Phases and Binding of Reflexives and Pronouns in English

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Abstract[†]

This paper proposes a distinct approach to local binding effects for reflexives and pronominals in English whereby the nature of local binding domains is a by-product of the incremental interpretation of syntactic derivations (Uriageraka 1999, Chomsky 2000, 2001), emphasizing the role of the Conceptual /Intentional interface and the computational system (i.e. bare output conditions) in shaping general principles of grammars. A significant development of the Minimalist framework is the proposal that derivations operate through *phases* or multiple spell outs, which allows to reduce the strict cyclicity of derivations, and related locality effects of movement, to interface (bare output) conditions and economy conditions. In this paper I propose that incremental interpretation can further capture local binding domains effects of conditions A and B of Chomsky's (1981, 1986) Binding Theory. Basically, local binding domains are shown to correspond to "accessible phase domains". Our proposal hence contrasts with standard analyses (e.g. Reinhart and Reuland 1993, Pollard and Sag 1992) that define co-argumenthood as the core factor from which binding conditions are developed. Our proposal also provides a new perspective on the core contrasts between A-chain and A-bar chain w.r.t. binding and scope reconstruction effects and argues that checking of the uninterpretable feature Case is what defines potential phase domains.

1. Case and Phase

For Chomsky (2001, 2001), a phase is a syntactic object defined as a domain for cyclic interpretation. While Chomsky identifies vP and CP as phases, other categories have been identified as phases in the literature: DPs (Adger 2003); ApplP (McGinnis 2004); M-Domains and N-domains for morphology (DiSciullo 2003). A core proposal of this paper is that uninterpretable feature checking, Case in particular, defines a phase domain and makes DPs, AgrPs (or AspectP or ApplP), PPs and TPs potential phases. The reason why Case plays such a central role actually follows naturally from basic assumptions of the Minimalist Program. As an uninterpretable feature, Case must delete before spell out to avoid a derivation from crashing. Case-checking points

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must therefore correspond to the earliest phase spell out points that a derivation must reach. In particular for DPs, their case checking position in a derivation is the earliest point at which they can enter LF through spell out. This would effectively make case-checking categories, such as AgrP, TP, ApplP and PPs potential categorical phases and potential entry points of DPs at LF. If this is one the right track, we should hope to find evidence that DPs are not semantically active prior to those entry points and in turn, that they crucially are semantically active at those very points.

As it turns out, there is interesting evidence supporting that prediction. It is widely recognized that A-chains and A-bar Chains display a number of asymmetries or mirroring properties w.r.t. binding and scope reconstruction effects. In addition, the relative boundaries of argument A-chains and A-bar chains is precisely defined by Case: Case is always at the head of an argument A-chain and at the tail of an argument A-bar Chain, i.e. Case defines the upper and lower boundaries of argument A-chains and A-bar Chains, respectively. These two generalizations are no coincidence under our analysis. As we argue directly, those asymmetries indicate that DPs are semantically inert before the case checking point, while being active at and arguably, not beyond that same entry point. As such, they directly support our proposal that Case-checking defines potential phase categories and sets the transitional boundaries of A-chains and A-bar Chains, i.e. the minimal point at which a DP transits to LF and becomes semantically active.

1.2 Case Phase and Mirroring Properties of Chains

Let us now consider those mirroring properties in details, in light of our analysis. The mirroring properties are summarized in (1) for A-chains and (2) for A-bar chains.

(1) **A-chains**

a. Feed A-Binding:
John$_i$ seems to himself [e_i to be happy]

b. No Binding Reconstruction (Chomsky 1995:210)
[That Johni was asleep]$_j$ seems to himi [e_j to be correct]

c. No Scope reconstruction (Lasnik 2003: 134)
[no one]$_i$ is certain e_i to solve the problem
it is certain that no one solved the problem

d. No WCO effect:
Who$_i$ seems to his$_i$ mother [e_i to be intelligent]

(2) **A-bar chains**

a. Do not feed A-Binding:
*Whoi does [each other$_i$'s supporters] like ei

b. Binding Reconstruction
*[Which portrait of John$_i$]jdoes hei prefer e$_i$

c. Scope Reconstruction:
This man, some picture of whom everyone knows

d. WCO effect:
?*Whoi does [his$_i$ supporters] like e$_i$

These properties have been much discussed in the literature, and some more recently in Chomsky (1995) and Lasnik (2003), but no single explanation seems able to capture the striking mirroring behavior that A-chains and A-bar chains have w.r.t. various binding and scope reconstruction phenomena. Hence (1a) and (2a) contrast directly in that only the head of an A-chain can feed A-binding. Under our proposal, the DP becomes active at the head of the A-chain where Case is checked, and not before. In addition, it seems that this entry point is actually fixed insofar as A-binding is concerned: the (maximal) C-commanding scope of a DP for A-binding is defined by its entry point at LF. This indeed captures why A-bar chains do not feed A-binding.

(1b) and (2b) also contrasts but w.r.t. reconstruction effects: Only A-bar chains seem to force reconstruction, triggering a Condition C effect in (2b), but not in 2(a). This contrast is also observed for condition A, as in (3a) versus (3b) below.[1]

(3) a. *himself$_i$ seems to him$_i$ to t$_i$ be intelligent
b. [Which picture of himself] does Mary think John likes ti

Condition A (binding of anaphor *himself*) cannot be saved by reconstructing the A-chain in (3a), but apparently can in (3b) with the A-bar

[1] Examples like (3a) were treated as condition B violations in Belletti and Rizzi's (1988) analyis of Condition A as an "anywhere" condition. However, examples such as (i) below , which is at worse marginal, raises considerable doubts as to the correctness of such analysis. Imagine a context where John is watching a pre-recorded TV quiz show in which he was the participant:

(i) ?John$_i$ expected himself$_i$ to seem to him$_i$ t$_i$ to be more intelligent

chain. Under our proposal, these contrasts indicate that reconstruction is only possible up to the entry point of DP at LF, i.e. at the tail of an A-Bar chain. The absence of reconstruction within A-chains follows directly as traces of A-chains are below the entry point and thus, inactive at LF.

Another type of example that could be interpreted as A-chain reconstruction was originally pointed out by Belletti and Rizzi's (1988) analysis of psych-verbs, such as (4).

(4) a. [Each other$_j$'s supporters]$_i$ frightened the candidates$_j$ t_i
b. [Each other$_j$'s supporters]$_i$ seem to the candidatesj ti to be unscrupulous.

However Lasnik (2003) seriously questions the grammaticality of such examples and discusses numerous other similar ones that are clearly ungrammatical, such as (5).

(5) a. *[Each other$_j$'s supporters] supported the candidates$_j$
b. *[Each other$_j$'s supporters] asked the candidates$_j$ to be more supportive.

Yet, assuming such cases are grammatical, an alternative analysis of (4) is available in terms of "online" binding à la Lebeau (1988), which does not require reconstruction per se. Basically, *each other* is bound prior to A-movement (see section 2.3, examples (32)-(35) for more details).

Back to the contrasts in (1) and (2), the contrast between (1c) (from Lasnik 2003: 134) and (2c) now involves scope reconstruction. While (2c) clearly allows a narrow scope reading after reconstruction, Lasnik points out that (1c) doesn't allow the interpretation that would result from reconstructing the quantifier in the initial position of the A-chain. The same conclusion was reached in (Chomsky 1995:327) based on the following contrasts.

(6) a. (It seems that) everyone is not there yet
b. I expected everyone not to be there yet
c. Everyone$_i$ seems t_i not to be there yet

As Chomsky comments: "Negation can have wide scope over the quantifier in (a), and it seems in (b), but not in (c)…reconstruction in the A-chain does not take place, or so it occurs".

Again, the mirroring properties of A-Bar chain and A-chain w.r.t. scope reconstruction is naturally captured under our proposal. The absence of

scope reconstruction with A-chain is explained along the same line as binding reconstruction: The targeted reconstruction DP position does not exist at LF as it would be below the minimal entry point defined by case checking.

Finally, consider the contrast between (1d) and (2d) involving WCO effect. Most configurational approaches to WCO (e.g. Bijection Principle, Co-bound Variable condition, etc.) assume that some structural condition only applies to Operator-variable constructions, at the exclusion of A-chains. This can perhaps be justified if traces of A-chains are not variables (thus escaping any condition on co-bound "variables"), however, this in turn excludes a purely contextual definition of variables (to prevent traces of A-chains as locally A-bar bound variables) and requires an intrinsic definition of variables that is related to Case, which is not without problems for, e.g. PRO as a variable. Even so, it remains a stipulation that a configurational contraint on co-binding would only apply to co-bound variable traces, and not include traces of A-movement: Formally speaking, both are mere copies in minimalist terms. Under our proposal, under the absence of WCO with A-chains now follows directly from the fact there is no WCO configuration created by A-movement, i.e. traces of A-chains are not accessible at LF, thus no violation can surface.

In sum, our prediction that a DP is semantically inactive prior to its case-checking and transfer to LF is supported by the mirroring properties of A-chains and bar-chains w.r.t. binding, scope, reconstruction and WCO effects. Under our proposal, Case features must delete prior to spell out and therefore, Case checking positions define the minimal phase spell out/entry points of DPs at LF. As a by-product, this entry point also defines the transition point between argument A-chains and A-bar Chains. For instance, it fixes the c-commanding scope of a DP for binding (i.e. Binding occurs at LF) as well as its lowest reconstruction position. We will therefore adopt the following working hypothesis.

(7) **Case Phase** (first version)
Case feature checking (through spec-head) allows phase spell out and defines potential phasal categories.

As a consequence of (7), syntactic categories where case-checking occurs should all be potential phases: DPs (Adger 2003), ApplP (McGinnis 2004) and I now propose, AgrPs, TPs and PPs. Whether Case is the only uninterpretable feature responsible for determining potential phase categories remains an open question in this paper. Notice further that AgroP really is an extended projection of *v* and is therefore basically corresponding to the *v*P

phase of Chomsky (2001). The crucial difference being that Case is the defining notion for that phase.

In the next section, an analysis of Local Binding Domain for reflexives and pronouns in English is developed based on the assumption that Case defines phasal categories and that phase categories, in turn, are the domains over which local binding is defined.

2. Case Phases and Binding Conditions A/B

Generative grammar has recorded some attempts at unifying local domains for binding and movement, starting as early as Bouchard (1981) and Aoun's Generalized Binding Theory (1982). While subsequent accounts have not pursued that direction (Chomsky 1986, Reinhart and Reuland (R&R) 1993, among others), there is a legitimate appeal to this possibility from a theoretical standpoint. If indeed phases are the source of locality and strict cyclicity of movement, then finding that other local properties of grammar are exploiting the same fundamental architectural design would provide significant support for the notion and the nature of phases. In turn, it would make the system much more efficient and economical, as seemingly independent grammatical phenomena would emerge from a unique formal source.

In this second section, I develop an analysis of the nature of local binding domains for reflexives and pronouns in English based on the proposal in (7) which I refer to as Case Phase. Under this analysis, local binding domains essentially reflect the accessibility of antecedents within a phase at the C/I Interface. Such a conception of local binding domains is in line with the view that phase derivation can be justified as an economy or efficiency condition imposed by the Interfaces (bare output conditions) as phasal derivation reduces the search space and reduces backtracking and look ahead (DiSciullo 2003). Hence the use of a reflexive, instead of a pronoun, is a way for a grammar to eliminate some potential anaphoric ambiguity as early as possible, i.e. within each phase spell out. More precisely, DPs are semantically inert before being spelled out at the C/I interface and a reflexive (by opposition to a pronominal) is viewed as an element morphologically marked to be bound immediately as it enters the C/I interface, i.e. the use of a reflexive indicates that a bound anaphor has been spelled out in the same "accessible phase(s)", as its antecedent. As a result, "local binding domains" would correspond to "accessible phase domains".

2.1 Phase Assumptions

To consider how such analysis would apply, let us first consider some basic assumptions about phase theory. A phase is essentially an XP category,

while the *edge* and *domain* of a phase respectively correspond to the specifier and head-complement of such an XP. Following Chomsky (2001), grammatical operations can span over at most two phases, as defined in the Impenetrability Condition in (8).

(8) Phases Impenetrability Condition (Chomsky 2001)

The domain H is not accessible to operations at ZP; only H and its edges are accessible to such operations.

[ZP Z … [HP α [H YP]]]

According to (8), a relation within "accessible phases" can span at most two phases, provided that one of the element stands at the *edge* of the lower phase (thereby escaping it). For instance, if α is at the edge of a phase HP, it is accessible to any element in the next phase up, namely ZP.

I propose that Binding Conditions A and B can be stated as (9a,b):[2]

(9) a. Condition A
A reflexive anaphor must be bound in its accessible phases

b. Condition B
A pronoun must be free in its accessible phases

2.2 Binding in Sentential Phases

Applied to binding relations, the local binding domain of reflexives would correspond to that "window" of accessible phases at spell out. A basic example is shown in (10) for a transitive predicate.

(10) Legend: **(** = phase
~~John~~ = trace/copy
John = spelled out point

([TP[John$_i$]**(**[$_{AgroP}$himselfi[$_{vP}$~~John~~$_i$ likes ~~himself~~$_i$]]]

TP and AgroP are the Case phases in this structure (I am assuming, following Chomsky 1995 and Lasnik 2003 that accusative case is checked in spec of AgroP, i.e. covert movement applies on the mapping to C/I). *John* becomes "semantically active" only at TP phase, i.e. after nominative Case is

[2] The question of logophoric use of reflexives within the current proposal is treated in section 2.3

checked on T. *himself* in Spec of AgroP is also active and has *John* in Spec TP as antecedent. As *himself* sits at the edge of phase AgroP, *John* is contained and accessible in the next phase, TP. In sum two "accessible phases", as defined by PIC, would correspond to the Binding domain of reflexive and the non-binding domain of pronouns in English.

The analysis extends directly to (11) ECM constructions if we assume, following Lasnik's (2003), that the subject of the infinitival clause raises to AgroP of the exceptional case-marking verb for case-checking.[3]

(11) ECM and Small clauses: parallel to transitive verbs

a. $John_i$ believes $himself_i$ to have won
([$_{TP}$[$John_i$] ([$_{AgroP}$ $himself_i$ [$_{vP}$ ~~John~~ believes [$_{TP}$ ~~himself~~$_i$ to have won]]]

b. $Lucie_i$ heard $herself_i$ praise Max
[$_{TP}$Lucie ([$_{AgroP}$ $herself_i$ [$_{VP}$ heard[$_{SC}$ ([$_{Agr}$Max [VP ~~herself~~$_i$ praise ~~Max~~]]]]]]

The analysis is also correct in cases where the reflexive is located in the object position of the small clause with an intervening disjoint subject (examples taken from Reinhart and Reuland 1993). In (12), the reflexive cannot be bound by the main subject, but it can be so by the subject of the small clause in (13).

(12) (R&R:688)
$Lucie_i$ heard [Max praise her_i/*$herself_i$]
[$_{TP}$Lucie ([$_{AgroP}$ Max_i [$_{VP}$ heard[$_{SC}$ ([$_{Agro}$ $herself_i$ [$_{VP}$ ~~Max~~ praise ~~herself~~$_i$]]]]]]

(13) (R&R:688)
Lucie heard [Max_i praise *him_i/$himself_i$]

[3] Note that this prediction distinguishes our analysis from those based on the notion of co-argumenthood to predict the distribution of obligatory reflexives, such as Reinhart&Reuland (R&R, 1993) and Pollard&Sag (1992). For R&R, cases like ECM and small clauses as in (12)-(13) force their analysis into proposing that the notion of "co-argument" includes either Theta-marking or Case-marking, and crucially, only the former notion must apply to their Condition B. This seems a spurious generalization to us and it remains problematic for cases like (16) "John wanted for himself to be happy".

[$_{TP}$Lucie **(**[$_{AgroP}$ Max$_i$ [$_{VP}$ heard[$_{SC}$ **(**[$_{Agro}$ himself$_i$ [$_{VP}$ ~~Max~~ praise ~~himself~~$_i$]]]]]]

Hence in (12), the small clause subject Max raises to get its Case checked and thereby triggers an AgroP phase. Even after raising to the spec of the lower AgroP (for case-checking) and escaping it, herself stands in the domain of the higher AgroP phase and must therefore be bound within it, but its intended antecedent Lucie is located higher in the TP phase. In (13) however, the reflexive is properly bound within the higher AgroP phase, i.e. is bound by the small clause subject Max.

The analysis also extends to the subtle discrepancies noted by Reuland and Reinhart between argument PPs in (14) and adjunct PPs in (15), where the complementary distribution between pronouns and reflexives seems to collapse.

(14) Argument PPs (R&R:661)

a. *Max* speaks with *himself*/**him*
b. *Lucy*'s joke about *herself*/**her*

(15) Predicate and adjunct PPs (R&R:664)

a. *Max* saw a gun near *himself*/*him*
b. *Lucy* counted five tourists in the room apart *herself*//*her*

These examples first raise the question of the status of PP as a potential phase category. As P marks Case, PPs could arguably define a phase domain according to our proposal in (7). However, a general assumption about PP is that it does not involve structural Case-checking under spec-head agreement but rather, inherent Case marking, i.e. case related to theta role assignment. One might therefore question whether inherent Case, insofar as it is related to theta-role assignment, is an uninterpretable feature. If there is an inherent case feature, it is also very plausible that is it canceled in situ upon merging, i.e. upon theta role assignment.

For our analysis' standpoint, if the "in situ" cancellation of Case in PPs triggered a strong phase, it would imply that a DP within a PP could never be a reflexive, clearly an undesirable conclusion. Let us explore this plausible assumption further and assume that the configuration in (23) is one where only a *weak* phase is defined, by virtue of the lack of movement for Case checking. More formally, let us revise (7) as (7'):[4]

[4] Notice that extending (7') to another uninterpretible feature such as [Wh] would make CP a strong phase as well in context of Wh-movement. Yet another way of making CP a

(7') **Case Phase** (final version)
Case feature checking through movement defines potential strong phasal categories.

Under these revised assumptions, let us first consider the analysis of examples involving argument PPs. Argument PPs have their theta-role assigned by the verb and must arguably be merged and spelled out along with the verb for interpretation. That assumption yields the correct results: Argument PPs will always require a reflexive if bound by a co-argument, either a subject in (16) or an object in (17) (= R&R:636).

(16) Max_i speaks with $himself_i$
([$_{TP}$[Max_i] [$_{vP}$ Max_i speaks [$_{PP}$with $himself_i$]]]

(17) Lucie explained Max_i to $himself_i$/*him_i
([$_{TP}$[Lucie] **(**[$_{AgrP}$$Max_i$ [$_{AgrP}$ [$_{vP}$~~Lucie~~ explained [~~Max_i~~] [$_{PP}$ to $himself_i$/*him_i]]]]

In contrast, adjunct PPs are not dependent on the verb for theta role assignment of their DP complement, which opens the possibility that they may or not spell out in the same phase as the verb. In the spirit of Lebeaux (1988) and Uriagareka (1999; within a multiple spell-out framework), PP adjuncts are merged independently of the main predicate/argument structure, through generalized transformations. This predicts that two structures are possible for adjunct PPs, depending on whether a PP is merged at the edge or in the domain of an AgroP phase.[5] If PP merges at AgroP's edge, it escapes the AgroP phase for the purpose of PIC. In such case, a reflexive is required as shown in (18). If however PP spells out in AgroP's domain (e.g. in the VP), the reflexive is out and the pronoun is in, as in (19).

(18) **(**[$_{TP}$[$John_i$] [$_{AgrP}$a gun [$_{AgrP}$ [$_{vP}$~~John~~$_i$ saw ~~a gun~~] [$_{PP}$ near $himself_i$]]]]

(19) **(**[$_{TP}$[$John_i$] **(**[$_{AgrP}$a gun [$_{AgrP}$ [$_{vP}$~~John~~$_i$ saw a ~~gun~~ [$_{PP}$ near him_i]]]]]

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strong phase is actually Case, assuming that CP is case-marked. See Canac-Marquis (in progress) for an analysis along those lines.

[5] I keep assuming here that AgroP is actually an extended projection of *v* and therefore, the PP still modifies the *v*P as required by the interpretation.

The analysis therefore implies that there is no collapsing of the complementary distribution of reflexives and pronouns in those examples but rather, two distinct derivations are possible by virtue of the adjunct status of the PP, each derivation requiring a different type of anaphor.

This analysis of PPs further makes the prediction that if an antecedent is in the same phase despite the adjunct PP merging to AgroP, a reflexive is required. And indeed, such is the case when the antecedent is an object argument as in (20)= (R&R:668).

(20) John rolls the carpet$_i$ over *it$_i$/itself$_i$ (cf. Max rolled the carpet over him/himself)

a. **(**[$_{TP}$[John] **(**[$_{AgrP}$the carpet$_i$ [$_{AgrP}$ [$_{vP}$~~John~~ rolls ~~the carpet~~ [$_{PP}$ over itself$_i$]]]]]

b. **(**[$_{TP}$[John] [$_{AgrP}$the carpet$_i$ [$_{AgrP}$ [$_{vP}$~~John~~ rolls ~~the carpet~~] [$_{PP}$ over itself$_i$]]]]

(20a) is the derivation with the PP in the domain of the AgroP phase, and it is bound by the direct object, requiring a reflexive. In (20b), the PP is merged at the edge of the AgroP phase that it thereby escapes, but the direct object also remains in the same AgroP phase and a reflexive is still required.

The latter analysis of co-bound arguments seems to clash, however, with PPs in double object constructions. First note that the analysis of the dative shift example in (21) where the reflexive in the indirect PP is bound by the direct object, can be treated similarly to (20).

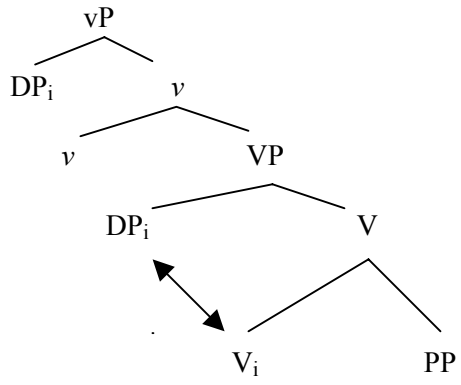
(21) I presented Max$_i$ to himself$_i$/*him$_i$ (Larson 1988 ex (5))
([$_{TP}$[I **(**[$_{AgrP}$~~Max~~$_i$ [$_{AgrP}$ [$_{vP}$ I explained [~~Max~~$_i$] [$_{PP}$ to himself$_i$/*him$_i$]]]]

However, in the case where the reflexive in the PP is bound by the subject, we would expect the reflexive to be excluded and the pronoun mandatory, as the reflexive is embedded in the AgroP domain defined by the direct object. Yet, the distribution is exactly the opposite, as shown in (22).

(22) Lucie$_i$ sent shoes to herself$_i$ /*her$_i$
([$_{TP}$[Lucie$_i$] **(**[$_{AgrP}$ shoes [$_{AgrP}$ [$_{vP}$ Lucie sent [shoes$_i$][$_{PP}$to herself$_i$/*her$_i$]…]

From the perspective of our analysis, the behavior of the reflexive in (22) directly contrasts with ECM (11) and small clause (12-13) in which the main subject because of the intervening AgroP phase cannot bind a reflexive. Cleary, some crucial factor must distinguish these constructions from the double object one. An indeed, a closer look at the double object analysis of Larson (1988) offers an interesting possibility when re-considered under minimalist assumptions. This is illustrated in (23).

(23) VP shell analysis (Larson 1988, Chomsky 1995, among others)



According to the original VP shell analysis of Larson, the direct object is generated in the specifier of V. Though Larson proposed that V raises further in *v* for Case-checking, another plausible analysis is that the spec-head agreement configuration is already achieved at merger and DP need not raise for Case-checking (notice that V itself would still need to raise independently, arguably for predication of the external argument). In minimalist terms, this is arguably the most economical option. The result would in fact render this type of case checking configuration similar to inherent Case of PPs insofar as no movement is required to check Case, i.e. Case would be checked upon merger and theta role assignment. In fact, our proposal in (7') already specifies that such must be the case. Hence (22) can be reanalyzed as (24).

(24) Lucie$_i$ sent shoes to herself$_i$ /*her$_i$

([$_{TP}$[Lucie$_i$] [[$_{vP}$ ~~Lucie~~$_i$ sent [shoes][$_{PP}$to herself$_i$/*her$_i$]]]

Notice that there is no AgroP phase anymore, as Case is assigned/canceled at merger *in situ* and by assumption, only a weak phase is created. The indirect PP object therefore lies in the main TP phase and if bound by the subject, must be a reflexive.

One more case involving a preposition falls naturally under our analysis, namely the reflexive subjects of *for*-clause:

(25) John$_i$ wanted for himself$_i$ to be happy
([$_{TP}$[Johni] [$_{vP}$~~John~~$_i$ wanted] [$_{CP}$ for [$_{TP}$ himself$_i$/*him$_i$ to be happy]]]]

According to standard analyses, *for* is a prepositional complementizer assigning structural case to the subject of the infinitive (Kayne 1981, Chomsky 1981). Since *for* is prepositional and does not trigger spec-head agreement, CP only creates a weak phase under (7') and the main TP is therefore the strong phase containing himself and its antecedent, John. The choice of the reflexive over the pronoun follows directly. Note that this type of example is another case distinguishing our analysis from those treating reflexivity as a property of co-arguments, as Reinhart and Reuland (1993).[6] Clearly, the subject of the infinitival is not a co-argument of the main verb, and the case assigner *for* is not the main predicate either. The fact that a reflexive is mandatory in this context strongly suggests that co-argumenthood is not the definitive notion to capture its distribution.

2.3 Binding in DP Phases

Let us now consider how the main paradigm of binding in DPs would develop under our analysis. Following Adger (2002), but also Svenonius (2005) and Hiraiwa (2005), DPs are strong phases. In our terms, this assumption follows as DPs are Case-marked and until their case is checked, they cannot be spelled out. Assuming so, DPs therefore create a phasal binding *domain* for our conditions A and B and any reflexive embedded in a DP domain can only be bound by an antecedant within DP. That is generally the case with picture noun phrases with prenominal subjects, as in (24).

(26) a. Mary$_i$ likes **(** [$_{DP}$ John's picture of *herself$_i$/her$_i$]
b. Mary likes **(** [$_{DP}$ John$_i$'s picture of himself$_i$/*him$_i$]

These cases do not pose any peculiar challenge to our analysis. The *of*-PP is a weak phase and the prenominal DP *John* is also a weak phase (and

[6] Reuland and Reinhart treat such cases as exceptional, where *himself* would be used as a logophoric reflexive in this context and this, despite the fact that the pronoun is clearly excluded under a subject-bound reading. As R&R mention (1993:712) "We doubt, however, that any theory should be modified to account for such cases". We agree in that, no theory should treat such cases as marginal but rather, they should fall from general assumptions. See our analysis of (16).

in any case, does not include the anaphor), which leaves DP as the first accessible strong phase and binding domain.

Cases where no subject is present, as in (26), could be treated along the lines of Chomsky (1986) proposal that a (controlled) PRO is accessible in those constructions.

(27) Lucie$_i$ saw a picture of herself$_i$/her$_i$

([$_{TP}$[Lucie$_i$] ([$_{AgrP}$ ([$_{DP}$ a PRO$_{i/j}$ picture [of her$_i$/herself$_i$]] [$_{vP}$ saw a ~~picture of herself~~$_i$]

The analysis essentially follows the lines of (26), with PRO as the accessible subject in the DP phase. PRO however can either be controlled by the subject, allowing the reflexive reading, or be arbitrarily controlled, allowing the pronoun to appear as bound by the subject.

Notice that a construction such as (27) is treated quite differently in approaches based on co-argumenthood. For R&R for instance, there is no syntactic PRO in (27), so there is no syntactic co-argument for the reflexive, which thereby escapes their reflexive binding condition. This implies that for R&R, the anaphor in (27) is used logophorically. A somewhat similar analysis in spirit is also found in Pollard and Sag (1992, 1994) and Manning and Sag (1999) where the anaphor in (27) is an "exempt-anaphor" (i.e. exempted from binding conditions) since it does not have a co-argument in its argument structure and may thereby satisfy binding vacuously and be used logophorically. Both of these approaches rely on the assumption that there is a complementary distribution between bound and logophoric uses of reflexives, as defined by syntactic and /or syntactic co-argumenthood. This assumption, however, is not without problems. Example (16) above with the *for* complementizer, as well as case of ECM (11) and small clauses (12)-(13), require treating syntactic and semantic co-arguments as separate notions for Binding purposes. In addition, there are clear cases where co-arguments of a bare predicate escape binding conditions, as pointed out in Zibri-Hertz (1989:719) who cites examples such as (28).

(28) John$_i$ thinks that Paul$_j$ hates himSELF$_{i/j}$ more than anyone in the world

This type of example indicates that co-argumenthood cannot be considered a sin-qua-non condition for reflexive binding. As nicely argued in Gast (2004) a *self*-form seems to be used logoriphically only if it refers to the 'assigned epistemic validator' of a discourse segment, rather than if it is not a co-argument of some reflexive-marked predicate. In other words, it seems

that discourse and pragmatic factors validate logophoric uses of reflexives mere "exemption" is not a sufficient condition.

Back to examples (26) and (27), Runner and Kaiser (2005:55) bring up a number of convincing arguments related to ellipsis, collective reading and "only" construction suggesting that the possessor NP in (26) is not an actual argument of the *picture* noun. For instance, Runner and Kaiser point out the contrasts between (29) and (30) w.r.t. the bound variable and strict readings:

(29) John_i hates himself_i and so does Fred

(30) John_i has a picture of himself_i, and so does Fred.

Whereas (29) only allows for a bound variable reading, (30) allows for both a bound and strict reading. This follows, according to Runner and Kaiser, if in (30) *John* and *himself* are not co-arguments and *himself* is exempted from Binding condition A, allowing the strict/coreferential reading. The crucial examples are then (31) (Runner Sussman and Tnenhaus 2002) and (32) (Runner 2003):

(31) *Jimmy bought JFK's picture of himself* for $500 not realizing he could've bought the museum's for just $100 in its going out business sale.

(32) (n.b. quote captured during a live psycholinguitic experiment)

Pick up Joe. Have Joe touch Ken's picture of himself. Now, have *Joe touch Harry's picture of himself.*

These examples involve an overt possessor in the NP and similarly to (30), both a bound variable and co-referential reading are available. Runner and Kaiser logically conclude, based on the parallel with (30) and the contrast with (29), that the possessor is not a co-argument of the picture phrase. If that is correct however, an analysis based on co-argumenthood fails to capture why a condition B is still applying in the same structural environment as (31) and (32), a shown in (33).

(33) Mary likes $[_{DP}\ \text{John}_i\text{'s picture of } *\text{him}_i/\text{himself}_i]$

If the possessor *John* is not a co-argument of *him* in (33*),* why are conditions A/B mandatorily applying? Again, the notion of co-argumenthood seems to fall short of capturing the true generalization for the identification of the domains for binding conditions. In contrast, our proposal does not face this type of issue as the argument or co-argument

status of the pronominal possessor is irrelevant: Only its presence, or absence, within the accessible phase of the reflexive makes it a mandatory binder or not in (33). Indeed, the pronoun must be free in its accessible phase DP, which includes the overt pronominal possessors in both examples.

As for the long distance readings in (31) and (32), we must either maintain that these are true cases of logophoric use of *himself* or provide an alternative analyses for it. There are a number of options to explore at this point and I will discuss two.

One option, which relates to other contexts of long distance binding, is to treat cases like (33) as instances of "online binding". Cases of online binding refer to examples such as (34) for A-movement and (35) for A-bar movement.

(34) Each others' supporters frightened the candidate
[$_{TP}$ ([$_{AgrP}$ [$_{DP}$the candidates$_i$] [$_{AgrP}$[$_{DP}$each other$_i$'s] supporters]$_j$ [$_{vP}$ frightened t_j t_i …]

(35) John$_j$ wonders [which pictures of himself$_j$]$_i$ Mary likes t_i

(36) *John$_i$ wonders if Mary likes a picture of himself$_i$

Cases like (34) involve psych-predicates which following the original analysis of Beletti and Rizzi (1988), are double object predicates with theme and experiencer internal theta roles. In the spirit of Beletti and Rizzi, but also Lebeau (1988) this type of examples where the reciprocal seems to precede its antecedent can be treated as an instance of binding before raising of the theme argument in subject position, as illustrated in the structure in (34). Under our analysis, this is possible if *each other's* can be spelled out at the same time as its antecedent: *the candidates*. Notice that the accusative case feature of *the candidates* is case-checked in spec of AgroP, making the latter a phase domain. At that point of the derivation, *supporters* cannot obviously check its nominative Case, however, *each other's* presumably can in spec of DP. Indeed, *each other's* bears a genetive case on its sleeve as a morphological mark, and similarly to PPs, can arguably have its case checked *in situ* (in spec of DP). Notice that nothing prevents spelling a subpart of a constituent such as DP. In fact, phase spell out is all about spelling out sub parts of larger constituents.

In sum, we are considering the option that the reciprocal in (34) can spell out in the same phase as its antecedent by virtue of (i) carrying its own genetive/possessive Case, thus creating its own weak phase, and (ii) being an adjunct and thus not requiring to be spelled out in the same phase as a selecting predicate. Now considering cases like (35), which were originally

pointed out in Barss (1986), we can surmise that the anticipated spell out involving A-movement in (34) finds a mirror application for A-bar movement in (35). In (35), the reflexive *himself* behaves not as if it needed to be spelled out by anticipation, but rather, as if it were allowed to be delayed until it reached a higher point in the derivation, through A-bar-movement, until a targeted antecedent would be available. Notice the contrast with (36), which indicates that *himself* cannot be treated as a logophoric or exempt-anaphor in these types of examples. The analysis for (35) is shown in (37).

(37) **(**[$_{TP}$John$_j$ wonders **(**[$_{CP}$ [~~which pictures~~ of himself$_j$] Mary **(**[$_{AgroP}$ which pictures [$_{PP}$~~of himself~~$_j$]] likes [~~which pictures of himself~~]

The Wh constituent first moves to spec of AgroP in the embedded clause to check accusative case on w*hich picture*. Notice that even though *which picture* spells out to C/I interface, the phonetic features of *which picture* must carry on as required by pied pipping for Wh-movement.[7] At that point also, the PP *of himself* does not spell out, by virtue of its adjunct status and weak phase. Further movement of the Wh constituent for Wh-feature checking allows the PP to pied pipe its way to spec of CP, at which point it can spell out. Being in the spec of CP, it escapes CP phase, which allows the PP *of himself* to be in the same TP phase as its targeted antecedent, *John*.[8]

We can now go back to the analysis of examples (31) and (32) under these assumptions. An alternative suggested by the latest discussion would exploit once again the weak phase and adjunct status of the PP *of himself*. Very simply, the same way the PP can delay its spell out to account for long distance cases such as (35), let us consider without further assumption that the same option is available in (31) and (32). This yields appropriate results. By delaying its spell out, the PP escapes the DP phase and can reach an antecedent within the main clause, as is the case in (31) and (32). This analysis hence correctly captures the fact that *himself* can choose either the local antecedent in the DP of the more distant one in the main clause. It also captures the asymmetry between an anaphor and a pronoun in the same context. Hence, even if the pronoun escapes the DP phases, the pronominal possessor will still bind it within the same TP phase.

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[7] Perhaps this can be viewed similarly to cases of "remnant" movement, in the spirit of Kayne (1995) and related work.

[8] Examples where the main predicate selects double objects DP CP as (i) below would required an analysis of case assignment of the DP similar to double object of type DP PP , as in (22) in the text.

(i) John$_i$ asked [Mary] [which picture of himself$_i$] she prefered.

Further exploration of this first option for (31) and (32) would have to determine whether the same structural contexts with de-verbal predicates such as *destruction* in (38) is expected to yield different results, as the PP would not have an adjunct status and would have to spell out with its predicate, within DP.

(38) Ebenezer$_j$ saw [John's$_i$ destruction of himself $_{??j/i}$]

Preliminary native judgments seem inconclusive and further research into this question is warranted. Another prediction of this first analysis of (31) and (32) is that an even longer distance than the "next phase up" should not validate a long distance reading, as in (39) and (40).

(39) John$_i$ said that Bill$_j$ saw [Jacob's$_k$ picture of himself$_{k/j/?i}$]

(40) John$_i$ said that there was [Jacob$_j$'s picture of himself$_{j/?i}$] in the post office.

Initial native speaker judgments of these examples seem to indicate that distance is not the distinguishing factor. If that is so, a second option for the analysis of (31) and (32) needs to be explored.

The second option, along the spirit of the "exempt-anaphor" of Pollard and Sag, is to explore the idea that a reflexive can escape a binding condition vacuously if one of the pre-conditions is not fulfilled. Under our approach however, such a pre-condition could not be, as in the Pollard and Sag approach, a factor such as "…the presence of a co-argument in the argument structure…", since co-argumenthood is not a component of our binding conditions. Rather, "accessibility of an antecedent in a phase" would be. In other words, if binding condition A were to apply *only* if a potential and accessible antecedent resided within the same phase, this would allow condition A to be exempted in case there were no such antecedent. This condition seems plausible to the extent that the absence of any accessible antecedent in a phase containing a reflexive could only be interpreted as an attempt at logophoric reference, not locally bound anaphora. This is also in line with our general assumption that the use of pronouns and anaphors is motivated by economy conditions: There is no potential ambiguity to eliminate if there is no potential antecedent in the phase of the reflexive. Let us therefore reformulate our Condition A in (9) as follows:

(9') Condition A
A reflexive must be bound in its phase only if there is an antecedent in the phase.

The consequence of (9') for the analysis of (31) and (32) is straightforward. Since the pre-nominal possessor resides outside the *domain* of the DP phase and can be spelled out independently of the domain, *himself* can be spelled out without a potential antecedent in its DP *domain* phase. If that option is chosen, the reflexive escapes (9') and need not be bound in its phase, i.e. it is exempted and can be used logophorically if the discourse conditions are adequate. Condition B as originally stated in (9) need not be reformulated as it requires a pronoun to be free in its "accessible phases", i.e. in all phases that it could be spelled out in. In (32), the pre-nominal possessor is at the edge of the DP phase, thus in an "accessible phase" for the pronoun in the DP domain: The pronoun must therefore be free in DP.

Conclusion

This paper extends the theory of derivation by phase (Chomsky 2001), originally proposed for locality and cyclicity effects on movement, to capture local binding domains of pronoun and reflexives in English. First arguing that phases are partitioned on the basis of spec-head checking of uninterpretable features such as Case, I then proposed that the local binding domains for reflexives and pronouns in English are defined in terms of accessible phase domains. The choice of a reflexive (Condition A) over a pronoun (Condition B) is dictated by whether or not the antecedent is located in the same accessible phases at phase spell to the C/I interface. The analysis contrasts with standard analyses whereby co-argumenthood is a core factor in determining the contexts where binding conditions apply.

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