On the incompatibility of two types of phases[*]

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1.   Introduction

The notion of locality has played an important role in generative theories of syntax, morphology, and phonology since their inception, the general idea being that certain rules or processes have access only to a limited portion of the derivation. The original notion of the *cycle* was strengthened in syntactic theory with the introduction of Subjacency, which prohibited movement across two cyclic nodes (Chomsky 1973). While the exact identity of the cyclic nodes has been debated, the rough idea has persisted in the Barriers framework (Chomsky 1986), and most recently in Phase theory (Chomsky 2001, 2008).

An interesting point in the study of locality comes with the advent of Distributed Morphology (DM), which assumes morphological structure is (derived from) syntactic structure. As would be natural in such a framework, Marantz 2001, 2007 proposes that the locality domains relevant for the morphology are the same ones that are relevant for syntax–DM phases are phases in the Chomskyan sense (see also Embick 2010, 2021); they are governed by the *Phase Impenetrability Condition* (PIC), given in (1).[1]

(1)   **Phase Impenetrability Condition** (Chomsky 2001:14)
       Given the structure [ZP Z . . . [HP α [H ' H YP]]], where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

[1]I adopt the weak version of the PIC (PIC2), proposed in Chomsky 2001 and assumed in most DM work on locality. In section 4, I elaborate on this choice, showing that the strong PIC is too strict to capture the relevant morphological locality restrictions. Because of this, a unification of morphological and syntactic locality constraints would only be possible under the weak PIC.

This paper shows that there are irreconcilable differences in the way Phase theory needs to be formulated in order to account for both morphological and syntactic locality effects.

First, I show that assuming syntactic and morphological locality effects to have a common origin (viz. Phase theory) leads to the wrong empirical predictions. Specifically, section 2 shows that adjectivization in Bosnian/Croatian/Serbian (BCS) does not impose locality boundary in the Chomskyan sense (for punctuated movement paths). Specifically, adjectives in BCS do not allow intermediate movement through their specifier, despite allowing their complements to subextract. On the other hand, section 3 shows that adjectivization in BCS imposes a DM-locality boundary (for allomorphy and morphological tone assignment). Section 4 offers a more general conceptual critique of the proposed unification; while the weak PIC in (1) is needed to capture morphological locality effects, only the strong PIC (Chomsky 2000:108) can plausibly have the desired effect on the syntax side, in terms of forcing successive-cyclic movement through specifiers of dedicated phasal heads. These results suggest that we may need to rethink the way in which we derive the effects of locality constraints, either on the syntax side or on the morphology side. I offer some general remarks to this end in section 5; see Bešlin in progress for an articulated proposal.

2. BCS adjectives are not Chomskyan phase-heads

In this section I employ reconstruction-for-binding diagnostics to show that spec, *a*P in BCS cannot serve as an intermediate landing site for *wh-* movement. Given that phases are supposed to force movement though their specifiers, this pattern suggests that BCS *a*P is not a phase head (for discussion and similar examples, see Fox 2000, Legate 2003).

It is worth noting that reconstruction-type diagnostics can only ever work in one direction, namely to show that a phrase is *not* a phase. If phases exist, they should force movement through their specifier. However, it has not been convincingly shown that phase heads are the only heads that *allow* movement through their phrasal specifier. Therefore, the ability to make an intermediate stop in a certain position could be independent of phasehood. In cases where, for example, a binding violation would occur if said intermediate stop was not made, the seeming obligatoriness of the intermediate move could be because making the move is the only way to satisfy the relevant binding conditions and get the derivation to converge, and not due to phasehood itself. However, since phases are supposed to explain the effects of successive-cyclicity, the *in*ability to make an intermediate stop in a certain position can be taken as evidence for non-phasehood.[2]

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[2]This reasoning should hold unless reconstruction is prohibited for independent reasons, as in the case of weak islands, see Abels and Bentzen 2009. BCS *a*P does not seem to be a weak island, as evidenced by the possibility of reconstruction within the *a*P in (i). The anaphor in the fronted *wh-* phrase can only be bound in its base position, namely the complement position of the *a*P. I will use traces throughout to save space, but I am assuming the copy-theory of movement, which explains the observed reconstruction effects.

(i)   [Koj-ih   svoj-ih$_i$ mana]$_1$ je Marija$_i$ svesna **t$_1$**?
         which-GEN self's-GEN flaws-GEN is Mary   aware
         'Which of her flaws is Mary aware of?'

First note that (long-distance) A'-movement is generally possible out of BCS *a*P, as illustrated with the *wh-* extraction of its complement in (2). Evidence that we are dealing with true movement (and not, for example, base-generation in the clause-initial position) comes from two sources. First, we observe case connectivity effects; the adjective *vredan* 'worthy' assigns genitive case to its complement, and the case-marking persists on the extracted *wh-* phase (2). Second, we can attempt to insert an island configuration between the presumed base position and the landing site of the *wh-* phrase; this should only lead to ungrammaticality if movement is taking place. Indeed, if we place a conjunction phrase in the complement of *a*P and place one of the conjuncts sentence-initially, the result is unacceptable, presumably due to a violation of the Coordinate Structure Constraint; the ungrammaticality of (3) suggests that the fronted *wh-* phrase is moved.

(2) [Čije pažnj-e]$_1$ je   rekla da je   Marko vredan **t$_1$**?
     whose attention-GEN AUX said DA AUX Marko worthy
     'Whose attention did she say that Marko is worthy of?'

(3) *[Čije pažnj-e]$_1$ je   rekla da je   Marko vredan **t$_1$** i Petrov-e   ljubavi?
     whose attention-GEN AUX said DA AUX Marko worthy   & Petar's-GEN love
     'Whose attention did she say that Marko is worthy of and Petar's love?'

Now, if *a* were a phase-head, A'-movement from within its domain should proceed through its specifier. However, the impossibility of reconstruction-for-binding in this position suggests that this is not the case. In (4), the moved PP contains two binding-sensitive elements, the bound variable anaphor (BVA) *svojoj* and the R-expression *Marija*. The only position in which both elements' binding requirements are fulfilled is the spec, *a*P position. This is presented schematically in (5). In the PP's base position, the R-expression is bound by the pronoun *njene*, which constitutes a Condition C violation (see Despić 2013 for a discussion of this binding configuration in English versus BCS). On the other hand, the BVA cannot get bound in either the final landing site or the potential stopping point in spec, *v*P of the matrix clause.[3] This means that the sentence should be grammatical if the BVA is removed, since the binding conditions can then be satisfied in the PP's final landing position; the prediction is borne out (6). Returning to (4), if a stopping point were available in spec, *a*P in (5), then the R-expression would escape being bound by the pronoun, and the BVA could get bound by the quantified DP. The fact that (4) is ungrammatical indicates that this stopping point is not available, and thus suggests that BCS *a*P is not a (Chomskyan) phase.[4]

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[3]As for the internal argument of the passive, BCS allows it to remain in its base position and appear after the verb, as in (4)-(5); in fact, this is the preferred word order under neutral intonation; see Godjevac 2000 for a discussion of unaccusatives versus unergatives. Passives pattern with unaccusatives.

[4]The acceptability of the English translation of (4) is expected, since the English passive subject obligatory moves to TP. If the subject is in TP and if the *wh-* phrase can stop in spec, passive *v*P (Legate 2003), the binding conditions can be satisfied. Passive subjects in BCS optionally move out of *v*P, and (4) with the subject in preverbal position is grammatical, like in English. Examples are omitted for space reasons.

(4) *[Na kojoj svojoj$_i$ žurci na kojoj je bila Marija$_k$]$_1$ je (kasnije) smatran
at which self's party at which AUX was Mary AUX later considered
svaki od momaka$_i$ vrednim njene$_k$ pažnje **t$_1$**?
each of guys worthy her attention
'At which one of his parties that Mary attended was each of the guys later considered worthy of her attention?'

(5) [$_{CP}$[$_{PP}$ at which...self's$_i$ ...Mary$_k$] [$_{vP}$ X v [$_{DP}$ each$_i$... [$_{aP}$ ✓ worth her$_k$ attention [$_{PP}$ X]]]]

(6) Na kojoj božićnoj žurci na kojoj je bila Marija$_k$ je (kasnije) smatran
at which Christmas party at which AUX was Mary AUX later considered
svaki od momaka$_i$ vrednim njene$_k$ pažnje?
each of guys worthy her attention
'At which Christmas party that Mary attended was each of the guys later considered worthy of her attention?'

Note that (4)-(5) assumes the moved PP to be generated low, in a position lower than the adjectival complement. The justification for this comes from examples like (7). The BVA's antecedent *svaki od momaka* 'each of the guys' c-commands the PP-internal BVA regardless of whether the PP attaches above or below the adjective; the relative position of the adjectival complement 'X's attention' and the *at*-PP must be determined by looking at the (im)possible placements of the bolded R-expression and pronoun. The only grammatical option is to have the R-expression in the adjectival complement, and the pronoun in the *at*-PP; the opposite is impossible, presumably because the pronoun would c-command and bind the R-expression in the *at*-PP.[5] This pattern confirms the hypothesized structure in (5).

(7) Kasnije je smatran svaki od momaka$_i$ vrednim **Marijine$_k$** pažnje na
later AUX considered each of guys worthy Mary's attention at
svojoj$_i$ božićnoj žurci na kojoj je **ona$_k$** bila.
self's Christmas party at which AUX she was
'Each of the guys was later considered worthy of Mary's attention at his Christmas party that she attended.'

The non-phasehood of BCS *a*Ps can also be demonstrated with QR in Antecedent Contained Deletion; I do not examine the facts here for space reasons (see Bešlin in progress).

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[5]This is not just an effect of linear order; co-referential pronouns can precede R-expressions in BCS (i).

(i) Kad njena$_i$ družina svira, Marija$_i$ igra.
when her group plays Mary dances
'When her groups plays, Mary dances.'

3. BCS adjectives are DM phase-heads

In this section, I show that *a(djectivization)* in BCS imposes a locality boundary for mor-
phological processes. I first examine its effects on root-conditioned allomorphy and then
on the placement of morphological tone.

3.1 *a*P blocks root-conditioned allomorphy

The broad consensus in the DM literature is that categorizers (*v, n, a*) are phase heads:
they delimit locality domains for morpho(phono)logical processes. Recall that the PIC in
(1) prohibits a phase-head from seeing the complement of a phase head it c-commands; in
terms relevant for us here, a root should be inaccessible to a phase-head *y* if a phase-head *x*
intervenes between the two.

(8) $[_{yP}\ y\ ...\ [_{xP}\ x\ ...\ [\ \text{ROOT}\ ]]]$

The first piece of evidence that BCS *a* acts as a domain delimiter for the morphology comes
from allomorphy patterns. BCS has rich derivational morphology; the broadly agentive
(person-denoting) nominalizing suffixes in BCS are at least *-ar, -aš, -er, -ac, -ač, -ic(a), -ik,*
and *-džij(a)*. Root-derived nouns may take any of the *n* allomorphs on offer; the choice of
nominalizer (*n*) is determined by the particular root (9).

(9) a. kormil-*ar* 'helmsman'   e. voz-*ač*   'driver'
     b. batin-*aš*   'beater'   f. izdaj-*ica* 'traitor'
     c. poz-*er*   'poser'   g. proza-*ik*   'prose-writer'
     d. pis-*ac*   'writer'   h. bureg-*džija* 'börek-maker'

Important here is the fact that a root may influence the choice of nominalizing suffix
only if there is no intervening categorizers between the two (10)-(11), in line with DM
phase-theoretic predictions. What we see in the deadjectival nominals in (10) is that the
adjectivizer *-ljiv* intervenes between the root and the nominalizer *-ac*, and it is only the *a*
that can influence the form of *n*, which is now uniform regardless of the root in question.
In (11), I illustrate the same phenomenon with a different *a* and *n*.

(10) a. boleš-*ljiv-ac* 'sick one'   c. smrd-*ljiv-ac*   'stinky one'
      b. plaš-*ljiv-ac*   'scared one'   d. razmet-*ljiv-ac* 'boasting one'

(11) a. držav-*n-ik*   'statesman'   c. put-*n-ik*   'traveler'
      b. besmrt-*n-ik* 'immortal one'   d. boles-*n-ik* 'sick one'

In case the insertion context is not met for any of the specified allomorphs, *-ar* is in-
serted; I give a schematic representation of Vocabulary Insertion for $n_{[+human]}$ in (12). Sup-
port for *-ar* as the elsewhere allomorph comes from its appearance in the most diverse set
of contexts and its use in nonce-words, e.g., *zaves-ar* 'curtain-maker'.

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(12) $n_{[+human]}$ ↔ /ac/ **//** a_1, √pis, √škrt, √drip, √alžir, √festival, …
  ↔ /ik/ **//** a_2, √proza, √sokrat, √alkohol, √žen, …
  …
  ↔ /ar/ **//** elsewhere

Thus, BCS *a* acts as a locality boundary for root-determined allomorphy. Next, I turn to the role of *a* in mediating morphological tone placement.

3.2 *a*P mediates the placement of morphological tone

In BCS, prominent syllables of prosodic words carry a tone, which can be described as rising or falling. In their influential proposal, Inkelas and Zec (1988) argue that only H(igh) tones are represented in the BCS lexicon; BCS roots and affixes are idiosyncratically marked or unmarked for H. A falling tone results from word-initial H and a rising tone from a non-word initial H that spreads to the preceding syllable, as in (13).[6] I will adopt this analysis throughout, marking the origin position of the H with the acute accent (á).

(13) a. σ σ (σ) (falling)
        |
        H

   b. σ σ (σ) (rising)
        \/
        H

   BCS imposes a restriction on the realization of underyling Hs in derived words. In the examples below, (14) instantiates a ROOT-*n* configuration, and (15) a ROOT-*a-n* configuration. The nominalizer -*ik*, which is underlyingly H-marked, can influence the placement of tone if it attaches to a root (14), but not if it attaches to an already adjectivized stem (15). The adjectivizer in (15) blocks the subsequent addition of -*ik* from influencing the position of the H. Other BCS adjectivizers behave the same way in that they mediate the placement of H (see Bešlin in progress).[7]

(14) a. so.krát → so.kra.t-ík   c. a.nal.gét.(sko) → a.nal.ge.t-ík
   b. pro.zá → pro.za.-ík   d. ál.ko.hol → al.ko.ho.l-ík

(15) a. be.stid → be.stid.-n-ik   c. na.pást → na.pás.-n-ik
   b. bez.-í.me(n) → bez.í.me.-n-ik   d. pro.mét → pro.mét.-n-ik

   The contrast in (14)-(15) can be explained if the adjectivizer in BCS is a phase head: the nominalizer is not able to see the root across it and influence the position of H. In other words, tone placement in BCS is determined within the first phase, and further material is unable to modify it (see Newell 2008 for a similar conclusion for Turkish and Cupeño).

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[6]Inkelas and Zec 1988 show that the location of stress is fully predictable based on their account of tone; stress placement is on the leftmost H-bearing syllable. Stress, being predictable in this way, will be irrelevant for our purposes. Vowel length information is also irrelevant and is omitted throughout.

[7]The role of categorizing morphemes in regulating morphophonological processes was first cashed out in this way by Marvin (2002), who argues that lexical stress-assignment in English and Slovenian is mediated by phasal spell-out domains below the word level.

Note that the position of H is not always determined between the first two elements that merge, nor is it dependent on linear adjacency to the root. First, there are contexts where some composition has taken place before the first categorizing affix is added, but the categorizer is still able to determine the position of H, as in the case of derivation based on root+root compounds (16a)[8] or non-categorizing affixes+roots (16b). Furthermore, non-phasal (non-categorizing) material merged after the first categorizer is still able to influence the position of H, as in the case of adjectival comparative morphology (16c); this is fully predicted by the weak PIC in (1).

(16)　a.　dub+o+rez-ác　　b.　raz-nos-áč　　c.　led-en-íj-i
　　　　deep-L-cut-N　　　　PREF-carry-N　　　ice-A-CMP-M
　　　　'woodcarver'　　　　'delivery guy'　　　'icier'

This section showed that BCS categorizers–the hypothesized phase heads of DM–behave as domain delimiters for morphological processes; specifically, adjectivizers, but not non-categorizing morphemes, "close off" the domain of root-allomorphy and morphological tone placement.
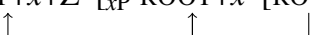
4.　A note on the general incompatibility of the two phase theories

In this section, I would like to point out some general difficulties for the unification of syntactic and morphological locality effects with Phase theory. First, it has been noted in the literature that Phase theory can account for the relevant morphological effects only if the weak PIC in (1) is adopted (Embick 2010). This is because non-phasal nodes that intervene between the first and second phasal node have to be able to influence the form of the root, which would be impossible if the Phase was sent to spell-out immediately upon its completion. We see this effect in cases such as the English *go-went* root suppletion, where Tense must be able to access the root across *v*, but also in the BCS cases discussed in 3.2., where comparatives count as part of the first phase across the phasal *a*.

There has been work attempting to unify syntactic and morphological locality domains using a model in which the whole phase (rather than the phasal complement) gets spelled out, but assuming that head-movement drives phase-extension in the sense of den Dikken 2007 (see e.g., Fenger 2020). The problem here, as in the case of the strong PIC, is that a non-phasal head Z must be allowed to influence/be influenced by the root across the first phase-head. To allow this, we would need to say that the ROOT moves to the first categorizer and then both move to the non-phasal Z, which drives phase extension (17). At this point, we spell out ROOT+x+Z. However, given the final landing site of ROOT+x+Z, we then predict that the next phase-head y should have access to the root to the same extent it has access to x, which is precisely the outcome DM Phase theory aims to preclude. Hence, the weak PIC is needed in the morphology.

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[8]*O* is a frequent linking vowel in BCS root+root compounds; I take *dub+rez* to merge first because *duborez* exists as an independent word, while *rezac* does not.

(17)   [$_{y}$P y [$_{Z}$P ROOT+x+Z [$_{x}$P ROOT+x [ROOT]]]]

For Phase theory as a theory of punctuated movement paths, the strong PIC is required, which states that the completion of a phase immediately triggers the spell-out of its complement (Chomsky 2000:108). The reason the weak PIC is not suitable is that it does not, in fact, force successive-cyclic movement of the kind that the literature on Phase theory assumes. This is because the looser way the weak PIC is stated allows an XP to escape the opacity of the phase that dominates it not only by moving to the spec of that phase, but also by moving to the spec of any non-phasal phrase that is merged between the two phases. For example, XP in (18) may escape spell-out by moving through the specifier of non-phasal WP or spec ZP, and not just by moving to spec, yP. On the other hand, the strong PIC forces movement of XP to stop in spec yP, since XP would otherwise get spelled out before W or Z are merged. It is also worth mentioning that the PIC itself, regardless of its exact formulation, does not force movement of any kind. Rather, it is the assumption that "edge features" may be arbitrarily inserted on phase heads to force movement that derives successive-cyclicity effects. We may then wonder about the utility of Phase theory as a theory of successive cyclicity, since the movement features can arguably do the same job without any reference to the PIC.

(18)   [$_{x}$P x [ZP Z [WP W [$_{y}$P y [XP]]]]]

Thus, attempts to unify morphological and syntactic locality effects with Phase theory face serious challenges. Namely, there seems to be no way to state Phase theory in a way that is permissive enough to be able to explain morphological effects, but constrained enough that it triggers the desired successive-cyclicity effects.

5.   Conclusions and future directions

This paper has shown that a unified explanation of locality effects in syntax and morphology in terms of Phase theory faces considerable difficulties, both empirical and conceptual. There has also been considerable dissatisfaction in the field regarding Phase theory as a theory of successive-cyclicity (see e.g. Boeckx and Grohmann 2007) and it has been pointed out that Phase theory is redundant with certain other syntactic locality principles that have been proposed over the years, like Minimality (see Müller 2011, Bešlin in progress).

This short paper has raised some of the relevant issues without attempting a solution. In Bešlin in progress, I argue that Minimality is the only syntactic locality principle, which regulates probe-goal relations and drives successive-cyclicity effects. On the other hand, a modified version of the weak PIC, namely *Transfer*, regulates the transfer of syntactic structure to the interfaces, but has no effects syntax-internally. Elements that have been transferred to the interfaces can still be accessed for the purpose of syntax (e.g., displacement, agreement), but can no longer be internally manipulated for the purposes of the morphophonology or semantic interpretation.

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