants to marry someone from Valencia.

On one reading, marrying anyone from Valencia would satisfy Jon (e.g. Jon does not know anyone from Valencia, so he does not have the desire to marry anyone in particular, but believes that Valencian girls are really beautiful, since he heard it from a friend). In this case the indefinite takes scope under the intensional verb. On the other reading, there is someone from Valencia (e.g. Jessica Serrano), such that Jon wants to marry her. On this reading (as is obvious from the paraphrase), the indefinite takes scope over the intensional verb. Note that wide scope of the indefinite is sometimes argued to arise from reasons other than QR, but since indefinites will be used to determine narrow scope, this is not really important.

Plurals, on the other hand, are good for testing wide scope relative to an intensional verb. In (23), there are again two readings. The narrow scope reading of the plural DP *these two women from Nicosia*, is true in a situation where John wants to marry both women we are talking about. The wide scope reading, on the other hand is true in a situation where John wants to marry either of the two women, but not both of them. This second reading is said to require QR of the plural DP over the intensional verb. That this is really related to QR is shown by example (24), which is according to Sauerland necessarily understood with the narrow scope (CP blocks QR, so that the plural is always under the intensional verb), so that it is only true in a situation where Sue desires that John marries twice.

(23) John wants to marry these two women from Nicosia.

(24) Sue desires that John marry these two women from Nicosia.

(cf. Sauerland 2005, 305)

Putting the proposed wide and narrow scope tests together, Sauerland constructs an example with a plural DP inside an indefinite DP. The point is to separate the two parts of the DP (the embedded QNP2 and the main QNP1) with the help of an intervening intensional verb. Since indefinites are easy to test for narrow scope and plurals for wide scope, QNP2 should be a plural and QNP1 an indefinite. This kind of DP is observed in (25). As Sauerland argues, the embedded QNP2 *these two countries* in (25a) can take scope not only higher than *someone*, but also higher than *want*. At the same time, *someone* takes narrow scope with respect to *want*. (example (25) from Sauerland 2005, p. 306, ex. (8))

- (25) a. *Sue wanted to marry someone from these two countries.*
 b. ‘For these two countries, there’s someone that Sue wanted to marry.’
 (two > someone > want)
 c. ‘Sue’s wish: for these two countries, marry someone from that country.’
 (want > two > someone)
 d. ‘For these two countries, Sue had the desire to marry someone from that country.’
 (two > want > someone)

(25d) should not exist if the embedded QNP2 takes scope inside the DP, yet this is the salient reading in a context where Sue writes in a personal add that she is looking for a Japanese or Canadian man to marry. Comparable facts are found in Slovenian. (26) indeed has the interpretation where Sue wanted to marry only once and that she did not care whom she married as long as that person was from one of the two countries she specified.¹²

¹² At the same time an indefinite under an intensional verb can be understood non-specifically, parallel to (22), and a plural can scope wider than the intensional verb, parallel to (23), (i). Additionally, when QR is impossible (e.g. out of finite clausal complements), such reading is also impossible, (ii).

- (i) Rok si danes želi it na ta dva hriba. Ali na Krn ali pa na Rž.
 Rok REFL today wish go on this two hills either on Krn or else on Rž
 ‘Rok wishes to go to these two mountains today. Either Krn or Rž.’
- (ii) # Želi si da bi danes šel na ta dva hriba. Ali na Krn ali na Rž.
 wish REFL that COND today go on this two hills either on Krn or on Rž
 ‘He wishes that he would climb these two hills today. Either Krn or Rž.’

- (26) Marija je hotela poročiti nekoga iz teh dveh držav
 Marija AUX wanted marry someone from these two countries
 ‘Marija wanted to marry someone from these two countries.’

Sauerland suggests that the DP internal QNP2 never takes scope at the DP edge. Since scope taking is a determining factor for (LF) phase edges, not being able to take scope at the DP edge means that the DP edge is not an (LF) phase edge.

A different argument showing that DP is not a scope island can also be produced. If contained QNPs can only scope at the edge of the containing QNP, then we have a strong prediction in the case where a contained QNP embeds another QNP. I have in mind something like the examples in (27), sketched in (28).

- (27) a. Some exit from [every freeway in [a large California city]]
 b. Every book by [some author from [some Eastern European country]]

- (28) [QP1 Q1 [NP1 ... [QP2 Q2 [NP2 ... [QP3 Q3 [NP3 ...]]]]]]

In these cases, DP-only scoping predicts that QP3 can not QR directly to QP1, eliminating the possibility for the scope order in (29). It also predicts other scope orderings to be impossible, but I will limit myself to this one.

- (29) *QP3 > QP1 > QP2

This prediction does not bear out. (30), with three QNPs, one inside the other, is obviously multiply ambiguous. In a situation where Vili is a building manager and has to take care of several buildings, the interpretation of the QPs in their base order refers to no key, since a door can only be located in one house (in case he would only have one house, this would be different). But even the predicted interpretation, with the order QP1 > QP3 > QP2, (30b), is not the most salient reading, nor is it the most pragmatically reasonable. The most salient, natural, and pragmatically acceptable reading is the reading given in (30c), where the most embedded QP3 takes scope over the main QP1. According to this sequence of quantifiers, what Vili got is a master key for each building he takes care of.

- (30) a. Viliju sem dal en ključ za vsa vrata v vseh njegovih stavbah.
 Vili AUX give one key for all door in all his buildings
 ‘I gave Vili a key for all doors in all his buildings.’
 b. Vili got a master key that opens all doors for each house.
 c. Vili got a single master key for all the doors in all his houses.

Just like the facts by Sauerland (2005), presented above in (25), the Slovenian facts in (30) also show that DP is indeed not a scope island. Following Sauerland, I will extend this finding to claim QR never targets the DP edge, meaning that DP is not an LF phase (does not spell-out to LF).

(ii) *PF phasehood*: Matushansky (2003) shows that in the case of DP, PF and LF diagnostics actually produce contradictory results. LF diagnostics, on the one hand, show that DP is not a phase, while PF diagnostics, on the other hand show that it is. Of the three PF tests Matushansky uses, we will skip *isolation* because of its previously mentioned problems.

We will first have a look at movement structures that possibly do not involve purely syntactic operations. One such case is extraposition. Since it only applies to *v*Ps and CPs and not to DPs (there is possibly a syntactic reason for that), it is not useful in our case. Topic left dislocation, on the other hand, a possible test for the same effect, applies to DPs, and CPs, but it does not work with *v*Ps, (31) (examples (31) through (35) are from Matushansky 2003, p. 10-11).

- (31) a. [_{CP} That Hermione was interested in someone else], who could imagine **it**?
 b. [_{DP} Hermione’s interest in someone else], who could imagine **it**?
 c. [Hermione be interested in Viktor], who could imagine **it**?

Clefting, as in (32), does not apply to *v*Ps, but it again applies to both CPs and DPs.

- (32) a. It’s [_{CP} that Desdemona was faithful] that Othello doubted.
 b. It’s [_{DP} Desdemona’s faithfulness] that Othello doubted.

Pseudo-clefting applies to both uncontroversial cases, ν P and CP, and it also works with DPs, as in (33). As shown in section x.2.3, pseudo-clefting also does not apply to raising ν Ps, providing evidence that they are not PF phases.

- (33) a. What King Lear said was [_{CP} that Cordelia was no longer his favorite daughter].
b. What Goneril did was [_{ν P} blind Gloster].
c. What Regan listened to was [_{DP} Goneril's suggestions].

Predicate fronting is not really applicable to CPs, because it only applies to predicates (and CPs are not predicates), although (34a) is only given a question mark in Matushansky (2003), my informants claim it is much worse than that.

- (34) a. ?Juliet promised that she would marry Romeo, and [_{CP} that she would marry Romeo] her parents didn't think/know.
b. Goneril said she would pluck out Gloster's eyes, and [_{ν P} pluck out his eyes] she did.
c. Regan is called the villain of the play and [_{DP} the villain of the play]_{*i*} she is *t_i*

Though-constructions also exclude CPs, possibly for the same reason; CPs are not predicates. They apply freely to ν Ps and DPs, (35).

- (35) a. [_{ν P} Marry her lover] though Juliet did, the results were disastrous.
b. [_{DP} The villain of the play] though Regan is *t_i*, I still like her best.

It seems thus, that movement diagnostics confirm the PF phasehood of DPs. The results are not completely unanimous with respect to the other phases, but there seem to be (syntactic) explanations for each case where a diagnostic does not apply. If DP is a PF interface unit, it is probably sent out to PF when the DP phase is completed.

Just like movement diagnostics, the Nuclear stress rule also provides evidence for the PF phasehood of DPs. The Nuclear stress rule assigns stress to the rightmost stress-bearing element in a PF phase (cf. Legate 2001, Cinque 1993). It assigns primary stress to the rightmost element in the object DP in (36a) and to the preposition left behind when this rightmost element moves out in (36b), suggesting that DP is a unit on which nuclear stress

rule applies.

- (36) a. Balthasar dislike rumors about **Justine**. (Matushansky 2003: 12-13)
b. Who did Balthasar dislike rumors **about**?

Since DPs pass all the proposed PF diagnostics for phases¹³, we can safely conclude that DP is a PF phase (see Matushansky 2003 for more discussion and skepticism). Thus, we have shown that a DP spells-out to PF but not to LF, meaning DP is a PF but not an LF phase.

x.3.2 DP internal phase (Matushansky 2003, Svenonius 2004)

Matushansky (2003) also argues that there is a DP internal projection (below the quantifier) that is of semantic type <t>, but it is less clear whether this projections is also a phase. This projection, which is also a QR landing site, has to be under the projection of the article. This is clearly seen in example (37) (from Matushansky 2003, 6), where the NPI *any* has to QR in order to be interpreted, yet cannot QR higher than the article (either to an IP adjoined position or to a higher projection inside the DP) or else the NPI would not get licensed (nor would we get the appropriate interpretation). According to Matushansky (2003), this node possibly, but not necessarily, corresponds to the escape hatch for QR of degree operators, which is presumably SpecNumP.

- (37) No student from any foreign country was admitted.

x.4 Coming from the other end

As noted in the introduction, Reconstruction is a case of an item being pronounced higher than where it is interpreted. We can explain this phenomenon by saying that the item was spelled-out to LF prior to its spell-out to PF. Covert movement, on the other hand, can be seen as an event of spell-out to PF happening prior to spell-out to LF. In both cases, the location where an item is interpreted is not the same as the location of its pronunciation. We

¹³ With movement, this is less obvious because of the large number of potentially relevant movement operations, but nevertheless, DPs pass a comparable amount of movement diagnostics as the two most uncontroversial phases, CP and vP.

will now see that in order to derive these two phenomena using non-simultaneous spell-out, we need non-simultaneous phases in exactly the locations where we posited that they are.

x.4.1 Total reconstruction

The clearest instantiation of reconstruction is total reconstruction. Unlike partial reconstruction, total (or radical) reconstruction reconstructs the entire phrase from its surface position (where it is pronounced) to its base position (where it is interpreted).

A typical example is given in (38), where although the subject DP *someone from Stony Brook* is pronounced higher than the predicate *likely*, it can still be interpreted lower than the predicate. For the sentence in (38) to be true, there need not be anyone specific from Stony Brook who has the property of being likely to be in The Country Corner (the local Armenian restaurant). This narrow scope interpretation of the indefinite in (38) simply means that there is above chance (or hugely above chance) likelihood/probability that there is someone from Stony Brook University at the moment in Country corner (maybe because this is one of the few good places around Stony Brook).¹⁴

(38) *Some SBU student is likely to be in The Country Corner right now.*

On the copy theory of movement (Chomsky 1995), this result can be achieved by interpreting the lower copy of the moved subject and by pronouncing the higher copy. However, deleting a created copy is an unwanted backstep in the derivation (some further problems are discussed by Sauerland and Elbourne 2002). Sauerland & Elbourne (2002) (building on a proposal by Aoun & Benmamoun 1998) avoid these problems by proposing PF movement of the subject. Their analysis, however, wrongly predicts that reconstructing DPs will not interact syntactically with the matrix clause. For example, purely phonological movement of *scissors* in (39) should not trigger matrix plural agreement, just like the group denoting plural DP *a northern team* does not (when it is interpreted inside the scope of

¹⁴ See Lasnik (1998) for the view that A-movement does not reconstruct suggested by examples like (i). I follow Bobaljik & Wurmbrand (1999) and Boeckx (2001) and assume that only indefinites reconstruct in raising constructions.

(i) Every coin is 3% likely to land heads. (Lasnik 1998:93)
 ≠ It is 3% likely that every coin will land heads.

likely), (39-41).

- (39) a. Scissors *is/are likely to be in the drawer. likely > \exists
 b. There *is/are likely to be scissors in the drawer. likely > \exists
- (40) a. A northern team is likely to be in the final. likely > \exists
 b. There is likely to be a northern team in the final. likely > \exists
- (41) a. A northern team are likely to be in the final. \exists > likely
 b.*There are likely to be a northern team in the final.

Sauerland and Elbourne (2002) claim group names like *a northern team*, being morphologically singular only trigger plural agreement when they are also interpreted inside the matrix clause, because plural agreement is triggered by the semantic plural feature [mereology]. If this feature is spelled out inside the lower clause, there is nothing to trigger plural agreement with, so we get default singular agreement in (40), when the DP is interpreted low. A possible AGREE relation must therefore be blocked by another (LF) phase in between the matrix TP and the embedded subject position in SpecTP. As argued above, this is the partial phase of the raising ν P, which only spells-out to LF, just like the non-finite TP.

Sauerland & Elbourne's (2002) analysis although explaining total reconstruction away with PF-movement, does not really provide any mechanism for PF-movement itself. I propose a revised version of their proposal. In particular, I derive an understanding of the kind of 'PF-movement' they discuss as syntactic movement of isolated P(honological) & F(ormal) features. Because there are LF-only phases at certain points in the derivation, P features remain available for further movement, even after the *S* features were spelled-out. Thus, whatever is interpreted low can still move on and get pronounced higher.

If non-finite TP and raising ν P are LF-only phases, we can give total reconstruction a completely derivational analysis. Once the matrix ν P is completed, the entire lower TP, including its specifier, spells-out to LF. This means all the LF related features of the entire TP are inaccessible for any further derivation, but all the PF-related and formal features, on the other hand, remain active in the derivation. This syntactic object (composed of PF and formal features) later checks the EPP of the matrix clause and triggers plural agreement in (39). Since the subject gets shipped to LF inside the lower clause, it takes narrow scope with

respect to the matrix predicate *likely*. But since it does not get shipped to PF at the same time, it can move to the matrix subject position, where it gets pronounced. Therefore no special mechanism is required to choose which copy of the moved argument is interpreted by LF and which by PF.

The derivation presented in (42) starts off with a simple intransitive (unergative) verb merging with *v*, the first phase, and its subject, (42a). DP then moves to the non-finite SpecTP, which is an LF-only phase, (42b). When elements from the next phase merge in, the *S* side of the complement of T becomes inaccessible, (42c). The embedded TP and the matrix *v* are both partial phases, only spelling out to LF. So that when the matrix T is merged in, only the P & F part of the DP in the lower SpecTP are accessible and move up to satisfy the matrix EPP, (42d) (F features trigger movement while the P features pied pipe). The difference between the P and the *S* part of the derivation resulted from the presence of the two deficient phases (non-finite TP and the raising *v*P). The difference in the size of the spelled-out phase is erased with any new phase (e.g. the root C) merged into the structure. The derivation results in (42e).

(42)a. <i>S</i>	$[_{vP} DP \ v \ [_{VP} V \]]$				
P	$[_{vP} DP \ v \ [_{VP} V \]]$				
b. <i>S</i>	$[_{TP} DP \ T \ [_{vP} \ v \]]$				
P	$[_{TP} DP \ T \ [_{vP} \ v \]]$				
c. <i>S</i>	$[_{vP} \ v \ [_{VP} V \ [_{TP} DP \ T \ \textit{-spelled-out-} \]]]]$				
P	$[_{vP} \ v \ [_{VP} V \ [_{TP} DP \ T \ [_{vP} \ v \]]]]$				
d. <i>S</i>	$[_{TP} \ T \ [_{vP} \ v \ \textit{--- spelled-out ---} \]]]]$				
P	$[_{TP} DP_i \ T \ [_{vP} \ v \ [_{VP} V \ [_{TP} \ t_i \ T \ [_{vP} \ v \]]]]]]$				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">e. <i>S</i>-interpretation:</td> <td style="padding: 5px; text-align: right;">$V \ [_{TP} DP \ \dots]$</td> </tr> <tr> <td style="padding: 5px;">P-interpretation: DP</td> <td style="padding: 5px; text-align: right;">$V \ \dots$</td> </tr> </table>		e. <i>S</i> -interpretation:	$V \ [_{TP} DP \ \dots]$	P-interpretation: DP	$V \ \dots$
e. <i>S</i> -interpretation:	$V \ [_{TP} DP \ \dots]$				
P-interpretation: DP	$V \ \dots$				

In the crucial step, (42d), the P-features of DP that remained visible due to the lack of PF phases move to the edge of the TP phase. They have thus split from the *S*-features of the same DP, which were already spelled-out to LF as part of the embedded TP phase. At the end, the P-features get pronounced higher than where their *S*-counterparts get interpreted.

With the interpretation being lower than pronunciation, DP appears to have reconstructed.¹⁵

x.4.2 Quantifier raising

Covert movement presents standard phase theory with a serious challenge. If phase boundaries freeze all syntactic movements, nothing should escape. If something does escape, such movement can only be an instance of purely LF movement. But covert movement is typically argued to be syntactic. Chomsky (2005a,b) cites Nissenbaum's (2000) 'solution', which takes the difference between *covert* and *overt movement* as a difference in timing between spell-out and move. If movement to the edge applies prior to spell-out, movement is overt. If spell-out applies prior to movement to the edge, movement is covert. With the standard assumptions that spell-out is simultaneous, and that spell-out creates uncrossable boundaries, there should not be any movement after spell-out, therefore, there should not be any covert movement. Nissenbaum (2000) assumes spell-out is not simultaneous to both interface, but rather that only phonological features get spelled-out to PF cyclically, while the others remain in the derivation on its way to LF. In such a system, his solution makes perfect sense, but for us it is unacceptable. Another possible analysis, assuming copy theory of movement, deletes the lower LF copies and the upper PF copies created by movement (e.g. Bobaljik 1995). This analysis is not preferred since it returns the derivation to a previous stage, it involves an undoing operation. (In addition it lacks a convincing way of determining which copy is to be deleted at which interface. Knowing the two interfaces are not related such mechanism seems impossible).

But covert movement can be understood coherently in terms of non-simultaneous spell-out. We can view it as an instance of a syntactic object that was previously spelled-out to PF and now participates in the derivation with its as yet unspelled-out *S* & *F* features. As for the location of such a partial phase, the general account must lie in our analysis of DP structure. Quantifier raising is a property of (strong) quantifiers, a subgroup of DPs, therefore it seems reasonable to look into the internal structure of the DP for the source of its movement. What we need seems to be a top projection of the DP that would not spell-out to

¹⁵ As explained in section x.2.3, the status of the raising *v*P being an LF(-only) phase is controversial. Note that Total reconstruction can just as well be derived if the raising *v*P turns out not to be a (LF) phase. To do that we would need some other assumptions, which I unfortunately do not have enough space to introduce and explain. The reader is directed to Marušič (2005) for further discussion of these and related issues.

LF, so that the LF related features of the DP could move covertly, but that the same projection would at the same time spell-out to PF. This is exactly what we have seen to be the phasal composition of DPs. As we said, DP is a phonological/PF phase, but not a semantic/LF phase. When DP gets merged into the structure, there are no differences between the position of the S, P, and F features of the DP, but when the next phase is introduced, the DPs internal structure becomes PF invisible.

Crucially, the highest phase inside a DP with a strong quantifier, labeled KP in (43) (following Bittner and Hale 1996), is not an LF phase, as argued by Matushansky (2003) and Sauerland (2005). Whenever the KP spells out to PF, since it is only a PF phase, its LF related features (S) are not removed from the derivation (like their PF correspondent features) and can move further. Here again I should stress that when I say that KP is a phase and that it gets spelled-out to PF, I actually mean that there is a projection on top of the DP/KP whose complement spells-out to PF, and whose head and specifier obviously do not.

(43)	<i>quantificational nominal phrase</i>
	Spells-out to LF
	[_{KP} K [_{DP} D [_{NP} N]]]
	Spells-out to PF

Now we need to make a bit of a detour before we present a sample derivation. The separation of spell-out to the two interfaces makes us think what other properties associated with phases can be seen as interface specific. One typical edge property is the EPP feature. van Craenenbroeck & den Dikken (2005) argue EPP is actually a PF condition. We would think this makes it a property of the PF phase. No counterarguments to this reasoning seem to exist. The only identified LF-only phases so far, the non-finite TP and the raising ν P, most likely do not have the (classic) EPP. Note that it is impossible to determine where the typical subject of the non-finite clause PRO is located (and even if we could, if EPP is indeed a PF condition, how can a null subject satisfy it?). In addition, as Bošković (2002) argues, expletives do not move, therefore in a sentence like (44), there is nothing in the embedded SpecTP, suggesting the embedded T does not have the EPP.

(44) There is likely to be someone in the seminar room.

If having the (observable) EPP is a property of the PF phase edge, what is the property of the LF phase edge? I propose that just like there is an observable EPP (observable at the surface level, i.e. PF), there is also an EPP_{LF} , which has roughly the same function at the other interface. It allows LF moved phrases to be accessible for further derivation. Just like the presence of a [+WH] feature determines the scope of a *wh*-word, we seem to need a feature marking scope in the clause. I propose that scope is marked with the presence of a [+Quant] feature in the TP (or any other phase projection except CP). Note that [+Quant] and EPP_{LF} are not necessarily two different features. This feature then attracts the (LF part of the) quantifier, which thus appears to have covertly moved to the edge of the clause. The [+quant] feature actually attracts [+Q], a formal feature of the quantifier.

With the basic assumptions presented, we can have a look at a sample derivation in (45). We start the derivation with a prefabricated KP in which, as discussed, the maximal projection is a PF-only phase, (45a). When the KP is merged with the verb in (45b), only the *S* & *F* features of the quantifier are visible. The lower NP phase has the active edge, but again only for *S* & *F*-features. P-features of the complement of the KP phase are inaccessible, and P-features of the lower phase NP are already spelled-out at this point. When the next higher phase, νP , merges in, the *S* & *F*-features of *DP* are visible, but not its P-features. Only KP and K are P-visible at νP , (45c). Thus only *S* & *F*-features of the DP can move up (the relevant *F* feature is attracted by the EPP_{LF} or the scope marking feature of the νP , while the *S* features move along). When the derivation reaches TP, the *S* & *F* features of the quantifier are still accessible since they are located at the edge of the νP phase. They get attracted to the quantificational probe (the scope marked projection which I assume here is simply TP, where the EPP_{LF} is located), where they also move to, (45e). Thus we end up with the quantified object DP being interpreted higher than the subject, yet at the same time, pronounced lower, inside the VP, (45f).

(45)a.	<i>S</i>	$[_{KP}[_{DP} D \ [_{NP} N \]]]$
	P	$[_{KP}[_{DP} D \ [_{NP} N \]]]$
b.	<i>S</i>	$[_{VP} V \ [_{KP}[_{DP} D \ [_{NP} N \]]]]$
	P	$[_{VP} V \ [_{KP} K_{-spelled-out-} \]]$

- c. S $[_{vP}[DP D[_{NP} N]]_i v [_{VP} V [_{KP} t_i]]]$
P $[_{vP} v [_{VP} V [_{KP} K_{-spelled-out-}]]]$
- d. S $[_{TP} KP T [_{vP}[DP D[_{NP} N]] v \text{---spelled-out---}]]$
P $[_{TP} KP T [_{vP} v \text{---spelled-out---}]]$
- e. $S [_{TP} [_{DP} D[_{NP} N]]_i [_{TP} KP T [_{vP} t_i v \text{---spelled-out---}]]]$
P $[_{TP} [_{TP} KP T [_{vP} v \text{---spelled-out---}]]]$

f. <i>S-interpretation</i>	DP_{OBJ}	DP_{SUB}
P-interpretation	KP_{SUB}	KP_{OBJ}

I am largely ignoring the partial reconstruction facts observed with QR and *wh*-movement. As shown in (46a-c), parts of the moved *wh*-phrase behave as if they are interpreted in the base position of the *wh*-phrase.

- (46) a. Which picture of himself did John like **t**.
b. Which of each other's friends did they remind **t** that he saw Bill.
c. *Which one of John_i's friends did he_i see?
d. *He_i saw every one of John_i's friends.
e. *He_i showed Mary every picture that John_i took on his last trip.

Note that this is not the actual restriction of the quantifier but rather some even smaller part of the restriction. Restriction is typically interpreted where the quantifier is, as shown with the necessarily false (47a), where the non-denoting term gets interpreted inside of the matrix clause, and the possibly true (47b), where—on the narrow scope—reading the non-denoting ‘unicorn’ gets interpreted inside the embedded clause.

- (47) a. # Which unicorn is likely to be approaching?
b. A unicorn is likely to be approaching.

But since the restriction can be composite, parts of it behave as if they are interpreted low, reflexives can bind subject that appear lower than the *wh*-word, (46a), and names inside the restriction are subject to principle C violation caused by the pronoun that only c-

commands the *wh*-trace, (46c). Notice that the same facts hold also for complements of quantifiers. Not everything gets QRed to a higher position where they could escape Principle C violation, (46d,e), etc.¹⁶

Partial reconstruction facts are indeed very intriguing and a theory that claims to be able to explain total reconstruction should have something to say about them too. At the present stage I can only hint at a possible solution. Note that there is a DP internal phase, which only spells-out to the LF interface. This partial phase could in principle be responsible for the reconstruction of parts of the DP. Obviously things are not as trivial since DP internal parts can be interpreted in any position where the DP moved through. But note that a DP internal part cannot attach to the main clausal structure by itself, since it needs the outer DP structure. This is problematic also for the (more or less) standard approaches using the copy theory of movement. Maybe in order for the DP internal part to get interpreted at any of the positions the DP moved through, some sort of reprojection is needed (Hornstein and Uriagereka 2002). Since this is a special operation, it can apply at any given point in the structure, so that wherever it applies that is the location where the restriction will be interpreted.

x.5 Conclusion

We have derived two apparently different phenomena (total reconstruction and quantifier raising) without any backtracking to earlier stages in the derivation. This is a very welcome result in the quest for a purely derivational theory. As it was shown, both phenomena are just a consequence of the phasal composition of the non-finite clauses and of the DP, both of which involve non-simultaneous spell-out to the interfaces.

With a way of understanding QR and total reconstruction, we can combine the two phenomena and derive the other reading of indefinite in raising constructions. I am assuming, indefinites are ambiguous between true indefinites and strong quantifiers. If an indefinite is understood as a strong quantifier, it can QR to the matrix TP, just like other quantifiers can.

¹⁶ In a way, the existence of QR suggests that a sentence like *a girl saw every picture of herself* would have the reading where for every picture with a girl, there would be a girl that saw that picture. This reading is impossible. This might be an instance of scope freezing and I have nothing to add here. The fact that an example with a quantifier parallel to (46c) (e.g. **Someone sent him_i to everyone of John_i's friends*) is bad suggests that the complement of the quantifier does get interpreted low.

So the fact that a sentence like (38) is ambiguous between a matrix and an embedded reading of the subject is no more surprising than the fact that (48) has the wide scope reading of the universal (Boeckx 2001 claims (48) has only the wide scope reading).

(48) Everyone is likely to feel embarrassed if Slovenia wins the world cup.

Further discussion of these cases, including a discussion of whether and why sentences like (48) are not ambiguous is given in Marušič (2005).

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