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4 Parallels in the structure of phases in clausal and nominal domains

Abstract: It is commonly assumed that clauses are bi-phasal, consisting in a CP phase and a mid-level, internal phase vP/AspP. There is also a common view, since Abney 1987, Szabolcsi 1983, that clauses and nominal phrases are structured in similar ways. This chapter makes the claim that nominal phrases may be bi-phasal like clauses and examines the consequences of such a conclusion for recent general approaches to phases, in particular theories advocating the contextual determination of phases (e. g. Bošković 2014). The chapter presents arguments relating to blocking effects in Bangla/Bengali that nominal constituents in Bangla contain an internal QP phase as well as projecting a higher DP-level phase, motivated by patterns of extraction and argument ellipsis. Cross-linguistic variation with regard to the presence of mono- vs. bi-phasality are suggested to be due to differences in the amount of functional structure that languages grammaticalize in clausal and nominal domains. The chapter also probes ellipsis as a diagnostic for phasehood within nominals, and notes that ellipsis patterns in English and Hungarian (Ruda 2016) offer potential evidence for the presence of bi-phasal nominals in both these languages.

4.1 Introduction

It has long been suggested that clauses and nominal phrases are structured in similar ways (Abney 1987, Szabolcsi 1983). One important property ascribed to CPs in a Minimalist view of syntax is that they function as *phases* and also contain an internal *phase* – vP (Chomsky 2000). Given recent suggestions that DPs also occur as phases (Svenonius 2004, Bošković 2012, Hinzen 2012), it is natural to ask whether such nominal constituents might additionally contain an internal phase, paralleling the occurrence of a lower phasal unit within clauses. Drawing on work in Simpson and Syed (2016) and Syed and Simpson (2017), this paper presents arguments from word order patterns and other syntactic phenomena in Bangla nominal phrases which suggest that such constituents do indeed contain a mid-level internal phase projected above NP, and that a higher DP level of structure also projects as a phase. This results in the conclusion that the fully extended projection of noun phrases may contain two separate phases, in a way that resembles the occurrence of two phasal levels within clauses. The paper suggests that such proposals are not in conflict with the contextual approach to phases described in

Bošković (2014), which actually assumes that nominals are mono-phasal, and can in fact be shown to align with the premise in Bošković (2012, 2014) that languages may grammaticalize functional structure in the nominal and clausal domains to different degrees. The paper also presents novel ellipsis-related data from English and reference to similar patterns in Polish and Hungarian from Ruda (2016) which support the view that nominals in other languages are potentially bi-phasal domains.

The structure of the paper is as follows. Section 4.2 presents arguments given in Simpson and Syed (2016) that nominal constituents in Bangla contain an internal phase projected below possessors and demonstratives: QP. Section 4.3 motivates a DP analysis of nominal projections in Bangla, although the language lacks definite determiners, and shows that DPs in Bangla pattern as phases, as in other languages. Section 4.4 then considers the broader cross-linguistic consequences of the conclusion that DPs may have a bi-phasal structure and shows how such a conclusion can be reconciled with the influential approach to phases argued for in Bošković (2014, 2016), and Harwood (2015). Section 4.5 asks why the presence of nominal-internal phases may be harder to detect than clause-internal phases, and explores ellipsis as a diagnostic for phasehood within nominals in other languages. Finally, section 4.6 summarizes the results of the paper.

4.2 QPs as nominal-internal phases in Bangla (Simpson and Syed 2016)

In Bangla, the most neutral order of elements within nominal phrases is as seen in (1): Possessor > Demonstrative > Numeral > Classifier > Adjective(s) > Noun (Bhattacharya, 1999):

- (1) *Ram-er ei tin Te notun tupi*
 Ram-GEN DEM 3 CLF new hat
 ‘these three new hats of Ram’s’

Other orders of these elements may, however, occur for certain interpretative effects. First, the phrasal sequence of adjectives and noun/NP regularly raises leftwards past the classifier and numerals to signal a definite interpretation (Bhattacharya 1999, Dayal 2012, Chacón 2012, Syed 2017), as shown in (2a/b).

- (2) a. *tin Te notun tupi*
 3 CLF new hat
 ‘three new hats’
- b. *[notun tupi]_k tin Te t_k*
 new hat 3 CLF
 ‘the three new hats’

If a demonstrative is present, the [Adj N] constituent raises to a landing-site lower than the demonstrative but higher than the numeral, as shown in (3a/b):

- (3) a. *ei tin Te notun tupi*
 DEM 3 CLF new hat
- b. *ei [notun tupi]_k tin Te t_k*
 DEM new hat 3 CLF

When adjectives are heavily focused, a second kind of nominal-internal movement may take place to a higher position between possessors and demonstratives, which Syed (2017) identifies as a FocusPhrase/FocP.

- (4) *Ram-er [notun]_m ei tin Te [t_m tupi]*
 Ram-GEN new DEM 3 CLF hat
 ‘these three new hats of Ram’s’

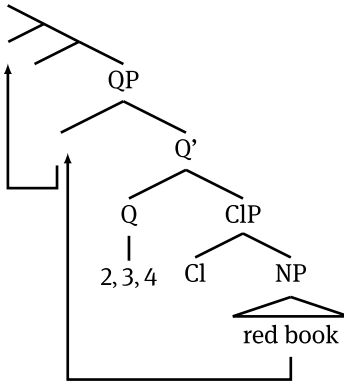
What is significant to note is that both types of leftwards displacement – definiteness-related NP movement and focus movement of AdjPs – may only take place when a low numeral is present and both are blocked when higher numerals occur, as shown in (5)–(8):

- (5) *[notun tupi]_k du To/tin Te/char Te t_k*
 new hat 2 CLF/3 CLF/4 CLF
 ‘the 2/3/4 new hats’
- (6) **[notun tupi]_k choy Ta/sat Ta/at Ta/nau Ta/doS Ta t_k*
 new hat 6 CLF/7 CLF/8 CLF/9 CLF/10 CLF
- (7) *[notun]_k ei du To/tin Te/char Te [t_k tupi]*
 new DEM 2 CLF/3 CLF/4 CLF hat
 ‘these two/three/four new hats’
- (8) **[notun]_k ei choy Ta/sat Ta/at Ta [t_k tupi]*
 new DEM 6 CLF/7 CLF/8 CLF hat

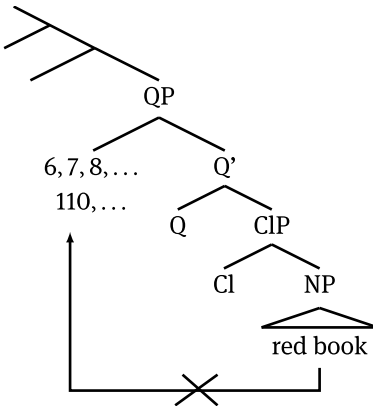
In Simpson and Syed (2016), we propose a structural account of the blocking effect of higher numerals which built on evidence that there is variation in the ways that numerals are merged into nominal projections. In a variety of works it has been argued that numerals may sometimes occur as phrasal constituents in specifier positions, and in other instances be merged as heads in the main projection line of nominal constituents (Danon 2012, Borer 2005, Bailyn 2004, Shlonsky 2004, Franks 1994, Pereltsvaig 2006). In Bangla, we suggest that the low numerals 1–4

occur as heads in Q^0 , while higher numerals are projected as phrasal constituents in SpecQP, noting that such a structural difference in the position of low and high numerals allows for a straightforward account of the blocking patterns observed if it is additionally assumed that definiteness-related NP-movement and focus AdjP-movement must proceed successive-cyclically through SpecQP. Higher numerals present in SpecQP will block this movement, while lower numerals in Q^0 will allow for it to occur, as schematized in (9a/b).



(9) a.



b.



In such a perspective, SpecQP functions as an escape hatch for movement to higher positions within nominal phrases, similar to other escape hatch phenomena such as the need for *wh*-phrases to move through lower SpecCP positions in order to exit a clause, and the requirement that elements within DPs pass through SpecDP in any movement to higher positions (McCloskey 2000, Szabolcsi 1983), as represented in (10).

- (10) $[\text{CP WH}_k \dots \dots \dots [\text{CP } t_k [\text{C} \dots \dots \dots t_k \dots \dots \dots]]]$

 $[\dots \dots \text{XP}_k \dots \dots \dots [\text{DP } t_k \text{ D} \dots \dots \dots t_k \dots \dots \dots]]$


In addition to high numerals, most quantifiers are found to block nominal-internal NP and AdjP movement in Bangla, and so can be assumed to occur in SpecQP. However, one quantifier *kOyek* ‘some/a few’ does allow for NP/AdjP movement to take place if it occurs in a reduced enclitic form *kO-*, as seen in (11) and (12). The full-form of this quantifier, *kOyek*, is therefore taken to be a phrasal constituent projected in SpecQP, while the reduced enclitic form *kO-* patterns like a head merged in Q^0 , permitting movement to occur through the unoccupied SpecQP position.

- (11) $*[_{NP} \text{lal } \text{boi}]_i [_{QP} \text{kOyek} [_{ClP} \text{Ta } t_i]]$
 red book some CLF
- (12) $[_{NP} \text{lal } \text{boi}]_i [_{QP} t_i \text{kO} [_{ClP} \text{Ta } t_i]]$
 red book some CLF
 ‘the few *red books*.’

The key properties of AdjP- and NP-movement within Bangla nominal constituents are consequently those listed in (13):

- (13) i. AdjP-/NP-movement is caused by properties of focus and definiteness.
 ii. AdjP-/NP-movement needs to pass through SpecQP.
 iii. AdjP-/NP-movement through SpecQP only takes place when an AdjP/NP constituent needs to reach a higher position, hence no raising of this type occurs in the absence of interpretations of focus or definiteness.
 iv. SpecQP functions as an escape hatch for lower phrasal elements attracted by higher probes relating to focus and definiteness.

Focused AdjPs and NPs raising for definiteness-related reasons thus undergo obligatory successive cyclic movement through a lower position (SpecQP) with which there is no Agree relation involving focus/definiteness features solely in order to reach a higher position which does involve such a relation. In Simpson and Syed (2016), we argue that the only way such successive cyclic movement to/through a lower escape hatch can be analyzed is that raising to this interme-

diate position makes the moved element visible to a higher probe at the edge of a lower phase, allowing the higher probe to agree with the moved goal and attract it further. AdjP/NP-movement to SpecQP thus can be seen to occur as a way to avoid a violation of the Phase Impenetrability Condition/PIC (Chomsky 2000) – an element which needs to enter into an Agreement relation with a probe in a higher phase must first raise to the edge of a lower phase, and is otherwise inaccessible to the higher probe (Legate 2003, Bošković 2005). Such movement is technically facilitated via the presence of edge features on a phasal head and does not reflect any other necessary Agreement relation existing between the phasal head and the moved element. The conclusion which results from this is that: “QP is in fact a *nominal-internal phase*, forcing successive cyclic movement to occur through its specifier/edge when elements from within QP need to Agree with functional heads in a higher part of the noun phrase, and that phases may therefore be projected in embedded positions within nominal projections and not simply occur as the highest (DP) projection of a nominal constituent, as has often been assumed” (Simpson and Syed 2016:761).¹ The Bangla patterns of focus and definiteness-driven movement consequently provide novel evidence for the assumption that nominal expressions as well as clauses may contain internal phases, a fully natural expectation and prediction given other well-described structural parallels between CP and DP structure (Abney 1987, Szabolcsi 1983).²

1 The analysis presented here assumes that QPs in Bangla only have a single specifier position. Simpson and Syed (2016:761) note that an alternative, multiple specifier analysis incorporating ideas in Bošković (2016) can be argued to lead to the same conclusion that QP is a phase. Bošković (2016) suggests that all phases permit multiple specifiers, but only the highest specifier position is visible to elements in a higher phase, and only elements in this position can therefore be extracted from phases. In Bangla nominals, when a higher numeral is merged into SpecQP and movement of an AdjP/NP subsequently occurs, this will result in the AdjP/NP coming to occupy a lower specifier position if Tucking In (Richards 2001) is assumed as a constraint on the establishment of multiple specifier positions, and in such a position it will not be visible to higher probes. Further movement of AdjPs/NPs will therefore be blocked when higher numerals occur, even if multiple specifier positions are in fact present with QP.

2 If the blocking effect caused by higher numerals in Bangla indicates the underlying presence of a phase (QP), a natural question to ask is whether blocking and intervention effects can be used as a *general* diagnostic for phases, and *always* be taken to signal the presence of a phase. Here, we believe, the answer is ‘no’, because blocking/intervention effects may occur for (at least) two different reasons, and blocking/intervention effects will typically only reveal phasehood in one set of cases.

In patterns of ‘structural blocking’, an element X needs to move through a position W in order to reach a higher position, attracted by a probe Z. If another element occupies position W, as in (i), movement of X through position W is blocked and this makes extraction of X impossible. W serves as an escape hatch for movement, which in minimalist terms shows the need for movement to

A further, potential consequence of the conclusion that QP acts as a nominal-internal phase in Bangla is that if nominal phrases in Bangla project a higher, DP-level of structure, such constituents may be determined to be bi-phasal, with both an internal QP phase and a ‘closing-off’ (highest projection) DP phase. What needs to be investigated in this regard is therefore whether DPs are indeed projected in Bangla (a language without overt determiners), and whether there is also evidence that such constituents pattern as phases.

4.3 Bangla as a DP language

Bošković (2008:101) entertains a strong claim about nominal structures across languages, that languages without articles do not have DPs. This proposal builds on insights gained from the comparison of a broad range of syntactic properties in

and through the edge of a phase, to avoid violations of the PIC. Structural blocking and the need for successive cyclic movement functions as a useful diagnostic for phases.

(i) ...Z... [_{phase} W...X...]....

However, other occurrences of intervention effects which involve ‘featural blocking’ cannot be used in the same way as a diagnostic for the presence of phases. In instances of ‘featural blocking’, a probe Z cannot locate and agree with a potential goal X because another element W intervenes between Z and X, and features present on W cause the search by the probe to terminate at W and not search further down to X. If X can be moved/scrambled over W as in (ii), or if W is not present, as in (iii), this will allow for Z to Agree with X.

(ii) ...Z... X_k.....W.....t_k....

(iii) ...Z.....X....

Featural blocking occurs in classic cases of intervention effects such as those caused by the interference of focused phrases on wh-in-situ licensing in Korean, Japanese and Chinese, as well as in patterns involving the Person Case Constraint.

Structural blocking and featural blocking are significantly different in nature. With structural blocking, a goal needs to move through the structural position occupied by an intervener, and it is the physical presence of the latter which blocks movement, not any features which it bears – hence high numerals in Bangla do not carry features relating to definiteness which interfere with the relation between the probe and the goal NP when there is nominal-internal definiteness-related movement of NP constituents. In cases of featural blocking, by way of contrast, there is no need for a goal to move to the position occupied by an intervener, and the goal can be licensed without movement in its base position if no intervener is present. This indicates that there is no phasal boundary present between the goal and a higher probe, and when featural blocking does occur, it does not (necessarily) signal the presence of an underlying phase.

different languages, and results in the categorization of languages as being either DP languages (projecting D and DP), or NP languages (lacking a DP level of structure). As Bangla is a language which lacks overt determiners,³ the strong claim considered in Bošković (2008) should lead to its analysis as an NP language without any DP level of structure. However, a closer consideration of other properties taken to characterize languages with articles shows that Bangla nominal syntax regularly aligns it with archetypal DP languages, rather than NP languages, and hence that Bangla nominals should be taken to project up to a DP level. Here we will review three core patterns which have been presented in Bošković (2008, 2009), Bošković and Gajewski (2011), and Despić (2013) as potential diagnostics that may be used for distinguishing DP from NP languages, all of which lead to the conclusion that Bangla is a language of the former type. For discussion of additional patterns that lead to the same conclusion, see Syed and Simpson (2017).

4.3.1 The majority reading of MOST

Bošković and Gajewski (2011) argue that only languages with articles allow a majority reading of MOST (words close to the meaning of English ‘most’), and that NP languages only permit a relative reading of elements of MOST. English and German, for example, are both DP languages with overt determiners, and allow both a majority and a relative reading for MOST, as indicated in English (14):

- (14) *Most people going to pubs in Upton Snodsbury drink Bishop’s Tipple.*
 ‘More people drink Bishops’ Tipple than any other beverage/beer in Upton Snodsbury pubs’. (Relative reading)
 ‘More than half the people in Upton Snodsbury pubs drink Bishops’ Tipple’. (Majority reading)

Bošković and Gajewski (2011) develop a syntactic analysis of the difference between DP and NP languages with regard to MOST and the interpretations it allows which suggests that a majority reading of MOST requires QR and adjunction to NP. Such adjunction is argued not to be available as an option in languages where NPs are arguments (NP languages), because adjunction to arguments is (taken to be) banned, following Chomsky (1986).

³ Demonstratives are not assumed to be instances of the category D in Bangla, and occur lower down in nominal constituents than they do in English, to the right of possessors (which may co-occur with demonstratives) – see example (32) in section 4.3.3.

When Bangla is now considered, interestingly it patterns like a typical DP language and permits majority readings of MOST, as illustrated in (15). This distinguishes Bangla from other typical NP languages and makes Bangla look like a ‘covert’ DP language.

- (15) *besirbhag lok kal parTi-te beer khelo*
 most people yesterday party-LOC beer drank
 Available readings:
 (i) ‘more people drank beer than any other beverage in the party yesterday’
 (relative reading)
 (ii) ‘more than half the people drank beer at the party’ (majority reading)

4.3.2 Neg(ative) raising

Neg-raising refers to a patterning in which the presence of negation in a higher clause can be interpreted as negating the content of a lower clause, possible with some verbs in some languages, but not with other verbs/languages, as described in Fillmore (1963), Horn (1971), Bošković and Gajewski (2011), among others. In English, for example, the co-occurrence of negation with the embedding verb ‘believe’ allows for negation to be understood as applying to the subordinate clause, as if ‘not’ had raised from an embedded position to the matrix, but this is not possible with the verb ‘claim’, as illustrated in (16) and (17):

- (16) a. *Mary did not believe that Fred was smart.* can mean:
 b. *Mary believed that Fred was not smart.*
 (17) a. *John did not claim that Mary was smart.* cannot mean:
 b. *John claimed that Mary was not smart.*

The presence of negation with neg-raising verbs also typically licenses lower clause negative polarity items, as seen in (18), in contrast to similar structures with non-neg-raising verbs, where embedded NPIs are not licensed (19):

- (18) *John didn’t believe [that Mary would leave until tomorrow].*
 (19) **John didn’t claim [that Mary would leave until tomorrow].*

Bošković (2008) finds that neg-raising only occurs in the class of DP languages, identified as such by the occurrence of articles:

- (20) “Languages without articles disallow neg-raising, and languages with articles allow it.”

Bošković (2008:104)

Such a distribution leads to the conclusion that languages with neg-raising phenomena should be classified as ‘DP languages’, even if no overt articles occur in these languages, and this is the situation found in Bangla. Typical neg-raising patterns occur in Bangla, showing again that it patterns like other DP languages, not NP languages. NPIs are licensed in lower clauses embedded by equivalents to the verb ‘believe’, but not other embedding verbs, as illustrated in (21) and (22).

- (21) *ami biSSas kOri na je ram kal parTi-te kono khabar kheyechē*
 I belief do NEG that Ram yesterday party-at any food ate
 ‘I don’t believe that Ram ate any food at the party yesterday’.

- (22) **ami dekhi-ni je ram kal parTi-te kono khabar kheyechē*
 I see-NEG that Ram yesterday party-LOC any food ate

4.3.3 Binding and the position of possessors in nominal projections

Despić (2013) explores certain asymmetries found in DP and NP languages with regard to binding relations involving possessors in nominal projections. In DP languages such as English, possessors do not c-command out of the nominal projection, hence it is possible for a nominal possessor in a DP in subject position to be co-referential with an R-expression or a pronoun in object-of-verb position, as shown in (23) and (24). The lack of a Principle B or C violation is simply explained by the assumption that possessors are merged in DP-internal positions which block c-command of any elements external to the DP.

- (23) [_{DP} *His_i father*] considers *John_i* highly intelligent.

- (24) [_{DP} *John_i’s father*] considers *him_i* highly intelligent.

In the NP language Serbo-Croatian, a different patterning is observed, and it is not possible for the possessor of a nominal phrase in subject position to be co-referential either with a pronoun or an R-expression in object position, as seen in (25) and (26).

- (25) **[Kusturicin_i najnoviji film] ga_i je zaista razočarao.*
 Kusturica’s latest film him is really disappointed
 ‘Kusturica’s latest film really disappointed him_i.’

- (26) **[Njegov_i najnoviji film] je zaista razočarao Kusturicu_i.*
 his latest film is really disappointed Kusturica
 ‘His_i latest film really disappointed Kusturica_i.’

The analysis Despić presents to account for the unacceptability of (25) and (26) suggests that possessors are adjoined to NPs in the NP language Serbo-Croatian (and there is no DP layer dominating NP), and that from such an adjoined position possessors c-command outside the NP, adopting May’s (1985) proposal that an element not dominated by all segments of a constituent will c-command out of that constituent.

DP languages with possessors merged in internal specifier positions are consequently predicted to regularly allow co-reference between possessors and other DP-external pronouns and R-expressions in configurations such as (23) and (24), while NP languages with possessors merged in NP-adjoined positions are expected to disallow all similar attempts at co-reference, if no additional structure is projected above NP.

When parallel examples are constructed in Bangla, it is found that Bangla patterns entirely like English and other DP languages, and allows the kind of co-reference relations seen in (23) and (24), involving pronouns and R-expressions. This is illustrated in (27) and (28):

- (27) *[ritupOrno_i-r SeS sinema Ta] ta_i-ke khub hOtaS korlo.*
 Rituporno-GEN last film CLF he-ACC very disappoint did
 ‘Rituporno’s last film really disappointed him’
- (28) *[ta_i-r SeS sinema Ta] ritupOrno_i-ke khub hOtaS korlo.*
 he-GEN last film CLF Rituporno-ACC very disappoint did
 ‘His last film really disappointed Rituporno’

Possessors in Bangla thus seem to be merged in a high specifier position which is the leftmost position in nominal projections in Bangla, by assumption SpecDP.

In Serbo-Croatian, Bošković (2005) and Zlatić (1997) suggest that possessors and demonstratives are both *adjectival* in nature, and because of this such elements enjoy a greater freedom of ordering relative to adjectives than is found in DP languages, where possessors and demonstratives occupy fixed positions (SpecDP/D). Example (29) shows that possessors and demonstratives can either precede or follow other adjectives, a distribution which is accounted for if all such elements are NP adjuncts:

- (29) a. *Jovanova/ova bivsa kuca*
 Jovan’s/this former house

may also be possible for a DP level of structure to develop in languages which do not have definite or indefinite determiners. Such a conclusion is compatible with a weaker hypothesis considered in Bošković (2008) that *some* languages without articles may not project DPs. It also raises the question of how a DP level of structure might develop in the absence of articles providing overt evidence for D and DP. In Bangla, a plausible answer to this may be that the definiteness-related NP-movement within nominal projections discussed in section 4.2 provides robust overt evidence to speakers/learners that higher levels of structure exist in nominal phrases. Such patterns of nominal-internal movement may serve a function in signaling the presence of a level of structure above NP (including DP) which is similar to the actual occurrence of overt articles, and that either the grammaticalization of articles or the development of high, nominal-internal movement may give rise to the projection of DP within a language.⁵

Syed (2017) suggests that the patterns in Bangla support the assumption of a three-way typology of NP and DP languages, as described in (33):

(33) *Three-way typology of 'NP' and 'DP' languages* (Syed 2017)

1. Languages without articles, which do not project DPs (Serbo-Croatian, Polish)
2. Languages with articles, which project DPs (English, German, Hungarian)
3. Languages without articles, which project DPs (Bangla)

To this typology, a fourth type might also possibly be added, following a recent claim in Börjars, Harries and Vincent (2016) that not all languages with articles actually do project DPs and that DPs may only develop some time after languages have fully grammaticalized determiners. Börjars et al. suggest that it is only when determiners come to be associated with a *fixed position* in nominals that DP functional structure comes into existence in languages which previously lacked DPs. Some languages may appear to have articles, but these elements do not cause the projection of a D position or a DP level of structure, due to their unfixed status. An

⁵ A reviewer of the paper asks whether, in general, a phrase can be projected if its head position is not lexically filled with any element (feature set, morpheme etc), and is genuinely empty. With regard to the D⁰ head of Bangla DPs, we assume that morphosyntactic features relating to definiteness may be present here, and serve to attract elements to SpecDP, hence D⁰ is not fully void of content and essentially has the same kind of status as English T⁰, which hosts tense-related features. We believe that the potential introduction of definiteness-related and tense features in D⁰ and T⁰ is made directly, without the need for any covert host morpheme, hence there is no need to assume that a 'covert article' or a 'covert auxiliary' occurs as a morphological container for such features.

example of such a language given by Börjars et al. is Old Norse, which had evolved a definiteness marker/definite determiner, but this element was: (a) optional, (b) not in complementary distribution with demonstratives and possessors, (c) not associated with a fixed position. Due to these properties, Börjars et al. claim that no D position was established by definite determiners in Old Norse and such elements were merged as optional adjuncts to NPs like other modifiers (see also Lander and Haegeman 2013 for a similar view of Old Norse). If such an interpretation of the patterns of Old Norse is indeed correct, the four-way typology of NP and DP languages in (34) can be assumed, in which overt articles are neither always necessary for the projection of DP in a language, nor a necessary guarantee that a DP level of structure does occur.

(34) *A Four-way typology of 'NP' and 'DP' languages*

Articles have developed	DPs are projected	Language
No	No	Serbo-Croatian
Yes	Yes	Modern English
No	Yes	Bangla
Yes	No	Old Norse

4.3.4 DPs as phases in Bangla

Returning to the central issue of the occurrence of nominal phases in Bangla, if there is now reasonable evidence that DPs are indeed projected in Bangla, such constituents might simply be assumed to instantiate phases as the highest projection in the nominal domain, as in other languages (Svenonius 2004, Bošković 2012, Hinzen 2012 among many others). In support of such an assumption, there is also empirical evidence that DP constituents function as phases in Bangla, relating to patterns of ellipsis and extraction.

'Argument ellipsis' is the term used to refer to the omission of overt arguments which critically licenses interpretations of sloppy identity, as seen in Japanese (35) (unlike the occurrence of null pronominal elements/pro in languages such as Spanish and Italian, which do not permit sloppy identity readings – see Oku 1998, Saito 2004, Takahashi 2008 among others).

- (35) a. *Taro-wa [zibun-no kodomo-ga eigo-o sitteiru ito itta.*
 Taro-TOP self-GEN child-NOM English-ACC knows that said
 'Lit. Taro said that self's child knew English'.
 b. *Hanako-wa [_ furansugo-o isitteiru to itta.*
 Hnsko-TOP French-ACC knows that said

‘Lit. Hanako said that _ knew French.’ Şener and Takahashi (2009)
 Strict: Hanako said that Taro’s child knew French.
 Sloppy: Hanako said that her own child knew French.

In Bošković (2014), it is suggested that only phases or the complements of phase heads may permit ellipsis, and that argument ellipsis can be made use of in the nominal domain as a diagnosis for the presence of a phase. In Bangla, an investigation into the interpretative properties of null arguments carried out in Simpson, Choudhury and Menon (2013) shows that argument ellipsis regularly occurs in the language, licensing typical interpretations of sloppy identity, as shown in (36):

- (36) *ram* [_{DP} *nije-r* *du To* *receptionist-ke*] *boklo*, *kintu raj* _
 Ram self-GEN 2 CLF receptionist-ACC criticized but Raj
proshongsha korlo.
 praise did
 ‘Ram_k criticized his_k two receptionists, but Raj_m praised (his_m two recep-
 tionists).’

Patterns of argument ellipsis consequently provide support for the assumption that DPs occur as phases in Bangla.

A second patterning which also points towards the status of DPs as phases in Bangla involves extraction from DP constituents. If DPs are phases in Bangla, the PIC will require that any extraction from DPs must first reach and pass through the edge of the DP phase, in order for the element to become visible to a higher DP-external probe. If there is a single SpecDP position in the phasal edge and it is filled with an overt possessor, the expectation is that this should block extraction, and such a prediction is borne out. Example (37) shows that an NP can freely extract from a containing DP, stranding nominal-internal elements higher than the NP, such as numerals and classifiers. However, if the SpecDP position is occupied by a possessor phrase, as in (38), extraction is no longer possible, indicating that such movement has to pass through the SpecDP position. It should also be noted that the base sequence in (38) *Ram-er du To boi*, without any NP-extraction, allows for a non-specific indefinite partitive interpretation ‘two of Ram’s books’, and so the extraction attempted in (38) is not ruled out by any constraint relating to specificity and a bar on extracting out of specific DPs.

- (37) [_{NP} *boi*]_k *ami* [_{DP} *t_k* [_{QP} *t_k* *du To t_k*]] *kinlam*.
 book I 2 CLF bought
 ‘I bought two books.’
- (38) * [_{NP} *boi*]_k *ami* [_{DP} *ram-er* [_{QP} *t_k* *du To t_k*]] *kinlam*.
 book I Ram-GEN 2 CLF bought

Such patterns show that SpecDP is a necessary escape hatch for extraction from DPs in Bangla, as in other languages (Szabolcsi 1983), forcing successive cyclic movement to occur through the DP phasal edge so as to avoid a violation of the PIC. This consequently provides further evidence that DP constituents in Bangla constitute phases as in other languages.

Putting the above conclusions together with those made earlier in section 4.2 now significantly results in the insight that Bangla nominal projections are *bi-phasal* constituents, containing both a mid-level phase QP and a higher level, ‘closing-off’ phase, DP. Nominal domains therefore potentially may consist in two cyclic phases, paralleling the bi-phasal structuring of clauses, in which an internal mid-level phase and a higher, closing off phase are both commonly assumed to occur. Such a basic parallelism between the phasal structuring of nominal and clausal projections is what might be predicted and expected given other extensive parallels in the structure of DPs and CPs that have regularly been highlighted in the literature since Abney (1987). Despite such a natural expectation, the more widespread view of phases assumed in the literature has been that there is actually an asymmetry between clauses and nominal projections, with only the former having a bi-phasal structure. In section 4.4, we consider a recent influential approach to phases, Bošković (2014), which assumes the existence of such an asymmetry and ask whether the conclusions of the current paper are compatible with this approach or not. Following this, in section 4.5 we ask why in general there may appear to be less abundant, clear evidence for the bi-phasal structure of nominals across languages, and highlight the potential value of ellipsis constructions as diagnoses for phasehood within nominal phrases.

4.4 Is there a real asymmetry in the phasal structure of clauses and nominals? Reconciling bi-phasality in Bangla nominals with Bošković (2014)

Bošković (2014) develops an interesting, new approach to the identification of phases, in which phases are not immutably fixed but contextually-determined by the amount of structure that is projected in any particular instance in a language. In the case of Serbo-Croatian nominal projections, it is argued that the frequent inextractability of complements of nouns may be explained if it is assumed that NPs serve as phases in Serbo-Croatian when no further layers of functional struc-

ture are projected. In such instances, complements of N need to raise to SpecNP to overcome the PIC and be visible to a higher probe triggering extraction from NP, but this movement is ruled out by the principle of antilocality (Abels 2003, Grohmann 2003). Consequently, attempts to extract the complements of nouns in Serbo-Croatian are regularly ungrammatical, as shown in (39).

- (39) ?**Ovog studenta_k sam pronašla [NP sliku t_k]*
 this student am found picture

However, when numerals and other quantifiers are present, such elements are taken to project additional functional structure, a QP layer above NP, and, interestingly, this appears to allow for complements of N to be extracted out of nominal phrases, as illustrated in (40).

- (40) *Ovog studenta_k sam pronašla [QP t_k mnogo/deset sliku t_k]*
 this student am found many/ten picture
 ‘Of this student, I found many/ten pictures.’

Bošković suggests that QP is contextually determined as a phase in such cases, not NP, as QP is the highest layer of structure projected in the object in (40). Complements of N may legitimately raise to SpecQP at the phasal edge as this movement does not violate antilocality, and from SpecQP extraction can take place out of the nominal projection (Bošković 2014:36). In English, by way of contrast, it is found that the complements of nouns *can* be extracted:

- (41) *[Of which city]_k did you witness [the destruction t_k]?*

Bošković suggests that DP is the single phase projected in nominals in English. The complement of N can move from its base position to SpecDP, the edge of the phase, and then be attracted further. It is claimed that NPs should be concluded *not* to be phases in English, because if NP were to be a phase as well as DP, the complement of N should not be able to extract out of NP (due to antilocality) and then out of DP. The general claim made in Bošković (2014) is that it is only the highest level of structure in nominal projections that serves as a phase, and this may vary in its identity, depending on how much structure is projected in different instances.

The conclusions relating to nominal-internal phases which have been drawn from Bangla might seem to be at odds with this new perspective in Bošković (2014) that phases are contextually determined and nominal projections are mono-phasal constituents. Sections 4.2 and 4.3 have argued that QP serves as a phase in Bangla, and this occurs even in the presence of higher functional structure, when

demonstratives, possessors, focused and definite-raised elements all signal the presence of higher nominal-internal functional projections. The addition of a DP level of structure then instantiates a higher phasal boundary, leading to the claim that Bangla nominals are regularly bi-phasal in their composition, which initially seems unexpected for the perspective developed in Bošković (2014). However, we believe that the Bangla patterns and the insights they provide are actually quite compatible with the broad position presented in Bošković (2014), and may also lead to a more generalized account of phasehood that does not distinguish nominal from verbal domains in any significant way. In Bošković's (2014) approach, clauses are viewed as patterning differently from nominal projections, and taken not to project just a single phase corresponding to the highest layer of structure, but both a mid-level phase, identified as AspP as well as a higher level phase, CP. Bošković suggests that AspP qualifies as a phase in virtue of being the highest layer of structure in the verbal domain, when it is projected, and that CP may be a phase 'because it is the highest projection in general.' It is added that '...the reader should bear in mind that full integration of CP into the current system is left for future research.' (Bošković 2014: 59). The asymmetry assumed in the phasal structure of clauses and nominals in Bošković (2014), with clauses being bi-phasal and nominals being mono-phasal domains is essentially the result of the patterns noted above in (39)–(41) – comparing Serbo-Croatian and English, NPs are concluded not to be phases in English because extraction of the complement of N is possible, unlike in Serbo-Croatian when QP is not projected over NP. Yet such a conclusion is no longer necessary if a slightly different view of the internal structure of English nominals is adopted. In Bošković (2014) it is assumed that nominal phrases in English consist only in a DP and NP level of structure, as represented in (42):

(42) English nominal structure (Bošković 2014): $[_{DP} \dots [_{NP} \dots]]$

However, supposing that English nominals were instead to contain an additional QP (or nP) projection between NP and DP, and this constituent were to be a phase, as in Bangla, it would be predicted that extraction of the complement of N should in fact be possible, as observed. The complement of N would be able to raise from its base position to the edge of the QP/nP phase, and from there to the edge of the DP phase, and then further out of DP, with no violations of the PIC or antilocality:

(43) Extraction of complement of N if English nominals contain an internal QP phase:

[Of which city]_k did you witness [_{DP} t_k the [_{QP} t_k [_{NP} destruction t_k]]?

The generalizations about extraction of complements of N constituents in Serbo-Croatian and English are therefore consistent with (at least) *two* different possibilities:⁶

- (44) i. NP is a phase in Serbo-Croatian but not English
 ii. QPs (and NPs) may be phases in both Serbo-Croatian and English. QP is sometimes not projected in Serbo-Croatian (in which case NP is determined to be a phase), but may always occur in English when structure up to DP is created, even if no overt elements are present in Q or SpecQP.⁷

As claims have frequently been made in the literature that QP (or an equivalent projection such as #P) is regularly present in English nominal constituents (for example, Borer 2005), we suggest that the second possibility in (44) is equally as plausible as the first, and assuming (44ii) will not only allow for a fully consistent account of both English and Serbo-Croatian but have the additional advantages of: (a) reconciling the findings from Bangla with those in English and Serbo-Croatian, and (b) eliminating the odd asymmetry in assumptions about the projection of phases in clauses and nominal phrases – both domains may be bi-phasal in principle, as might naturally be expected, with cross-linguistic variation in the actual occurrence of phases being due to the diachronic development and synchronic projection of different amounts of functional structure in different languages – for example, a DP level of structure occurring in English, Bangla and other DP languages, but not in NP languages such as Serbo-Croatian. The broad hypothesis of phasehood in clauses and nominals which we believe is worth exploring and pursuing further is briefly as follows.

The highest projection present in any clause or nominal will always be (contextually) determined to be a phase. In the clausal domain, this will typically be some layer of CP, but potentially also lower categories in reduced clauses which exhibit evidence of successive cyclic movement through their edge (for example, the stranding of material in such positions). In the nominal domain, DP will regularly function as a phase in languages which have developed DPs, occurring as the highest projection in the extended nominal structure, whereas in NP languages,

⁶ A reviewer of the paper notes that other alternative analyses have elsewhere been offered to the way that Slavic extraction patterns are analyzed in Bošković (2014), for example Fanselow and Féry (2013).

⁷ In reduced English nominals with no DP or QP level of structure (for example: ‘John became [_{NP} king of England] in 1199.’), it may be assumed that NP as the highest level of structure present is determined as a phase, as in Serbo-Croatian.

which do not project up to a DP level, the highest projection present in a nominal phrase will function as a phase. In Serbo-Croatian, this will be QP if present, and otherwise NP, as in Bošković (2014). Additionally, in languages which have developed a substantial functional structure above the lexical core in nominals and clauses, an internal, mid-level phase will also be projected above this lower core, breaking down the computation of complex nominal/clausal projections into two phasal components, in line with Chomsky's proposal that cyclic spell-out and the chunking of clauses into phases functions to reduce processing/memory load. The patterns from Bangla indicate that the identity of this mid-level phase in nominal constituents can be QP. A possibility to be examined further is whether *nP* might also serve as an internal phase in DP languages when QP is not projected, overtly or covertly – perhaps in languages where numerals and quantifiers are merged as adjuncts to *nP*/NP rather than in dedicated functional projections. In the clausal domain, we follow the conclusions in Bošković (2014) and Harwood (2015) that AspP rather than *vP* may occur as the internal, mid-level phase, when present, in languages which have indeed developed AspP as a functional projection. Clauses and nominal phrases are thus taken to be fully alike in having the *potential* to project both an internal and a higher-level 'closing' phase, and there is no important difference in the two domains in this regard. Where variation in the projection of phasal constituents actually does occur, this will be due to the amount of functional structure that has been grammaticalized differently in each domain/language (the DP vs. NP language difference), and occurrences of variation in the actual use of functional structure in any instance where optionality in its projection is permitted, for example optionality in the projection of a QP layer in Serbo-Croatian nominals, as revealed by the extraction patterns in (39) and (40).⁸

8 In both clauses and nominal constituents, both the mid- and higher-level phases can be taken to be contextually determined as phases, in virtue of being the highest projection present in a relevant domain in any particular instance. Bošković (2014) and Harwood (2015) argue that AspP (or *vP*) is contextually determined as a phase in the sub-IP verbal domain, and CP is assumed to be determined as a phase due to being the very highest projection present in a clause. In a parallel way, QP (or NP) will be contextually determined as a phase in the sub-DP nominal domain, and DP will regularly be determined as a phase (in DP languages) due to being the very highest projection present in nominal constituents. The contextual determination of phases can thus be taken to apply within clauses and nominals at two distinct points, when a certain amount of structure has been created – at an internal/mid-level stage, when material up to AspP/QP has been constructed, and again at a final, higher CP/DP level, when the construction of clausal and nominal projections has been completed.

4.5 Probing the cross-linguistic occurrence of internal phases in nominal constituents

If the hypothesis of a basic parallelism (vs. asymmetry) in the projection of phases in clausal and nominal domains is correct, or at least headed in the right direction, it is expected that evidence for internal phases in the nominal domain should potentially be available in all DP languages, and yet it is the clausal domain, not the nominal domain, which has regularly furnished empirical support for the existence of domain-internal phases during the last decade. One might naturally ask why this is so, and why it might perhaps be harder to notice the effects of nominal-internal phases than clause-internal phases. One possible reason for this is the simple observation that nominal phrases are very frequently much smaller constituents than clauses, hence movement-associated cyclicity effects indicative of phasal boundaries may be less immediately obvious within DPs as opposed to CPs. Quite generally, there is often less phrasal movement occurring within nominals, hence the potentially cyclic nature of movement and the effects of the PIC are less open to inspection inside DPs. However, where clear instances of successive cyclic movement within nominal constituents cannot be observed, *ellipsis* may be available as a tool to investigate the presence and identity of phases within the nominal domain, given suggestions in the literature that the possibility of eliding material indicates the underlying presence of a phase, for example Bošković (2014), Harwood (2015). Here we will now show how a brief examination of ellipsis within nominal phrases in English, and reference to recent work on Polish and Hungarian in Ruda (2016) offers further support for the assumption that internal phases may be projected in nominals as well as clauses.

First, considering English, one finds that ellipsis of the complement of phasal head D is possible, as illustrated in (45)–(48), where we take the D position to be instantiated by the determiner elements ‘these’ and ‘each’:

- (45) *John handed me two large boxes, and I put [each _] on a different table.*
 (46) *I like mangoes a lot. I bought [these _] yesterday.*
 (47) *I put those glasses in the cupboard. What shall I do with [these _]?*
 (48) *Those two nails are bent, so I’m going to use [these _].*

Interestingly, it is also possible to elide DP-internal material which follows numerals, which we suggest are merged in the head of a QP/#P projection which is the complement of D:

- (49) *Where did you put the boxes?*
Most of them are in the garage. [These two _], I'm going to put in the cellar.

Whereas numerals license ellipsis of their complements, adjectives generally do not license ellipsis in English:

- (50) *Where did you put the boxes?*
*Most of them are in the garage. *[These two big _], I'm going to put in the cellar.*

However, two special cases of ellipsis with adjectives need to be acknowledged as apparent exceptions to the generalization that material following adjectives cannot be omitted. The first of these is a set of conventionalized uses of adjectives with no following noun, for example in games and certain selling situations, where color terms have become regular substitutes for nouns (and players may not even know/ever use an overt noun for game pieces).

- (51) *Gimme [two blue_] and [three red _].*

The second set of exceptions is situations where heavy contrast on an adjective occurs, for example:

- (52) *Sue bought **green** apples and I bought [red _].*

Such cases may perhaps involve focus-raising of an adjective to some higher position prior to ellipsis of a constituent that is not just an NP. If the attempt is made to elide a noun following a contrastively focused adjective which remains in its base position following an overt demonstrative, this is unacceptable, as shown in (53), suggesting that cases of acceptable ellipsis such as (52) involve more than just simple NP deletion:

- (53) *Joan bought these **green** apples and I bought those **red** *(ones).*

In spontaneous, non-conventionalized, non-contrastive contexts, the broad observation is that numerals do license ellipsis of their complements, but adjectives do not:

- (54) Context: Looking for hidden Easter eggs:
- a. *Look! [Here are two _].*
 - b. *Look at [these two _]!*
 - c. **Look! Here are [two big _].*
 - d. **Look at [these two big _]!*

Such patterns are fully consistent with the possibility that English, like Bangla, projects a nominal-internal phase QP/#P, instantiated by numerals, and the head of this phasal constituent, Q/# licenses ellipsis of its complement. A simple investigation of ellipsis phenomena within English DPs thus offers potential evidence that nominal constituents in English are also bi-phasal, as in Bangla, with DP and QP/#P respectively serving as the closing-off and internal phases in nominal phrases. It can also be noted that when an NP/*n*P is not overtly present in cases such as those considered here, this results from genuine ellipsis of the complement of Q/# and is not the use of any null pronominal substitute for NP, because readings of sloppy identity are possible when an NP is not expressed overtly, the signature property of ellipsis, and not possible with null pronominals:

- (55) *John said he will sell [two of his cars] and Bill said he'll donate [three _].*
Possible sloppy interpretation: Bill_k said he_k will donate three of his_k cars.

Finally, it can be observed that nominal-internal ellipsis phenomena which has recently been examined in other languages has also independently reached the conclusion that nominals in DP languages may be bi-phasal constituents, whereas those in NP languages are mono-phasal. Ruda (2016) contrasts patterns of ellipsis in Hungarian, a DP language, with those occurring in Polish, an NP language, and argues at length that differences in the morpho-syntactic realization of ellipsis in the two languages support the view that DPs in Hungarian consist in two phasal components, which Ruda actually identifies as DP and *n*P, whereas nominals in Polish simply project a single phasal constituent which is suggested to be *n*P.

- (56) Phases in Polish and Hungarian nominals (Ruda 2016):
Polish: *n*P (an 'NP language')
Hungarian: DP and *n*P (a 'DP language')

The investigation of ellipsis and its relation to the presence of phases in a language may thus lead to significant new insights into the distribution and identity of phases within nominal and other domains, and is likely to be an important area of study and debate in future work on the nature of phases in syntactic structure.

4.6 General conclusions and issues for further investigation

This examination of the occurrence of phases in the nominal domain in Bangla, and the extensions of the Bangla study in sections 4.4 and 4.5 have suggested a

number of general conclusions relating to the cross-linguistic projection of phases which provoke further questions and encourage additional research in certain areas. In closing the paper, we highlight the main claims of the paper, in brief, and outline what we think the next steps should be in the ongoing minimalist study of phases.

4.6.1 Parallels in the structure of phases in clausal and nominal domains?

A principle, general claim of the paper has been that clauses and nominal phrases are alike in sharing the potential to project both an internal, mid-level phase and a higher-level phase, and that there is no important difference in the two domains in this regard. Whenever the necessary functional structure has been developed and is projected within a language and a syntactic domain, this will support a bi-phasal partition of CPs and DPs, and a broad parallelism in phasal structure in the two types of constituent rather than an imbalanced asymmetry. In this regard, the similar (potential) distribution of phases across nominal and clausal constituents is a further example of parallels in syntactic structure that have long been posited to be present in both domains (Abney 1987, Szabolcsi 1983 and much other work).

4.6.2 The identity of phases in clauses and nominals

Based on its comparison of Bangla with English and other work, the paper also identifies which categories are likely to occur/be determined as phases in nominal and clausal domains. Following Bošković (2014), it is assumed that the highest projection present in a domain will be contextually determined as a ‘closing’ phase. This will often be CP in the clausal domain, DP in DP languages, and a lower category in NP languages, either NP or QP if it is projected. Additionally, both clauses and nominals may project a mid-level internal phase, where relevant underlying syntactic structure is present. In CPs, this may be *vP* or *AspP* if projected, whereas in DPs there is evidence that it can be *QP*, if projected, and otherwise may be *nP*. Certainly more work needs to be carried out to substantiate the limits of variation in nominal-internal phases, just as has been initiated with investigations of clause-internal phases in Bošković (2014) and Harwood (2015).

4.6.3 Consequences for/integration with other recent approaches to phases

In section 4.5, we have attempted to show that the primary conclusions of the paper are *not* at odds with the fundamentals of the contextual determination approach to phases defended in Bošković (2014) and the claim that nominal phrases *may* contain a lower, internal phase in addition to a higher closing phase is actually quite compatible with this approach. The existence of two phasal levels in clauses was left as an unexplained oddity in Bošković (2014), but is here assumed to be a general structural feature of all phasal constituents of a certain size (CPs, DPs).

4.6.4 Might other categories also be bi-phasal, for example PPs?

In the hypothesis pursued here, if a lexical category projects complex, extended functional structure above a lexical core, it may be expected to be bi-phasal. Where such rigidly-ordered functional projections have not grammaticalized, however, a constituent will remain mono-phasal. PPs and other phrasal types might well have a bi-phasal structure in certain languages, but only if they have developed sufficient functional superstructure.

4.6.5 The use of ellipsis as a diagnostic to probe for the presence of phases

The potential use of ellipsis as a tool to reveal the occurrence of phases has been touched on in brief in sections 4.4 and 4.5, but there is clearly much more work to be done here, both with nominals and with clauses, extending cross-linguistic coverage of relevant data, and how it may support correlations between ellipsis and phases. What these correlations might actually be is also not yet fully agreed on and there are (at least) three different views of the ways that ellipsis has been suggested to link to phasehood. Different works have proposed that if a constituent can undergo ellipsis, it is (a) the complement of a phasal head, (b) either the complement of a phasal head or a phase itself, (c) itself a phase (and complements of phases *cannot* undergo ellipsis). At the present point in time, it is not fully clear which of these positions is correct, though here we have assumed and also provided evidence supporting (b), from Bošković (2014). In attempting to probe potential connections between ellipsis and the underlying presence of

phases, a further complication needs to be borne in mind and carefully controlled for – when a constituent is phonetically null, this might either be the result of ellipsis, or the use of a null pronominal element (Hiraiwa 2016). Simply showing that a phrase or sub-part of a phrase can be phonetically null does not establish that this results from ellipsis and somehow signals the occurrence of a phase, and strict/sloppy reading tests of the type noted in section 4.4 and 4.5 need to be incorporated to confirm that ellipsis is genuinely taking place, not substitution of a constituent with a null pro-form (which may have no connection with the presence of phases).

4.6.6 Another potential diagnostic for phases: movement

Last of all, Chomsky (2005), Roberts (2010), and Fowlie (2013) have all put forward the suggestion that only phases can undergo movement, consequently proposing that if a constituent can undergo movement, this automatically identifies it as a phase. Such a diagnostic for phasehood has not been made use of or assessed here, but is a further potential mechanism to explore in tandem with ellipsis and successive cyclic movement effects. An important question which arises here is what level of convergence can one find in utilizing the different diagnostics to identify phases?⁹ There is clearly much to investigate in the immediate future, but the relevant questions and challenges are all very interesting, and will hopefully lead on to a fuller understanding of the role of phases in syntactic computation.

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⁹ For useful discussion of additional diagnostics which may (sometimes) be used to analyze the presence of phases, see also Citko (2014:10).

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