Phase Extension

Contours of a Theory of the Role of Head Movement in Phrasal Extraction

Marcel den Dikken — Linguistics Program — CUNY Graduate Center — MDen-Dikken@gc.cuny.edu

1 The Program[1]

Starting out from the central ingredients of the analysis of the locality restrictions on Predicate Inversion presented in Den Dikken (2006a), in this paper I will lay the foundations for a theory of syntactic locality and the relationship between phrasal extraction and head movement that is predicated on the premises below:

(1) *Phase Impenetrability*
syntactic relationships (Agree) and processes (Move) are constrained by the Phase Impenetrability Condition (PIC) of Chomsky (2000 *et passim*): in phase α with head H, the domain is not accessible to operations outside α, only H and its edge are accessible to such operations

(2) *Inherent Phase*
an *inherent* phase is a *predication* (subject–predicate structure)

(3) *Phase Extension*
syntactic movement of the *head* H of a phase α up to the head X of the node β dominating α *extends* the phase up from α to β; α loses its phasehood in the process, and any constituent on the edge of α ends up in the domain of the derived phase β as a result of Phase Extension

The research program built on these premises, which I will be pursuing in a variety of different directions in the remainder of this paper, on the one hand simplifies the definition of the phase by identifying them as simple predications, and on the other hand reintroduces the dynamicity of barrierhood that *Barriers* was known for: the idea that constituents can inherit barrierhood (or phasehood) from categories they dominate. While barrierhood in Chomsky (1986) was defined in terms of a complex interplay of L-marking, domination, and government, plus a series of stipulated exceptions clustered around the Infl-projection, the present theory employs only the independently necessary concepts of predication and domination, plus head movement, a syntactic process that interacts with phrasal movement in readily predictable and empirically adequate ways.[2]

The purpose of this programmatic paper is to explore the research program defined by (1)–(3) in a number of empirical domains, ranging from Predicate Inversion (for which the theory was initially developed) via Dative Shift and Holmberg's Generalisation to incorporation phenomena, quantifier scope interaction and locality restrictions on long-distance A′–movement. The discussion to follow will thus cover a reasonably broad spectrum of syntactic A– and A′–dependencies, affording us a fair impression of the merits and possible demerits of the program. Illustration and discussion in each of the various domains of investigation will remain limited, however: these notes will serve the modest purpose of sketching out the workings of a theory of syntactic locality based on (1)–(3); with the exception of the discussion of Predicate Inversion in section 2 (based on Den Dikken 2006a), they are not (intended to represent) fully worked out analyses.

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2 In *Barriers*, there is a limited amount of interaction between head movement and phrasal movement already, in cases of L-marking resulting from V-to-I, and in Chomsky's 'extended chains' account of NP–movement in passive and raising constructions.

2 Predicate Inversion and Locality

Sentence pairs of the type in (4) exhibit an alternation often referred to in the literature as 'Copular Inversion'. The examples in (5) instantiate the 'Locative Inversion' alternation. And the alternation between the prepositional dative construction and the double object construction illustrated in (6) represents what is sometimes called 'Dative Inversion' (or 'Dative Shift').

(4) a. this book is the #1 best-seller in the country
b. the #1 best-seller in the country is this book
(5) a. this book lay on the president's desk
b. on the president's desk lay this book
(6) a. I gave this book to one of my students
b. I gave one of my students this book

All three pairs arguably share the fact that in the a–sentences of each pair, the noun phrase *this book* is the subject of the nominal or prepositional predicate to its right — thus, *this book* is the subject of *the #1 best-seller in the country* in (4a), of *on the president's desk* in (5a), and of *to one of my students* in (6a). For (4a), this is an uncontroversial claim; I will not spill any further ink over it. But for (5a) and (6a), it is not at all self-evident. My point in this section is not to present arguments for an approach to (5a) and (6a) in terms of predication; those arguments have been developed elsewhere (see e.g. Stowell 1983, Hoekstra 1984, Kayne 1984, Den Dikken 1995, and references cited there). Rather, my purpose here is to show that, given a predicational approach to the a–sentences in (4)–(6), their b–counterparts can be derived from them via a syntactic operation generalising over all three pairs: Predicate Inversion.[3]

Concretely, what I would like to argue is that the b–sentences in (4)–(6) are derived from the a–sentences via the raising of the predicate of *this book* into an A–specifier position (a *subject* position) in the course of the syntactic derivation:[4]

(7) a. $[_{RP}$ SUBJECT [RELATOR [PREDICATE]]]
b. $[_{FP}$ PREDICATE$_i$ [F $[_{RP}$ SUBJECT [RELATOR t_i]]]]

This bare-bones depiction of the relationship between the a– and b–sentences in (4)–(6) serves the purpose of presenting the reader with an initial glimpse of what is going on in these sentence pairs. But it will need to be developed further to actually make it work. For as things stand, (7b) — the Predicate Inversion derivation — presents us with two major conundrums:

(8) a. how can F establish an *Agree* relationship with the predicate from its vantage point outside the RP, which (in light of (2)) is a *phase*?
b. how can the predicate *Move* to a higher A–specifier position across the A–specifier position in which its subject is base-generated?

In order for F to establish an Agree relationship with the predicate, there must be no phase boundary in between F and the predicate, and for raising of the predicate across its subject to be allowed, the two phrases must be equidistant. Both conditions have to be met in order for Predicate Inversion to be successful.

3 Naturally, to the extent that the analyses of the b–sentences in (4)–(6) in terms of Predicate Inversion are successful, they will lend further support to an analysis of the constructions instantiated by (4)–(6) involving predication.

4 The structures in (7) assume that subject–predicate relationships are structurally mediated by an abstract functional head, the RELATOR. This hypothesis is discussed at length in Den Dikken (2006a), to which I refer the reader for details. It will be assumed as a given throughout this paper.

Though the subject originates on its edge, the predicate appears to be 'trapped' inside the RP phase in (7). But I will argue that there are two operations, in principle, that can be performed in Predicate Inversion constructions that each have the requisite conjunction of effects: the predicate is made visible to F and equidistance is ensured. These two operations are schematised in (9):

(9) a. $[_{RP}$ DP $[$RELATOR+X_j $[_{XP}$ t_j ...]]]
b. $[_{FP}$ Spec $[$F+RELATOR$_i$ $[_{RP}$ DP $[t_i$ $[_{XP}$ PREDICATE]]]]]

In (9a), the head of the small-clause predicate is raised up to the RELATOR; and in (9b), the RELATOR raises to a functional head introduced outside the small clause. I will discuss these strategies in turn.[5]

2.1 Raising the predicate head

Let me start with (9a). The first thing we need to ensure is that in (9a) the predicate is *visible* to the outside probe F. Raising of the predicate head to the RELATOR accomplishes this straightforwardly, by transferring the predicate's features right up to the head of the phase (the RELATOR):

(10) movement of the head H of a phrase HP embedded inside a phase Φ to the head of the phase makes both H and its maximal projection visible to probes outside the phase
PROBE ... $[_{RP}$ R+H_i $[_{HP}$ ... t_i ...]]
Φ

Movement of the head of a phrase encapsulated inside the domain of a phase up to the head of the phase will make not just that head but also its associated maximal projection visible to an outside probe.

Now that we have made the predicate visible to F, we still need to make sure that movement of the predicate to SpecFP is in keeping with Relativised Minimality. At first sight, it would seem that it is not: the predicate is raising to an A–specifier position (SpecFP) that is apparently further away from its launch site than the A–specifier in which the subject is base-generated (SpecRP); it would appear to be impossible for F to attract the predicate to its specifier across the base position of the subject, in keeping with locality. But again, this problem is easily averted. What we need to ensure is that movement to SpecFP across SpecRP obey the definition of 'closeness', according to which, in the configuration $[_{KP}$ ZP [K ... [YP ... XP]]], with K seeking to attract something to its specifier (ZP),

(11) YP is *closer to* K than XP unless YP is in the same minimal domain as *(a)* ZP or *(b)* XP[6]

Assuming the definition of the minimal domain of a head-movement chain in (12) (from Den Dikken 2006a: 114), we derive the desired result: by (11), the minimal domain of the chain (α, *t*) includes the maximal projection of the raised head (which is included in the minimal domain of the host β of the raised head α).

(12) the *minimal domain* δ_{MIN}(CH) of a chain resulting from head-adjunction of α to β is $\delta_{MIN}(\alpha) \cup \delta_{MIN}(\beta)$

As a result of movement of the predicate's head (α) to the RELATOR (β), therefore, the predicate is free to move past its subject into the domain of an outside probe: it is both equally close to the probe as its subject and not trapped inside the small-clause phase.

5 The discussion here is based directly on Den Dikken (2006a:section 4.3.2), to which the reader is referred for additional details.

6 The definition in (11) is a minimally adapted variant of the one given by Chomsky (1995:356–57). For our purposes here, 'XP' is the base position of the predicate, 'YP' the small clause subject, and 'ZP' the landing-site of Predicate Inversion.

2.2 Raising the RELATOR

The alternative to having the predicate head raise to the RELATOR to make the predicate eligible for movement across its subject via Predicate Inversion is to have the RELATOR raise to the head in whose specifier the moved predicate lands, F in (9b). In keeping with (3), *Phase Extension*, movement of the RELATOR up to F extends the RP phase up to FP, as depicted in (13b).[7]

(13) a. $[_{RP}$ SUBJECT [RELATOR [PREDICATE]]]
Φ

b. $[_{FP}$ F+R_i $[_{RP}$ SUBJECT [t_i [PREDICATE]]]]
Φ ⟵ (Φ)

c. $[_{FP}$ PREDICATE_j [F+R_i $[_{RP}$ SUBJECT [t_i t_j]]]]
Φ

Phase-extending movement of the RELATOR up to F results in a configuration in which the predicate is no longer separated from the attracting head F by a phase boundary: the inherent small-clause phase RP is extended up to FP; both the probe (F) and the goal (the predicate) are within this extended phase. And as a result of phase-extending head movement of the RELATOR to F, we also ensure that the predicate's landing site and the base position of the subject are in the same minimal domain, hence equidistant: β (the base position of the subject, SpecRP) in (13c) is not closer to the predicate's base position than α (the predicate's landing site, SpecFP) because β is in the same minimal domain as α.

So movement of the RELATOR up to F does exactly the two things it needs to do in order to make Predicate Inversion legitimate. But such phase-extending movement has one further consequence — not a particularly pleasant one for the subject of the inverted predicate: it traps the subject of the small clause inside the newly extended phase. The subject of RP, while originally on the edge of the RP phase (cf. (13a)), ends up being embedded within the domain of the extended phase (FP) as a result of movement of the RELATOR up to F (cf. (13c)).

Thus, as a consequence of the Predicate Inversion derivation based on (9b) (fleshed out in (13)), the subject will be invisible to any outside probes, and hence unable to establish any Agree relationships with outside probes. By contrast, the Predicate Inversion derivation based on (9a) has no adverse consequences for the subject: the subject continues to be on the edge of the RP phase. In the following subsection, I will show that this has interesting empirical consequences in the domain of A′–movement of the subject of the inverted predicate.[8]

2.3 Predicate Inversion and A′–extraction of the subject

As Moro (1997) was the first to discuss in detail, in Copular Inversion constructions of the type in (4b) it is impossible to A′–move the subject of the inverted predicate: sentences such as (14b) are ungrammatical. Parallel to this is the ungrammaticality of A′–extraction of the postverbal subject in Locative Inversion constructions, illustrated in (15b). Dative Inversion constructions pose a more complicated empirical picture: here, extraction of the direct object (which, on the analysis of dative constructions assumed here, is the subject of the dative PP in the underlying representation) fails in double object constructions containing a verbal particle, such as *out* (16b) (as Stowell 1981:342 has pointed out); but in simple, particle-less double object constructions, overt operator movement of the direct object is perfectly possible, as (17b) demonstrates.

7 As a notational convenience, I use the Greek capital Φ to designate phases; a Φ appearing in 'outline' and brackets is an erstwhile phase that has lost its phasehood as a result of Phase Extension.

8 Den Dikken (2006a:section 4.4) in addition addresses finite verb agreement with and A–movement of the postverbal subject.

(14) a. I think that the #1 best-seller in the country is this book
b. *which book do you think that the #1 best-seller in the country is *t*?
(15) a. I think that on the president's desk lay this book
b. *which book do you think that on the president's desk lay *t*?
(16) a. I think that I sent my students out a paper of mine
b. *which paper of yours do you think that you sent your students out *t*?
(17) a. I think that I sent my students a paper of mine
b. which paper of yours do you think that you sent your students *t*?

Moro (1997) captures the ban on A′–extraction of the postcopular subject in Copular Inversion constructions in terms of barrierhood. Moro assumes that the copula is unable to L–mark its small clause complement (because it is not lexical). As a result, this small clause is a barrier, which means, in turn, that extraction of the subject violates subjacency and, in addition, the ECP as well: the trace of the extracted subject fails to be properly governed. But in locative inversion constructions, where the small clause is governed by a *lexical* verb, no subjacency or ECP problems are expected to manifest themselves. Moro's approach to (14b) thus does not generalise to the Locative Inversion construction in (15b); nor does it have anything to say about the difference between (16b) and (17b).

What I take to be the cause the ill-formedness of the b–examples in (14), (15) and (16) to be (following the spirit though certainly not the letter of Moro's 1997 subjacency analysis) is a combination of two factors. First and foremost, there is the fact that the Predicate Inversion derivation in (13) 'traps' the subject in the domain of the extended phase, FP: at the completion of Predicate Inversion along the lines of (13), the subject is invisible to the outside probe $C^{[+WH]}$ that is supposed to attract it to SpecCP. But we know independently, from the A′–extractability of objects that arguably do not undergo Case-checking movement to a position on the edge of *v*P, for instance, that it is normally possible to extract constituents that are apparently encapsulated within the domain of a phase. The way out for such constituents is intermediate adjunction to the phase, as a result of which they end up on the edge of the phase and become visible to phase-external probes. Manoeuvring the postverbal subject of the Predicate Inversion constructions in (14), (15) and (16) onto the edge of the extended phase, FP, in (13c) must therefore be blocked if we are to derive the ungrammaticality of the b–examples from the application of Predicate Inversion. In Den Dikken (2006a:123), I claim that such intermediate adjunction is indeed blocked in (13c), by the condition on adjunction in (18).

(18) adjunction to meaningless categories is disallowed

Since FP in the structure of (13c) is the projection of a meaningless functional element, this projection is not available as an intermediate adjunction site for A′–extraction. This, in conjunction with the fact that FP is an extended phase as a result of movement of the RELATOR up to F, rules out the b–examples in (14)–(16), which are all derived via the Predicate Inversion derivation in (13).

But then why is (17b) grammatical, in contrast to (16b)?[9] The key empirical difference between these two examples is the presence in (16b) of a verbal particle, whose absence in (17b) is apparently responsible for its grammaticality. How can we factor the absence/presence of a verbal particle into the account? To see this, we have to be a little more precise about the derivation of Dative Inversion, which I have left fairly implicit in the discussion so far. In the next section, I will lay out the central core of the analysis of Dative Inversion that I first proposed in Den Dikken (1995), on which my account of the contrast between (16b) and (17b) will be built.

9 I did not provide an answer to this question in Den Dikken (2006a). In Den Dikken (1995), I suggested an account that treated (17b) as a 'covert' prepositional dative construction, with an empty-headed dative PP *in situ*, not undergoing Dative Inversion. In what follows, I will provide a purely syntactic account of the contrast between (16b) and (17b), from the perspective of the two logically possible derivations of Predicate Inversion discussed in sections 2.1 and 2.2.

2.4 Dative Inversion and A′–extraction of the direct object

Dative Inversion, according to Den Dikken (1995:Chapter 3), is a syntactic operation that transforms the prepositional dative construction into the double object construction by raising the dative PP into an A–specifier position above the base position of the direct object — a *bona fide* case of Predicate Inversion, therefore. There is one twist, however. The raised predicate in Dative Inversion constructions is somehow 'poorer' than its *in situ* counterpart in the prepositional dative construction: whereas the dative PP is visibly headed by a preposition, *to*, in the prepositional dative construction, no dative P surfaces in the double object construction (**I gave to one of my students this book* is unacceptable unless *this book* is pronounced with heavy stress and set apart from the preceding dative PP by comma intonation, in a Heavy NP Shift construction). It is this twist that will play a central role in the account of the contrast between (16b) and (17b).

In Den Dikken's (1995) account of Dative Inversion, the dative preposition is never radically absent in triadic constructions: whenever it does not surface, there is a null allomorph of the dative preposition present in the structure. This null allomorph of the dative P is subject to a licensing condition: it must *incorporate* (cf. Baker's 1988 'morphological licensing'). How can $P_{\varnothing}$ meet this incorporation requirement? The answer that I would like to propose is: it depends — whenever the RELATOR head of the small clause in which the dative PP is the predicate happens to be empty, the incorporation requirement that $P_{\varnothing}$ is subject to can be met straightforwardly by raising $P_{\varnothing}$ up to the RELATOR; but whenever the RELATOR head is itself filled by a lexical element that cannot serve as an incorporator, incorporation of $P_{\varnothing}$ into the RELATOR is impossible, and instead, $P_{\varnothing}$ will have to find a licenser higher up the tree: the verb.

How does this play out for the two types of double object construction we have been comparing, the one with a verbal particle and the one without? Key here is the assumption (which I will not argue for on independent grounds here) that the verbal particle in triadic constructions of the type in (16) is the spell-out of the RELATOR head. Thus, the difference, underlyingly, between (16) and (17) lies quintessentially in the question of whether the RELATOR head is filled or empty:

(19) a. $[_{RP}\ [_{DP}$ DIRECT OBJECT$]$ [RELATOR=*out* $[_{PP}\ P_{\varnothing}$ INDIRECT OBJECT$]]]$ (for (16))
b. $[_{RP}\ [_{DP}$ DIRECT OBJECT$]$ [RELATOR=$\varnothing$ $[_{PP}\ P_{\varnothing}$ INDIRECT OBJECT$]]]$ (for (17))

The derivation beyond (19b) will now proceed as follows. The null dative preposition $P_{\varnothing}$ incorporates into the null RELATOR, and is licensed thereby. As a result of the raising of the head of the small-clause predicate up to the RELATOR, *(i)* the features of the predicate head are transferred up to RP and thereby made visible to the outside probe F that seeks to attract the predicate, and *(ii)* the base position of the predicate and the base position of its subject are made equidistant (recall section 2.1). This has the beneficial effect of rendering Predicate Inversion into SpecFP grammatical *without* the need for movement of the RELATOR up to F ever arising: such movement is literally redundant; the derivation in (20) ensues grammatically without it.

(20) $[_{FP}\ [_{PP}\ t_i$ INDIRECT OBJECT$]_j$ [F $[_{RP}\ [_{DP}$ DIRECT OBJECT$]$ [RELATOR=$\varnothing$+P_i $t_j]]]]$ (for (17))

In (19a), by contrast, $P_{\varnothing}$ cannot incorporate into the RELATOR because the RELATOR is spelled out by a verbal particle, and particles are not incorporators.[10] So the derivation beyond (19a) must proceed differently. Since raising of the predicate head to the RELATOR cannot ensue, the predicate must be made visible to the external probe F by raising the RELATOR up to F, whereby the RP phase is extended up to FP, *à la* (13):

10 Actually, no element of category P ever seems to be able to incorporate the head of its complement. For some (e.g. Baker 2003) this is an indication that prepositions are not lexical elements. The analysis of Dative Inversion in terms of Predicate Inversion evidently makes it impossible for me to subscribe to the view that prepositions are, as a class, non-lexical: there must exist truly *lexical* prepositions. See also Den Dikken (2006c) for an extended argument to the effect that lexical prepositions do indeed exist.

(21) $[_{FP}\ [_{PP}\ P_{\varnothing}$ INDIRECT OBJECT$]_j$ [F+RELATOR$_i$=*out* $[_{RP}\ [_{DP}$ DIRECT OBJECT$]$ $[t_i\ t_j]]]]$ (for (16))

This head movement operation also renders the subject's base position and the predicate's landing-site equidistant, thereby ensuring that Dative Inversion meet the demands of Relativised Minimality.[11]

What is interesting, for our purposes in this paper, about the difference between (16a) and (17a) is that in the latter, phase-extending movement of the RELATOR up to F does not occur, whereas it is forced in the former. This means that in (20) the direct object (the subject of predication) continues to be on the edge of the RP phase all the way through the derivation, and FP does not inherit phasehood. It should be entirely unproblematic, therefore, for the direct object to A′–extract from the dative small clause in (20). In (21), by contrast, A′–extraction of the direct object is prohibited: the direct object is encapsulated in the domain of the extended phase, FP; no probe outside FP can see the direct object, and the direct object cannot manoeuvre itself onto the edge of the FP phase either since (18) forbids adjunction to FP.

We have now derived the contrast in grammaticality between (16b) and (17b) from the inner workings of the Predicate Inversion derivations on which these two sentences are based. The fact that (16b) is ungrammatical falls out in the same way that the ill-formedness of the b–sentences in (14) and (15) also follows, from locality theory in conjunction with the obligatory raising of the RELATOR up to F.[12] And it is precisely the fact that such raising does *not* take place in the course of the derivation of particle-less (17b), where $P_{\varnothing}$ can and will incorporate into the RELATOR, that A′–extraction of the direct object is unobstructed here. So the question of whether or not the RELATOR raises to F, thereby extending the small-clause phase up to FP, is the key to an analysis of the contrast between (16b) and (17b) — an indication that phase-extending head movement does indeed play a central role in the grammar.

3 Object Shift, Holmberg's Generalisation, and Phase-extending Head Movement

Towards the end of the previous section, in the discussion of Dative Inversion, we were concerned with movement operations taking place wholly within the confines of the verb's complement. We discovered that phase-extending head movement plays an important explanatory role in that context. In this section, I will move up the tree into the verb's extended projection, looking specifically at the question of how a constituent in the verb's complement can make its way out of *v*P (a phase) *without* intermediate adjunction to this phase. Once again, we will find that there is a crucial connection between phrasal movement and head movement in this context, as codified by Holmberg's Generalisation, which says that Object Shift can proceed only if the verb leaves its *v*P. And we will see that phase-extending head movement once again provides the explanation for this connection. But I would like to start the discussion from the vantage point of Fox & Pesetsky's recent analysis of Holmberg's Generalisation from the point of view of the minimalist theory of cyclicity.

3.1 Object Shift and Holmberg's Generalisation (I): Fox & Pesetsky

Holmberg's Generalisation expresses the fact that whenever the verb does not raise, the object cannot shift around material that finds itself adjoined to the (extended) projection of the verb, such as the sentential negation particle *inte* in the following Swedish examples:

11 The null dative preposition will eventually incorporate into the verb, once V is merged. I will skirt all questions regarding the legitimacy of head incorporation out of a specifier — plainly a nontrivial issue, but entirely tangential to my concerns here.

12 The obligatory raising of the particle-filled RELATOR up to F in the derivation of double object particle constructions has other beneficial consequences as well. In particular, it immediately explains the fact that the particle, in double object particle constructions, cannot be modified by things like *right* or *straight* (as noted by Oehrle 1976:192, Carlson & Roeper 1980:150, fn. 12, and Kayne 1985:126–27), and that precisely those particles that can raise up to the left of the direct object in a prepositional dative construction are legitimately usable in double object constructions (as Oehrle 1976:230–34 points out). See Den Dikken (1995:123–24) for illustration and discussion.

(22) a. jag kysste henne inte (Swedish)
I kissed her not
b. at jag <*henne> inte kysste <henne>
that I her not kissed her

In interesting work published recently in the pages of this journal, Fox & Pesetsky (2005) argue that Holmberg's Generalisation follows as a matter of course from a theory that exploits the idea that Spell-Out is cyclic, phase by phase, such that at the completion of each phase the material contained in that phase is linearised. Consider the derivations in (23):

(23) a. Φ1 $[_{VP}$ kysste henne]
→ linearisation: *kysste* < *henne*
Φ2 $[_{CP}$ jag kysste$_V$ henne$_i$ inte $[_{VP}$ t_V $t_i]]$
→ linearisation: *jag* < *kysste* < *henne* < *inte* < VP (= ∅)

b. Φ1 $[_{VP}$ kysste henne]
→ linearisation: *kysste* < *henne*
Φ2 $[_{CP}$ at jag henne$_i$ inte $[_{VP}$ kysste $t_i]]$
→ linearisation: *at* < *jag* < *henne* < *inte* < VP (= *kysste*)

b′. Φ1 $[_{VP}$ henne$_i$ $[_{VP}$ kysste $t_i]$
→ linearisation: *henne* < *kysste*
Φ2 $[_{CP}$ at jag henne$_i$ inte $[_{VP}$ t_i' $[_{VP}$ kysste $t_i]]]$
→ linearisation: *at* < *jag* < *henne* < *inte* < VP (= *kysste*)

Of these three derivations, the first represents (22a), with Object Shift and raising of the lexical verb happening in tandem. In the course of the derivation in (23a), Spell-Out, and hence linearisation, takes place at two points: first upon the completion of VP, which, for Fox & Pesetsky, is a phase in the Scandinavian languages; and then once again upon the completion of CP. What we must ensure is that the linearisation instructions given to the PF component upon the completion of the VP phase do not conflict with the linearisation instruction given to PF upon the completion of CP. In (23a), there is indeed no conflict: at the VP level, we give PF the instruction to linearise *kysste* before *henne*; and at the CP level, this instruction is preserved, with the object and the verb both having left the VP and landed in positions that reinstate their underlying relative order. But in (23b), which illustrates the derivation of the version of (22b) in which *henne* undergoes Object Shift to the left of *inte*, results in a linearisation conflict: at the VP phase, *kysste* is once again ordered before *henne*; but upon the completion of the CP phase, we are giving PF the conflicting instruction to linearise *henne* before *kysste*. Because of this linearisation conflict, (23b) crashes. It is impossible, therefore, for the object to shift out of the VP in one fell swoop, without intermediate adjunction to VP, unless the verb also leaves the VP and lands in a position that is higher than the object's landing site.

Of great significance in the conclusion I just drew is the qualification 'in one fell swoop, without intermediate adjunction to VP'. For if the object *had* adjoined to VP on its way out, so that we would have obtained the derivation in (23b′), we would have failed to rule out (22b) with *henne* to the left of *kysste*. After all, with *henne* adjoining to VP before Spell-Out, what is sent to PF upon the completion of the VP phase is the instruction that *henne* should precede *kysste*, and this linearisation instruction is obeyed perfectly well at the completion of the CP phase. To derive Holmberg's Generalisation from Order Preservation, therefore, Fox & Pesetsky (2005:17) need to make 'one key assumption: that Object Shift, unlike certain other instances of movement, does not proceed successive-cyclically through Spec,VP' (or a VP–adjoined position).[13]

13 The difference between specifier and adjunction positions is immaterial here, and perhaps non-existent (see Kayne 1994).

Is the (non-)successive cyclicity of Object Shift empirically testable? To find an answer to this question, one place to look is the distributional restrictions on floating quantifiers (FQs), whose surface positions are well known to be a good diagnostic for intermediate touch-downs under successive-cyclic movement. Consider, then, the paradigm in (24) (kindly provided to me by Anders Holmberg, p.c.):

(24)	a.	hon	gav	dem	troligen	*alla*	en	kyss			(Swedish)
		she	gave	them	probably	all	a	kiss			
	b.	hon	gav	dem	troligen	*alla*	passionerat		en	kyss	
		she	gave	them	probably	all	passionately		a	kiss	
	c.	*hon	gav	dem	troligen	passionerat	*alla*		en	kyss	
		she	gave	them	probably	passionately	all		a	kiss	

On the assumption that high adverbs (such as *troligen* 'probably') are attached outside *v*P, and that adverbial adjunction to VP in a *v*–VP configuration is impossible (cf. Chomsky 1995:315–16),[14] there remains exactly one adjunction site for low adverbs such as *passionerat* 'passionately': low adverbs are attached to *v*P, as in (25).

(25) $[_{ZP}$ *dem* (...) $[_{YP}$ *troligen* (...) $[_{XP}$ ⟨✓*alla*⟩ $[_{vP}$ *passionerat* $[_{vP}$ *v* $[_{VP}$ ⟨**alla*⟩ $[_{VP}$ V $[_{SC}$ IO DO]]]]]]]]

The ungrammaticality of (24c) now confirms Fox & Pesetsky's assumption that the shifted object cannot make a touch-down below the low adverb in (25), in a VP–adjoined position (or SpecVP). The grammaticality of (24b), however, tells us that the shifted indirect object CAN make a touch-down in a position between the two adverbs — arguably a position (just) outside *v*P, for if the object could touch down in a *v*P–adjoined position, it would not be clear (at least not *a priori*) why it could not land *below* the equally *v*P–adjoined base position of the low adverb, *passionerat*.

For Fox & Pesetsky, intermediate adjunction outside *v*P is immaterial as far as linearisation is concerned: whatever the nature of the intermediate landing site in between *troligen* and *passionerat*, it is neither VP nor CP, so it is not a Spell-out domain (or phase), and hence, no linearisation conflicts could ever result from an intermediate touch-down there. Fox & Pesetsky (2005:39) make it perfectly clear that 'one should not look to our system' for an explanation for intermediate touch-downs that have nothing to do with linearisation constraints — nor, for that matter, for a rationale for the illegitimacy of an intermediate touch-down that could not give rise to a linearisation conflict.

Fox & Pesetsky's account of Object Shift, dependent as it is on the central hypothesis that in the Scandinavian languages the VP, not the *v*P, is a Spell-Out domain (i.e., a phase), raises an important conceptual problem for the theory of phases. For Chomsky, phases are always 'propositional' — which, at the lexical level, translates into the statement that phases are 'Complete Functional Complexes' (CFCs), thematically fully saturated units. The idea that in Scandinavian it is VP, not *v*P, that is a phase flies straight in the face of this: plainly, VP is not a thematic whole.[15]

Though elegant and simple, Fox & Pesetsky's (2005) analysis of Object Shift thus leaves some room for improvement. In the next subsection, I will develop an analysis of Object Shift based on the premises in (1)–(3) — an analysis which in some ways marks a return to Chomsky's (1995:Chapter 3) account of Holmberg's Generalisation couched in the original minimalist locality theory.

14 The ban on adverbial adjunction to VP may follow on the assumption (currently subscribed to by Chomsky as well as by practitioners of Distributed Morphology) that prior to the merger of *v*, the root–VP has not yet been identified as *verbal*, hence is not an eligible adjunction site for specifically ad*verb*ial modifiers.

15 This is not to say that VP can never *acquire* phasehood in the course of the syntactic derivation as a result of Phase Extension. See section 4.2 for discussion of a context in which this seems to be precisely what is happening.

3.2 Object Shift and Holmberg's Generalisation: A phase-extension analysis

For Chomsky (1995:Chapter 3), the key property of Object Shift was that it involves movement of the object past the base position of the subject, to a higher A–position, hence necessarily in one fell swoop, without intermediate adjunction. One problem that this posed, and continues to pose, is that it apparently violates Relativised Minimality: in the process of raising to its A–specifier landing site, the object crosses over another A–position. In a phase-theoretical update of the analysis, we face a second problem as well: the base position of the subject is Spec*v*P, and *v*P (being an instantiation of a *predication*, a subject–predicate structure) is a *phase* — so whatever the nature of the *v*P–external probe X that sets Object Shift in motion,[16] this probe would appear to be unable to establish an Agree relationship with the object in (26).

(26) $[_{XP}$ X=probe $[_{vP}$ $[_{DP}$ SUBJECT] [*v* $[_{VP}$ V $[_{DP}$ OBJECT]]]]]

One could have the object adjoin to *v*P, manoeuvring it onto the edge of the phase and thereby making it visible to the outside probe X. But recall from section 3.1 that adjunction to *v*P cannot explain (24c). Moreover, since Object Shift is arguably A–movement, and since A–movement arguably cannot proceed via intermediate adjunction, it is unlikely that this will be what is going on in the derivation of Object Shift constructions. With successive-cyclic movement out of *v*P thus unavailable, there remains precisely one way in which Object Shift can be legitimate: the phase head, *v* (which has received V prior to the completion of *v*P: *v* and V must amalgamate prior to Spell-Out), must raise out of *v*P, minimally up to the functional head X that serves as the probe for Object Shift. By so raising, *v*+V will extend the *v*P up to XP, as in (27a):

(27) a. $[_{XP}$ X+[*v*+V$_{i}$]$_{j}$ $[_{vP}$ $[_{DP}$ SUBJECT] [t_j $[_{VP}$ t_i $[_{DP}$ OBJECT]]]]]
Φ◄————(Φ̸)

b. $[_{XP}$ $[_{DP}$ OBJECT]$_{k}$ [X+[*v*+V$_{i}$]$_{j}$ $[_{vP}$ $[_{DP}$ SUBJECT] [t_j $[_{VP}$ t_i t_k]]]]]
Φ

And with *v*P's phasehood extended up to XP, the object is free to raise to SpecXP, within the extended phase, as depicted in (27b). The derivation in (27a,b) is entirely parallel to that in (13b,c).

The fact that the shifted object makes no touch-down either on the edge of VP or on the edge of *v*P on its way out of *v*P predicts — correctly, in light of the facts in (24) — that there can be no FQ associated with the shifted object anywhere to the right of low, *v*P–adjoined adverbs (24c). That it *is* possible to have a FQ in between a *v*P–adjoined manner adverb and a *v*P–external sentential modifier such as *troligen* 'probably', as in (24b), suggests that SpecXP in (27b) is not necessarily the highest position that a shifted object can reach: from SpecXP the object can and will move further up, across sentential adverbials. This onward movement does not raise any minimality/locality problems, however, so I will ignore it here.

But entirely regardless of the question of whether the object does or does not raise on beyond SpecXP, it will be clear that (27b) X cannot be the final destination of the main verb in Object Shift constructions. For while movement of *v*+V to X makes it possible for the object to raise past the base position of the subject, the subject should ultimately make its way up to SpecTP past the landing site of the object, SpecXP. As things stand in (27b), the subject will not be attractable up to SpecTP: the probe, T, introduced outside XP, cannot 'see' the subject, which is now trapped inside the domain of the extended phase, XP. So to make the subject visible to T, and to ensure that the position that the subject skips on its way to SpecTP and its landing site are equidistant, X must move yet again, to T. In other words, history repeats itself further up the tree, as depicted in (27c,d), which is a perfect replica of (27a,b).

16 Chomsky (1995:Chapter 3) took this probe to be AgrO. There is no principled reason why AgrO should not be able to co-exist with *v*, but I agree with Chomsky (1995:Chapter 4) that 'agreement' is a *relationship*, not a *node*, so I would hesitate to identify 'X' as AgrO. A possible candidate for 'X' is an aspectual head; but for our purposes in this discussion, it is not important to know the true nature of 'X'. (Recall from the previous subsection that Object Shift arguably cannot target a position on the edge of *v*P.)

(27) c. $[_{TP}\ \text{T+[X+[}v\text{+V}_i]_j]_l\ [_{XP}\ [_{DP}\ \text{OBJECT}]_k\ [t_l\ [_{vP}\ [_{DP}\ \text{SUBJECT}]\ [t_j\ [_{VP}\ t_i\ t_k]]]]]]$

Φ◄—————— (Φ̸)

d. $[_{TP}\ [_{DP}\ \text{SUBJECT}]_m\ [\text{T+[X+[}v\text{+V}_i]_j]_l\ [_{XP}\ [_{DP}\ \text{OBJECT}]_k\ [t_l\ [_{vP}\ t_m\ [t_j\ [_{VP}\ t_i\ t_k]]]]]]]$

Thus we derive Holmberg's Generalisation (the fact that, whenever Object Shift takes place, the main verb must raise to a position higher up the tree than the object's landing site) from the theory of locality, in much the same way as in Chomsky's (1995:Chapter 3) original account, but this time factoring in the role of phases. Holmberg's Generalisation, viewed this way, is an instantiation of Phase Extension: the verb must raise out of *v*P, extending phasehood up to the projection of its host head, in order to facilitate fell-swoop movement of the object past the base position of the subject; and *v*'s host must, in turn, raise up to T to make fell-swoop movement of the subject past the landing site of the shifted object possible.

4 Incorporation, Phase Extension, and Scope

In the discussion of Dative Inversion in section 2, I already touched briefly upon *incorporation* (movement of a head into a higher lexical head), but I did not discuss its repercussions in the domain of Phase Extension in any detail yet. In this section, I would like to explore the consequences in the domain of locality of the incorporation of the head of a small clause into the lexical head selecting the small clause. There are many ways in which these consequences could be explored in principle. Rather than trying to be exhaustive, I have decided to pick out one particular area in which they are very much worth exploring: quantifier scope interaction and the 'freezing' of the small-clause subject — an area which has remained very poorly understood in the literature to date.[17]

4.1 The Explanandum

It is a well-known fact (see e.g. Hornstein 1995:81, 247–48 n. 75) that there is an important interpretive difference between the two examples in (28) when it comes to the scope of the universal quantifier *vis-à-vis* the existential quantifier in the nominative subject position.

(28) a. someone considers every congressman to be a fool $\exists$>/<$\forall$
b. someone considers every congressman a fool $\exists$>/*<$\forall$

Whereas (28a) is scopally ambiguous between the 'surface' reading in which *someone* scopes over *every congressman* ('there is someone who considers every congressman to be a fool') and the 'inverse', distributive reading in which *every congressman* takes scope over *someone* ('for every congressman there is someone who considers him to be a fool'), (28b) has only the surface-scope interpretation: the distributive reading is unavailable.

4.2 The Explanation: Covert Incorporation and Phase Extension

Hornstein (1995:248 n. 75) suggests that the difference between (28a) and (28b) might have something to do with a proposal that Stowell (1991) made on independent grounds with respect to the licensing of small-clause predicates: the idea that they incorporate into the verb that selects the small clause, in the LF branch of the derivation — what Stowell calls 'small clause restructuring'. For Hornstein (on whose analysis the accusative-marked ECM subject in both (28a) and (28b) raises to SpecAgrOP in the matrix clause), such LF incorporation 'somehow prevents' reconstruction of the subject, *someone*, into its base position, SpecVP — but he adds that he has 'no idea why this should be so'.

17 Bruening (2001) talks in admirable detail about scope freezing effects in double object constructions, but he does not extend the account to the facts under discussion here.

I believe Hornstein's basic insight that there is a link between (28b) and Stowell's (1991) 'small clause restructuring' is entirely on the right track, and that the mystery regarding its effect on the Q–scope facts dissolves once we gain a better understanding of the consequences of covert incorporation of the small-clause head into the verb selecting the small clause.

Three things are central in our understanding of what is going on. First, it bears reiterating that small clauses are *predications* (subject–predicate structures), hence *inherent phases* (recall (2)). Secondly, covert incorporation of the small-clause head, the RELATOR (irrespective of whether it does or does not contain the head of the predicate of the small clause), *extends* the small-clause phase up to the projection of the host of the raised RELATOR. And thirdly, we need to make a specific assumption about where the small-clause head raises when it does so covertly. Recall from the discussion in section 3.2 (between (26) and (27)) that the verbal root, V, amalgamates with the light verb *v* in the overt syntax: the two always come together prior to Spell-Out. What is left behind in the base position of the verbal root is a copy of the verbal root, V. Now what is it that the small-clause head incorporates into when it incorporates at LF — the base copy of the verbal root, or the *v*+V complex? My answer is: the former; the latter is too far away. If this is right, then this means that LF–incorporation of the RELATOR head into its selecting verb extends the RP phase up to VP *and no further* — after all, at LF there is no onward movement of the complex resulting from incorporation of the small-clause head into the verbal root: the lower copy of the verbal root does not move at all.

So as a result of incorporation of the RELATOR into the base copy of the verbal root in the LF wing of the derivation, the phasehood of the small clause is extended up to VP at LF, as depicted in (29):

(29) $[_{vP}\ v\text{+V}\ [_{VP}\ \not{\text{V}}\text{+RELATOR}_i\ [_{RP=SC}\ \text{SUBJECT}\ [t_i\ [\text{PREDICATE}]]]]] \quad \rightarrow$ *at LF*
$\Phi \longleftarrow (\Phi)$

The absence of a distributive reading for (28b) now follows on the further assumption that adjunction to the root–VP is impossible — something that we had assumed previously, in agreement with Chomsky's (1995: Chapter 4) assumption that nothing should ever sever *v* from the immediate projection of the verbal root. At LF, therefore, the subject of the small clause is *frozen* inside the domain of the extended phase, VP: it cannot reach the edge of the extended phase because this is not a legitimate adjunction site; and it cannot leave its domain-internal position without a stopover on the phase edge either.[18] The LF operation of Q–Raising hence cannot apply to the small-clause subject, as a result of which it cannot gain scope over the matrix subject.

This account of (28b) leaves (28a) entirely unaffected: there is no small clause in the complement of the lexical verb whose head covertly incorporates into that verb. And because incorporation of the small-clause head into the lexical verb in (28a) is a *covert* affair, it has no adverse consequences for *overt* movement of the small-clause subject either. In the overt syntax, the configuration depicted in (29) does not arise, hence in the overt syntax the base position of small-clause subject remains on the edge of the small-clausal phase and extraction of the small-clause subject is unobstructed.

4.3 Incorporation and the Government Transparency Corollary

Interesting questions now arise for languages in which the small-clause head incorporates into the selecting verb in *overt* syntax. Baker (1988) presents an in-depth analysis of the locality effects of incorporation into lexical heads from the point of view of the then-current locality theory, that of Chomsky (1986). He reaches the interesting conclusion that, as a corollary of the theory of government of the *Barriers* framework, incorporation into a lexical head extends the government domain of the incorporating head down into the government domain of the head that it incorporated:

18 There are no adverse effects for Case and agreement checking: the Agree relationship between *v* and the small-clause subject is established in the overt syntax, hence is unaffected by covert 'small clause restructuring'. The text discussion represents what Marušič (2005) calls 'nonsimultaneous phases': nodes which are phasal in one interpretive component but not in the other. The root–VP in (29) is an 'LF only' phase. The present theory can in principle derive 'nonsimultaneous phases' via LF phase-extending head movement, with 'LF only' phases as projections of the host of LF head movement and 'PF only' phases as the remnant thereof.

(30) *Government Transparency Corollary* (GTC; Baker 1988:64)
a lexical item which has an item incorporated into it governs everything which the incorporated item governed in its original structural position

With the advent of the minimalist program, where 'government' has fallen out of grace, one is led to ask how the effects of the GTC, which are undeniably real, can be derived from a theory without government. Of particular interest in the context of the present paper are cases in which the head of a constituent that is arguably a phase is incorporated into a higher head and brings about GTC effects. We just discussed such a case: incorporation of the head of a complement small clause into the selecting verbal head. For *covert* incorporation of this sort, we found that it actually has an *opacating* effect. But for *overt* incorporation, the effect is quite different: with the RELATOR incorporating into V, and the V+RELATOR complex subsequently raising on to *v*, this makes both the small-clause subject and the small-clause predicate visible to the *v* probe. The interesting case here is one in which the lexical head of the predicate itself incorporates into the (null) RELATOR, as in (9a), prior to movement of the RELATOR up to V. The chain of events that then ensues ensures the possibility of an Agree relationship for Case and agreement between *v* and the complement of the predicate head — and that is precisely one of the things that Baker (1988) argues can result from incorporation: in *applicative* constructions of the type found in the Bantu languages, *v* Agrees for Case and agreement with the object of the incorporated preposition (and in some Bantu languages, such as Kinyarwanda and one of the dialects of Chichewa, *v* in fact Agrees simultaneously both with the object of the incorporated P and with the small-clause subject).

It is tempting, therefore, to think that the effects of the Government Transparency Corollary can be derived from the theory of Phase Extension outlined in this paper. But before we can confidently draw this conclusion, a lot more work will need to be done on the details of GTC effects. I am not in a position at this time to undertake this task; but it will be interesting to explore the consequences of Phase Extension under overt incorporation into a lexical head in detail in future research.

5 Phase Extension, Long-distance A′–extraction, and Successive Cyclicity

For Chomsky (2000:108), '[t]he Phase-Impenetrability Condition requires that A′-movement target the edge of every phase, CP and *v*P'. And since for Chomsky, CP is systematically a phase, this entails that all extraction from a complement–CP must proceed via an intermediate stop-over in the embedded SpecCP, as depicted in (31). Rackowski & Richards (2005) present an alternative perspective on long *wh*-movement, according to which it proceeds systematically through *v*P–edge positions but not through SpecCP (cf. (32)). In Frank's (2002, 2006) TAG-based approach to locality, the role of successive cyclicity ('movement via the edge') is reduced even further: in this analysis, schematised in (33), movement to SpecCP must proceed via the *v*P–edge position in the tree that includes the *wh*-dependency (the top structure in (33)), but in the auxiliary tree representing the matrix clause (the C′–recursive tree on the second line of (33)), there can be no *v*P–adjoined trace because this auxiliary tree does not represent a *wh*-dependency, nor can there be an intermediate trace in the lower SpecCP (a position that is altogether non-existent); the net result of adjoining the auxiliary tree into the CP is a structure featuring just one intermediate trace, in a position adjoined to the embedded *v*P.

(31) $[_{CP}\ XP_i\ [_{C'}\ C\ [_{TP}\ SU_k\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_k\ [v\ [_{VP}\ V\ [_{CP}\ \cancel{XP}_i\ [_{C'}\ C\ [_{TP}\ SU_j\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_j\ [v\ [_{VP}\ V\ \cancel{XP}_i]...]$

(32) $[_{CP}\ XP_i\ [_{C'}\ C\ [_{TP}\ SU_k\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_k\ [v\ [_{VP}\ V\ [_{CP}\ C\ [_{TP}\ SU_j\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_j\ [v\ [_{VP}\ V\ \cancel{XP}_i]...]$

(33)
$$\frac{[_{CP}\ XP_i\ [_{C'}\ C\ [_{TP}\ SU_k\ [T\ [_{vP}\ \cancel{SU}_k\ [v\ [_{VP}\ V\ [_{C'}\ C\ [_{TP}\ SU_j\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_j\ [v\ [_{VP}\ V\ \cancel{XP}_i]...]}{[_{CP}\ XP_i\ [_{C'}\ C\ [_{TP}\ SU_k\ [T\ [_{vP}\ \cancel{SU}_k\ [v\ [_{VP}\ V\ [_{C'}\ C\ [_{TP}\ SU_j\ [T\ [_{vP}\ \cancel{XP}_i\ [_{vP/v'}\ \cancel{SU}_j\ [v\ [_{VP}\ V\ \cancel{XP}_i]...]}\ +$$

Sharing some of the insights of the Rackowski & Richards and Frank accounts, in this section I will present an approach to locality which, for long-distance *wh*-extraction, makes the need for a stop-over in embedded SpecCP positions dependent on the application of syntactic head movement to C. The proposal bases itself on the hypothesis in (2), that only subject–predicate structures are inherently phasal; other nodes can acquire phasehood in the course of the syntactic derivation as a result of movement of the head of the inherent small-clause phase to the heads of higher nodes in the structure, via Phase Extension. For a language in which *v*-to-T-to-C movement proceeds only in root CPs, this entails that long *wh*-movement proceeds through the *v*P-edge position in the lower clause and then straight to SpecCP in the matrix (cf. (34), similar to the outcome of (33)) — the embedded CP is not inherently a phase and does not acquire phasehood either (because *v*, the head of the only inherent phase of the lower clause, does not raise up to it); the matrix *v**P loses phasehood due to 'phase-extending' head movement of *v* via T up to the matrix C.

(34) $[_{CP}\ XP_i\ [_{C'}\ C\ [_{TP}\ SU_k\ [T\ [_{vP}\ \sout{SU}_k\ [v\ [_{VP}\ V\ [_{CP}\ C\ [_{TP}\ SU_j\ [T\ [_{vP}\ \sout{XP}_i\ [_{vP/v'}\ \sout{SU}_j\ [v\ [_{VP}\ V\ \sout{XP}_i]...]$

Assuming as before that movement of the functional head of a small clause (including *v*P) to the next higher head always extends the phase up to the projection of the next higher head, we predict that as a result of *v* raising to T, TP becomes a derived phase (cf. (35a); more on this in section 6.3, below). And with T subsequently raising on to C, that makes CP a derived phase at the next step in the derivation (35b).

(35) a. $[_{TP}\ \text{SUBJECT}_j\ [T+v_i\ [_{vP}\ t_j\ [t_i\ [_{VP}\ V\ ...]]]]]$
$\Phi \leftarrow (\Phi)$

b. $[_{CP}\ \_\_\_\ [C+T_k\ [_{TP}\ \text{SUBJECT}_j\ [t_k\ [_{vP}\ ...]]]]]$
$\Phi \leftarrow (\Phi)$

If CP is not inherently a phase but can only inherit phasehood via *v*-to-T-to-C movement, it is predicted that when such phase-extending head movement does not happen, CP is not a phase. In such situations, extraction from CP does not proceed through SpecCP. This has interesting repercussions for extraction from highest-subject *wh*-constructions, as I will now show.

Pesetsky & Torrego's (2001) account of subject *vs* non-subject extraction and T-to-C movement (cf. (36a,b)), in conjunction with the idea that CP is a phase iff *v*-to-T-to-C raising obtains, predicts that extraction from highest-subject *wh*-constructions should be legitimate without a stop-over in SpecCP — because CP is not a phase in highest-subject *wh*-constructions, no T-to-C movement taking place there (cf. (36a)).

(36) a. $[_{CP}\ \text{SUBJECT}_j\ \ [C\ (*+T_k)\ [_{TP}\ t_j\ [T_k\ [_{vP}\ ...]]]]]$
b. $[_{CP}\ \text{NON-SUBJECT}_n\ [C\ *(+T_k)\ [_{TP}\ \text{SUBJECT}_j\ [t_k\ [_{vP}\ ...\ t_n\ ...]]]]]$

This provides a perspective on Chung & McCloskey's (1983) observation (revisited in Chomsky 1986 in terms of his Vacuous Movement Hypothesis) that A′–extraction out of English highest-subject *wh*-constructions is typically much easier than A′–extraction out of other *wh*-constructions.[19] The grammaticality of the examples in (37) testifies to this.

(37) a. this is a paper that we really need to find someone who understands
b. these are the dialects that we want to find out who speaks to whom

The fact that (37a,b) and similar such examples are grammatical, whereas extraction from finite *wh*-constructions introduced by a non-subject *wh*-constituent generally crashes, can be understood from the perspective of the representations in (36), in conjunction with Phase Extension.

19 It is not the case, however, that extraction from highest-subject *wh*-constructions is unrestricted; see Den Dikken (2006b).

In (36b), the *v*P phase is extended, as a result of *v*-to-T-to-C movement, all the way up to CP. A probe outside this embedded CP will be unable to engage in an Agree relationship with any constituent inside the domain of the CP phase; and since English is not a multiple *wh*-fronting language, it cannot manoeuvre more than a single *wh*-phrase onto the edge of CP. Nothing will ever make it possible for an outside probe to Agree with a *wh*-phase in the domain of the CP in (36b), therefore — and this is as desired: sentences like **where don't you know what you should put* are impossible.

In (36a), by contrast, the need for T-to-C raising is obviated, on Pesetsky & Torrego's (2001) assumptions, by the fact that raising of the highest subject from SpecTP to SpecCP 'kills two birds with one stone', so to speak: it checks both C's uninterpretable *wh*-feature (*u*Wh) and its uninterpretable tense feature (*u*T). For the former, this is of course straightforward: the *wh*-subject is itself in the possession of a *wh*-feature. And for the latter, on the assumption that nominative Case is in fact an instantiation of *u*T (which is something that Pesetsky & Torrego argue for at length and on independent grounds) it follows that raising of the nominative subject to SpecCP checks C's *u*T feature as well. Raising of T to C for the purpose of checking *u*T on C, which was necessary in (36b) because the *wh*-phrase in SpecCP could not check *u*T (not being a nominative itself), is therefore redundant (hence illegitimate) in (36a). With T-to-C not taking place in (36a), the *v*P will not get extended up to CP, which means (in conjunction with the assumption that only subject–predicate structures are inherently phasal, and given that CP is not a subject–predicate structure) that CP is not a phase in this environment. TP may very well become a phase, as a result of *v*-to-T movement — though this depends on the properties of T in individual languages. But even if TP becomes a phase as a result of *v*-to-T movement, it still will not prevent extraction of a *wh*-phrase out of the CP in (36a): the prospective extractee can freely adjoin to the TP extended phase on its way out (TP is not a meaningless category, so (18) does not prohibit adjunction); and once in a TP–adjoined position, *(a)* it will be on the edge of the derived TP phase, and *(b)* it and the *wh*-phrase in SpecCP will be equidistant (because they are both immediately dominated by all the same maximal projections: TP does not dominate the TP–adjoined trace), so a CP–external probe is free to Agree with and attract the non-subject-*wh* in its TP–adjoined position across SpecCP.

6 Some Further Consequences of Phase Extension

The program built on the premises in (1)–(3) has a variety of further consequences, empirical as well as conceptual. I address a few of these in this final section, touching upon them briefly to paint the general picture.

6.1 Criteria for Phasehood

For Chomsky (2000:106), a phase is

> a natural syntactic object SO, an object that is relatively independent in terms of interface properties. On the "meaning side," perhaps the simplest and most principled choice is to take SO to be the closest syntactic counterpart to a proposition: either a verb phrase in which all θ-roles are assigned or a full clause including tense and force. Call these objects *propositional*. Considerations on the "sound side" support the choice, given properties of the kind mentioned earlier distinguishing CP from TP, which extend to *v*P (fronting, extraposition, pseudoclefting, response fragments, etc.). [original italics]

In his recent papers, Chomsky has suggested furthermore that the ability to act as probes and the possession of an EPP property may be the exclusive prerogative of phase heads (see e.g. Chomsky 2001:15–16; 'the jury is still out on that'). Let us distill from these remarks a set of criteria for phasehood:

(38) a. phases are semantically independent (propositional)
b. phases are phonologically independent (prosodically isolable, movable)
c. phases are potential probes (loci of uninterpretable formal features)
d. phases are the locus of EPP

In a theory, such as Chomsky's, in which phasehood is not syntactically manipulable ('once a phase, always a phase'; 'not a phase at the outset, then never a phase'), the criteria in (38) are handled straightforwardly. For a theory incorporating a more dynamic outlook on phasehood, such as the one defined by the program in (1)–(3), assessing the validity of these criteria is a more complicated task. Basic predications (subject–predicate structures) certainly do meet the criterion of semantic independence (propositionality). But they are not the only structures that do: CPs, for instance, do, too. Let me start out, then, by talking briefly about the consequences of the Phase Extension program for CP's phasehood, in light of the criteria in (38). Subsequently, I will proceed to a discussion of the phasehood of TP and DP, and to some reflections on the broader conceptual issues underlying phasehood and the criteria for it.

6.2 CP and Phasehood

The present theory categorically denies CPs *inherent* phasality; but CPs can certainly *acquire* phasehood via Phase Extension. As we have seen in the previous section, the question of whether phase-extending movement up to C obtains in the overt syntax or not has important consequences for the extractability from CP in the overt-syntactic derivation. In section 4.2, we had already encountered the possibility of *covert* phase-extending movement, having consequences for the LF wing of the grammar exclusively. It is entirely possible that universally *v*+V raises up to (finite) T and T raises onwards to C at LF, for reasons of scope. If so, this will make CP universally a phase on the 'meaning side' (in line with its status as a proposition), *without* CP necessarily being a phase on the 'sound side' and in its overt-syntactic behaviour as well. This is probably a desirable state of affairs. For despite meeting criterion (38a) throughout, not all CPs meet the criterion in (38b): there are CPs that are not phonologically independent (see e.g. *wanna*-contraction cases) and that cannot be moved or clefted (headless CPs). Overt phase-extending *v*-to-T-to-C movement, resulting in the lexicalisation of C as *that* on Pesetsky & Torrego's (2001) assumptions, is a prerequisite for overt movement or clefting of CP. This goes along well with what the Phase Extension program leads one to expect: only CPs that become phasal prior to spell-out show the criterion of phonological independence (38b).

Though it is not obvious that all Cs are probes (38c), there certainly are Cs that attract phrasal material into their specifier position, which indicates that Cs can possess the EPP property. If possession of the EPP property is the exclusive prerogative of phase heads, as (38d) has it, then every C that attracts a phrase into its specifier position must acquire phase-head-hood, via Phase Extension. If so, the analysis of highest-subject *wh*-constructions in (36a) will need to be revised: absent T-to-C movement, there is nothing that could endow CP with phasehood, and if phasehood is a prerequisite for having the EPP property, that means that *wh*-movement into SpecCP in fact cannot proceed in (36a). This conclusion may lead us back to the Vacuous Movement approach to highest-subject *wh*-constructions proposed in Chomsky (1986): the highest-subject *wh*-phrase stays in SpecTP; it cannot raise to SpecCP. Den Dikken (2006b) shows that a Vacuous Movement account of highest-subject *wh*-constructions has a variety of beneficial consequences. It is interesting to note that criterion (38d), in conjunction with my assumptions regarding CP's phasehood, seems to automatically lead us to such an account.

I hasten to add, however, that I am not prepared at this stage to embrace (38d) as a criterion for phasehood. The status of the EPP is itself up in the air. There are indications (compelling, to my mind) suggesting that the EPP is a PF condition. I refer the reader to Van Craenenbroeck & Den Dikken (to appear) for discussion of cases in which the EPP requirement imposed by T is lifted in ellipsis contexts in which T is elided at PF — which is the perfect segue into a discussion of TP and phasehood, the topic of the next subsection.

6.3 TP and Phasehood

One of the ingredients of Chomsky's recent work on phases that is most frequently called into question in the literature is his assertion that TP is not a phase. In light of what he says about phases in Chomsky (2000: 106), it is by no means self-evident that TP should not be a phase. Semantically, it is not clear why TP should not be propositional. And as far as relative independence on the 'sound side' is concerned, it is well known that TP can undergo Right Node Raising (see Bresnan 1974, where (39a) is attributed to Tim Austin):

(39) a. I've been wondering whether, but wouldn't positively want to state that, [$_{TP}$ your theory is correct]
b. I can tell you when, but I can't tell you why, [$_{TP}$ he left me]
c. tell him no more than, nor even all that, [$_{TP}$ he'd like to know]

It does not matter whether RNR involves movement or some other operation: the fact that the TPs in (39a–c) are prosodically clearly set apart from the rest of the sentence makes the point of TP's relative independence on the 'sound side' entirely irrespective of one's analysis of RNR, whose details are of no concern to me here. It is true that TP is not frontable or cleftable, but this likely has independent causes.[20] The evidence for TP's 'lack of autonomy' is not unequivocal, therefore: it depends on where you look.

The present theory agrees with Chomsky's assessment of TP and phasehood insofar as it shares with it the idea that TP, in many cases, is not *inherently* a phase. In simple transitive sentences such as (40a), the predication relationship between VP and the subject is established at *v*P, which is inherently phasal.

(40) a. Jean embrasse souvent Marie (French)
b. [$_{TP}$ Jean$_i$ [T+[$_v$ *v*+[$_V$ embrasse]$_j$]$_k$ [souvent [$_{vP}$ t_i [t_k [$_{VP}$ t_j Marie]]]]]]
Φ◄——————————(Φ)

For a language like French, the surface word order shows that the lexical verb raises to T, which proceeds in two steps: first the verbal root raises up to *v*, and subsequently the *v*+V complex raises to T. Movement of *v*+V to T gives rise to Phase Extension. So in French *v*P's phasehood is extended to TP in finite simple transitives of the type in (40a). Though not inherently a phase in contexts of the type in (40), TP can certainly *become* a phase as a result of phase-extending head movement, as depicted in (40b).[21]

In contexts in which the verb has no external θ-role to assign (i.e., in unaccusative constructions), the semantic relationship of set intersection between the surface subject and the VP can be mediated directly by T, without the need for a *v* RELATOR ever arising (see Den Dikken 2006a:23–24 for more discussion, the details of which are largely irrelevant here). In contexts in which TP itself mediates predication, TP is *inherently* a phase, regardless of whether there is verb movement up to it or not.[22]

(41) a. John fell
b. [$_{TP=RP}$ John$_i$ [T=RELATOR [$_{VP}$ fell t_i]]]
Φ

The question of whether TP is an *inherent* or *extended* phase is immaterial unless one attributes different properties to inherent and extended phases, which the theory I am presenting here explicitly does not.[23]

20 Thus, it is likely that the ungrammaticality of *[*Bush is a great president*]$_i$, *few people think that* t_i reduces to the *that*-trace effect, and that the ill-formedness of *[*Bush is a great president*]$_i$, *few people think* C$_\varnothing$ t_i is caused by the fact that t_i cannot be licensed by the null complementiser. Finally, the deviance of *[*Bush to be a great president*]$_i$, *few people consider* t_i may be Case-related. Case may also be the cause of the immobility of small clauses in general. I do not consider failure to meet (38b) fatal for phasehood.

21 In languages lacking overt movement to T, TP is probably an 'LF only' phase (cf. fn. 18) thanks to covert V–movement.

22 For copular sentences such as *John is intelligent*, there are two options in principle: one may either take T to perform the role of RELATOR of the subject and the non-verbal predicate (in which case TP is inherently phasal because it instantiates a predication) or the predication relationship between the nonverbal predicate and its subject can be established in a small clause embedded below T (which will then be the inherent phase, with movement of the copula that heads the small clause up to T resulting in Phase Extension to TP). For sentences with pleonastic subjects, details regarding phasehood depend a great deal on one's assumptions about pleonastics, which is a topic I cannot go into here.

23 In this respect there is once again a parallel between the present theory and Chomsky (1986), where no difference in syntactic significance or 'weight' is attributed to *inherent* barriers and *inheritance* barriers either.

The previous examples show that, in the present theory, TP frequently is or at least becomes a phase. The phasality of TP is often syntactically quite innocuous for extraction from TP, it seems: for phrasal A′–movement, it can always be voided by intermediate adjunction (TP not being an illegitimate adjunction site, unlike in Chomsky 1986);[24] A–movement can readily proceed from the SpecTP edge of (non-finite) TP whenever necessary; and head movement from TP must proceed through the head of the phase on independent grounds (the Head Movement Constraint), hence is uninhibited by TP's phasehood as well. The significance of TP's inherent or extended phasehood is ultimately an empirical issue. Perhaps surprisingly (given the centrality of TP in the system), it is not a straightforward matter to come up with evidence that will allow us to adjudicate the issue.[25] Let me just briefly highlight one particular issue here: T, phasehood, and the EPP (38d).

It seems indisputable that T may have an EPP property. So if we are to make this compatible with the idea that only phase heads can possess an EPP property *and* the claim that T is not a phase head, something will have to be done to capture the 'classic' EPP. Chomsky (2004) assumes that T inherits all its properties from C *qua* phase head, as a kind of 'hand-me-down' from above.[26] But for me, C is not inherently a phase head: after all, C is not a RELATOR of a predicate and its subject. So on my assumptions, T's EPP property cannot derive from C via feature inheritance: phasehood can only be inherited *upwards*, so to speak, via Phase Extension. By the logic of the program defined by (1)–(3), it is therefore to be expected that TP will acquire phasehood only via Phase Extension. So if (38d) is to hold (but recall the end of section 6.2 for qualification), this predicts a correlation between phrasal movement to SpecTP and head movement of *v* to T.[27]

24 Chomsky denies TP phasehood on the grounds that its edge does not seem to be a reconstruction site, suggesting that there can be no intermediate adjunction to TP. Work by Legate (2003) and references cited there likewise exploits reconstruction as a probe into phasehood, this time using it as evidence for (generalised) *v*P's systematic status as a phase. In Den Dikken (2006d) I show that in the latter context the reconstruction argument jumps to conclusions; its status in the former should likewise be subjected to scrutiny.

25 Gallego (2006) and Gallego & Uriagereka (2006), whose notion of 'phase-sliding' is very similar to my Phase Extension (3) (with Phase Extension being historically anterior), present as an argument for TP's parametrised phasehood a discussion of the fact that Iberian Romance (but not English) allows the subject to surface in the postverbal domain, even in transitive sentences, and that PP subextraction from such postverbal subjects is grammatical, in contrast to subextraction from preverbal subjects. They argue that these properties are a consequence of *v*-to-T movement obtaining in Iberian Romance, extending *v*P's phasehood up to TP. But their discussion does not provide unequivocal support for 'phase-sliding'/Phase Extension; much depends on one's outlook on the derivation of 'Vfin – OB – SU' orders (see Den Dikken 2006a:section 2.8.2 for relevant discussion). The subextraction discussion, moreover, is based on a speculative and questionable analysis of English data by Chomsky (2004). (I do not have the space here to go into the issues.) Gallego and Uriagereka wed 'phase-sliding' to Hornstein & Uriagereka's (2002) 'reprojection', which limits their reach. That there is no connection between Phase Extension and 'reprojection' is evident from the cases brought up in section 4.

26 The downward communication of properties, from C down to T, is not countercyclic (after all, TP is not a phase on Chomsky's assumptions), so this is strictly speaking a legitimate and coherent line of analysis. Yet, it is at the very least unintuitive to assume that the point at which the subject raises to SpecTP comes only after the merger of C and the concomitant downward percolation of C's properties to T. That, moreover, the feature inheritance approach does not work empirically either is suggested by the fact that T can have the EPP property in contexts in which a local C is arguably absent: ECM *to*-infinitives are a case in point. For such constructions, the standard analysis in (ia) is unavailable on the assumption that the EPP is the privilege of phase heads: 'defective' T is not a phase head, nor can it derive an EPP property from elsewhere. An alternative that comes to mind is the derivation in (ib), based on the input structure in (ib′). In (ib′), *to* is a RELATOR establishing a predication relationship between the VP of *speak French* and its subject, *these people*, in precisely the same way that its French equivalent *à* 'to' relates the VP *parler français* to its subject *ces gens* in the *faire*-infinitive causative construction in (ic) (Den Dikken 2006a:§2.7.2). Whereas in French (ic) the RELATOR and the subject stay *in situ*, in English (ib) both raise, the former to T, extending the phasehood of RP to TP and facilitating movement of *these people* to SpecTP by making T an EPP-endowed probe, and by making *these people* visible and movable to T *qua* probe.

(i) a. *I believe [$_{TP}$ these people$_i$ [to [$_{vP}$ t_i speak French]]]
b. I believe [$_{TP}$ these people$_i$ [T+RELATOR$_j$=*to* [$_{RP}$ [$_{VP}$ speak French] [t_j t_i]]]]
b′. ... [$_{RP}$ [$_{VP}$ speak French] [RELATOR=*to* [$_{DP}$ these people]]]
c. je fais [$_{RP}$ [$_{VP}$ parler français] [RELATOR=*à* [$_{DP}$ ces gens]]]
I make speak French to these people 'I make these people speak French'

27 It is customary to assume that universally *v*+V raises up to (finite) T at LF. This will make (finite) TP universally a phase on the 'meaning side'. In some languages, TP will also become a phase on the 'sound side' as a result of overt-syntactic Phase Extension. The idea that T is endowed with an EPP property as a result of phase-extending movement up to it apparently clashes with

6.4 DP and Phasehood

There is good reason to believe that DP and CP are each other's counterparts in their respective domains (the noun phrase and the clause). For CP, Chomsky assumes that it is inherently a phase. The present theory, by contrast, denies CP's inherent phasality (on the grounds that CP is not a predication structure), arguing that CP is only a phase whenever *v*-to-T-to-C movement obtains (recall the discussion in sections 5 and 6.2). For DP, something similar should hold: DP will only be a phase if a lower phase head raises up to it in the course of the derivation. Let us explore the repercussions of this in general terms.

The well-known opacity of possessed noun phrases follows straightforwardly on the entirely plausible assumption (supportable on the basis of a variety of evidence that I cannot go into here; cf. Den Dikken 1995) that the relationship between the possessor and the possessum is one of predication — recall here our brief discussion of prepositional dative and double object constructions, which represented the relationship between the dative PP (harbouring the possessor) and the direct object (the possessum) as one involving predication.

(42) a. *who did you read John's book about *t*?
b. *who$_k$ did you read [$_{DP}$ [John]$_i$ [D+RELATOR$_j$=*'s* [$_{RP}$ [book about t_k] [t_j t_i]]]]
Φ◄————————————(Φ)

In (42b), raising of the RELATOR of the possessum and the possessor (arguably spelled out as the 'Saxon genitive' *'s*, a copular element; see Den Dikken 1998) up to D extends RP's phasehood to DP. With the possessor ultimately raising to SpecDP, to the left of the landing-site of the raised RELATOR, an opaque DP results: a DP that qualifies as an extended phase due to phase-extending movement of a lower phase head up to D, whose specifier position cannot be used as an escape hatch because it is occupied, and to which adjunction is illegitimate because DP is an argument (Chomsky 1986:6).

Simple definite DPs are often opaque as well: thus, there is a clear contrast between (43a) and their indefinite counterpart in (44a) (cf. Fiengo & Higginbotham 1981 and references cited there).

(43) a. *who did you read {the/that} book about *t*?
b. *who$_k$ did you read [$_{DP}$ [SPECIFIC]$_i$ [D+RELATOR$_j$=*the* [$_{RP}$ [book about t_k] [t_j t_i]]]]
b′. *who$_k$ did you read [$_{DP}$ [that]$_i$ [D+RELATOR$_j$=∅ [$_{RP}$ [book about t_k] [t_j t_i]]]]
(44) a. who did you read a book about *t*?
b. who$_k$ did you read [$_{DP}$ [D=∅ [$_{NumP}$ Num=*a* [book about t_k]]]]

This effect of the Specificity Condition ('no specific DP may contain a free variable') can be understood from the perspective of the present research program on the assumption that specific noun phrases involve a predication relationship, within the noun phrase, between a(n abstract) specificity predicate and the projection of the head noun, as sketched in (43b).[28] The definite article *the* may well be the lexicalisation of the RELATOR head mediating the predication relationship between the specificity predicate and the head noun phrase. Raising to D takes it into its surface position to the left of the head noun; and it also extends phasehood up to DP.

Alexiadou & Anagnostopoulou's (1998) argument to the effect that verb movement to T *satisfies* the EPP, obviating phrasal movement to SpecTP. Empirically, it does not appear to be the case that all languages that have verb movement to T leave their subjects in a *v*P/VP internal position: though in some V-fronting languages the preverbal subject is arguably in an A′–position (as Alexiadou & Anagnostopoulou show on the basis of a variety of criteria), there are indubitably also languages whose preverbal subjects are in SpecTP, with V raised to T. For those verb movement languages that do indeed have a basic VSO syntax *à la* Alexiadou & Anagnostopoulou (1998), such as Modern Greek, a possibility that comes to mind is to extend to them Massam's (2001) analysis of VSO word order in Niuean, in terms of raising of the lexical root–VP to SpecTP, stranding *v* and the shifted object — a case of Predicate Inversion. With *v* raising to T and endowing T with an EPP property, and with the root–VP satisfying the EPP by raising to SpecTP, this analysis is in keeping with the theory, *without* the subject being triggered to vacate its *v*P-internal base position.

28 This is similar in effect to, though in a way the reverse of, Campbell (1996), where the head-noun's NP is the predicate of a null subject that is bound by a specificity operator base-generated in SpecDP. For Campbell, all common-noun phrases involve predication inside DP, but only specific noun phrases feature a specificity operator in SpecDP.

Full opacity arguably results from movement of the abstract specificity predicate to SpecDP, in a way analogous to the raising of the possessor into SpecDP in (42b) (cf. *which book*, where *which* is the overt specificity predicate, raised to SpecDP; the RELATOR is null in English when the specificity predicate is overt, and *vice versa*). It is plausible to hypothesise that the specificity predicate raising to SpecDP is lexicalised as the demonstrative in noun phrases with a high demonstrative, and that the RELATOR head in this case is null in English (cf. (43b′)); in languages like Hungarian, overt demonstratives that have a case-agreement relationship with the head noun (as is typical of subject–predicate relationships in general) show up in the outermost specifier position of the DP, to the immediate left of the definite article (as in *ez az asztal* 'this(NOM) the table(NOM), *ez-t az asztal-t* 'this-ACC the table-ACC', *ez-en az asztal-on* 'this-ADESS the table-ADESS').

In simple non-specific indefinite noun phrases like (44a), the specificity predicate is absent. There is no predication relationship established within the complement of D at all: the projection of the head noun functions simply as the complement of the Num head *a*, which is not a predication RELATOR, hence not a phase head; regardless of whether the indefinite article raises to D or not, therefore, DP will never become an extended phase in non-specific indefinite noun phrases, which explains their transparency to extraction.[29]

The fact that non-specific indefinite DPs do not acquire phasehood entails, if (38a,b) hold, that such DPs should not be semantically autonomous or movable. And indeed, it is well known that non-specific indefinites cannot scramble: they must stay within the VP, where they form a complex predicate with V at LF. Once an indefinite DP scrambles out of the VP, it is interpreted as a *specific* indefinite — in other words, as a DP whose structure includes a specificity predicate. As we have seen, such DPs do indeed acquire phasehood, via Phase Extension (recall (43b,b′)); their semantic and phonological independence falls out from (38). *Wh*-DPs are always movable, even if non-specific: the *wh*-operator is a predicate of the head-noun's NP, raising to SpecDP with concomitant phase-extending movement of the RELATOR up to D, much as in (43).

6.5 Phases and (Cyclic) Spell-Out

Unlike DPs, CPs always dominate a predication (though often not immediately). There is always the possibility, therefore, for CP to inherit phasehood as a result of Phase Extension. But I argued in section 5 that CPs do not always receive the head of the inherent phase in their complement: there are contexts in which (*v*-to-) T-to-C movement does not happen. What does this entail for the spell-out of such CPs?

This question is a pressing one in light of Chomsky's conceptual motivation for phase-wise cyclic derivation. For Chomsky, the conceptual basis for phase-wise cyclic syntax lies in the desire to alleviate the burden on active memory imposed by syntactic computation: by assuming that relatively autonomous chunks of syntactic structure (i.e., phases) are handed over to the interpretive components, PF and LF, upon their completion, or upon the completion of the next phase up (more on this choice below), and that the information that is part of these chunks can be 'forgotten' as soon as they are transferred to PF and LF, we can reduce the memory-load needed in the course of the construction of a syntactic structure.

So at the phase level, chunks of syntactic structure are sent off to the interpretive components. But does this entail that communication between syntax and PF/LF is only ever possible at phase boundaries? That is, are phases the only constituents that can ever be spelled out? If so, the present program must somehow ensure that the head of the root CP always plays host to phase-extending movement in the overt syntax, the only chance for the root CP to acquire phasehood. This could help us explain the Verb Second effect: the fact that the head of the root CP must receive the finite verb in languages exhibiting the effect. But the V2 effect is not universal, which immediately raises the question of what to do with root CPs in languages that do not fill their heads overtly. One possibility would be to argue that, despite surface appearances, the head of a root CP *is* in fact systematically filled overtly by the head of a lower phase. But there is a plausible alternative: one could also argue that the root node is sent off to the interpretive components *regardless* of whether it is a phase or not; it is, after all, the *root* node, the end of all syntactic (i.e., sentence-bound) computation.

29 There are also definite and specific noun phrases from which extraction is perfectly allowed (e.g., *which city did you witness the destruction of?*). I have no account of these cases at present. The text remarks should be read as tentative suggestions.

More broadly, we also need to consider the question of how Phase Extension (3) affects Chomsky's conceptual argument for phase-wise cyclic syntax in general. Recall that for Chomsky, the syntax communicates with the interpretive components at fixed points in the derivation: at phase boundaries, which are rigidly defined and non-dynamic (i.e., 'once a phase, always a phase'; 'not a phase at the outset, then never a phase'). In the Phase Extension program, by contrast, phasehood is *not* rigid, invariant: a particular node which is inherently phasal thanks to the fact that it is a predication structure can lose its phasehood as a result of syntactic movement of its head in the course of the derivation; and a node which is not inherently phasal can acquire phasehood by hosting the raised head of a lower phase. For languages that have no head movement at all in the syntax, the implications are minimal — though it will be clear that such languages will have far fewer phases in their syntax than they would on Chomsky's assumptions: no CP will ever be a phase in a language in which there is no head movement, for instance. But languages that radically lack syntactic head movement are few, perhaps non-existent.[30] So let us instead consider languages that do have head movement.

For the Phase Extension model to work, we need the spell-out of a phase α to be delayed at least until the completion of phase-extending head movement. If spell-out happened right at the completion of α, that would entirely defeat the purpose of head movement to extend the phase and keep the domain of the phase head 'alive' for syntactic manipulation. Take the case of Predicate Inversion, for instance: the predicate, which constitutes the domain of the RELATOR=phase head, would be irretrievably trapped inside the small clause if the domain of the small clause was sent off to the interpretive components upon the phase's completion; movement of the RELATOR would not have any beneficial effect on Predicate Inversion whatever. Phase-extending head movement carries the phase up one notch to the projection of the host head, whose domain is the entire erstwhile phase. Spell-out of the newly extended phase will once again not be immediate: if the head of the extended phase in its turn raises up, this will carry phasehood further up the tree, and this once again has syntactic consequences. Languages will be expected to differ, therefore, with respect to which portions of the structure are sent off to the interpretive components, and at which points. Whereas a language that does not move *v* up to T may spell out *v*P upon the merger of T, a language whose *v* raises to T must postpone the spell-out of *v*P at least until the merger of C; if T+*v* should raise further on to C, spell-out will be postponed even further. Even in heavily head-moving languages, however, spell-out will still proceed cyclically. For in certain syntactic configurations, head movement is either impossible or very rare — thus, for instance, complementisers (C) do not seem to incorporate into lexical verbs selecting CPs; similarly, determiners (D) do not incorporate into verbs selecting DPs, or at least, not very often. With head movement usually stopping at C and D, we thus continue to find points in the derivation at which subparts of the structure are sent off to the interpretive components, even in languages with massive head movement.

But the way the syntactic pie is cut up into slices varies depending on the extent of head movement, and as a result, the points at which the syntax interfaces with PF and LF are not rigidly the same in all languages. Thus, the core verbal predication of a clause is spelled out at the *v*P point in a language in which *v* does not move, at TP in a language with *v*-to-T and no further, and at CP in a language that has head movement all the way up. (45) gives a graphic impression of spell-out variation as a function of head movement.

(45) a. $\boxed{[_{CP}}$C $[_{TP}$ T $\boxed{[_{vP}}$*v* $[_{VP}$ V $[_{CP}$ C $[_{TP}$ T $\boxed{[_{vP}}$*v* $[_{VP}$ V ...]]]]]]]]

b. $[_{CP}$C $\boxed{[_{TP}}$T+[*v*+V] $[_{vP}$ t_v $[_{VP}$ t_V $[_{CP}$ C $\boxed{[_{TP}}$T+[*v*+V] $[_{vP}$ t_v $[_{VP}$ t_V ...]]]]]]]

c. $\boxed{[_{CP}}$C+[T+[v+V]] $[_{TP}$ t_T $[_{vP}$ t_v $[_{VP}$ t_V $\boxed{[_{CP}}$C+[T+[*v*+V]] $[_{TP}$ t_T $[_{vP}$ t_v $[_{VP}$ t_V ...]]]]]]]

I do not have a clear picture at this time of the plausibility of this result of Phase Extension from the point of view of the conceptual motivation that Chomsky provides for phase-wise cyclic derivation. One could conceivably assess the merits of it by investigating the relative burdens on active memory capacity imposed by head-moving and non-head-moving languages or, within individual languages, construction types. But to put things mildly, I am not a specialist in this area; so I must leave such investigations to others.

30 I myself know of no language for which it could plausibly be argued that it completely lacks all syntactic head movement.

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Linguistics Program — CUNY Graduate Center *MDen-Dikken@gc.cuny.edu*
365 Fifth Avenue — New York, NY 10016–4309 *http://web.gc.cuny.edu/dept/lingu/dendikken/index.html*