

Minimalist Construal:
Two Approaches to A and B*
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0. Introduction

Until recently, mainstream minimalist theorizing has treated construal as a (CI-) interface process rather than as a part of core grammar.¹ Recently, a number of authors have resisted this categorization and tried to reduce binding and control relations to those established by movement, agreement or some combination of the two.² In this chapter we'll compare and contrast two theories that give the grammar a privileged position with respect to the establishment of (at least some) binding relations. We'll discuss variants of Hornstein's (2001) movement-based analysis of construal and Reuland's (2001, 2005) Agree-based theory of reflexive binding. For ease of exposition, we'll refer to the former as Chain-Based Construal (CBC) and the latter as Agree-Based Construal (ABC).

1. Reasons to treat Binding as a grammatical process

First, construal relations display the characteristic hallmarks of core grammatical processes. For example, both local reflexivization and local control are obligatory, respect a domain locality restriction and (at least to a first approximation) adhere to a c-command requirement on antecedent-anaphor dependencies. Though it is logically possible that linguistic phenomena displaying these three signature properties of the grammar might fall outside the core, the fact that construal relations have them constitutes a *prima facie* reason for thinking that they all involve processes that lie within the core computational system.

This conclusion is especially persuasive with regard to locality. Given a

minimalist mindset conditions can arise in only two ways: as byproducts of the computational system or as restrictions imposed by the interfaces (CI being the relevant one for construal). Thus, if locality restrictions on construal are not byproducts of the computational system, they must arise from inherent interpretive properties of the CI interface. However, it is unclear what the source of such restrictions might be.

This is somewhat tendentious. Reinhart and Reuland (1993), following the original suggestion in Bach and Partee (1980), treat local reflexivization as an argument changing process. It is thus defined over the argument structure of a predicate, a very local configuration. Conceptually, this is the right kind of move. However, there are two problems if this is extended to construal more generally. First, it cannot be extended to local control configurations as control typically relates arguments of different predicates.³ Second, as has long been noted, it cannot extend to cases of local binding like (i) (discussed further below), where the reflexive is clearly in a different argument domain from its antecedent.

- (1) a. John believes himself to be important.
- b. John would greatly prefer for himself to win.
- c. John heard himself leave the building.
- d. The boys waited for each other to speak.

This is the only proposal we know of that conceptually reduces the locality of construal to a plausible interface property, viz. the locality that co-arguments of a single predicate enjoy. Note that other conceptions of argument structure (such as that used in Pollard and

Sag 1992) have no plausible status as interface conditions, since the notion of "co-argument" that they make available has no direct semantic significance.⁴ Absent such a source, the only other option is to analyze locality in terms of features of the computational system, i.e. in terms of how construal relations are established rather than the interpretations they come to possess.

This conclusion is buttressed by two further observations. First, local construal relations interact with other parts of the grammar that are thought to be products of the computational system, such as agreement. This is particularly evident in control relations where controlled PRO functions with respect to ϕ -feature transmission very much like an A-trace due to movement.⁵ Second, as has been known since Chomsky (1981), there is a lot of overlap in the properties of movement and construal. For example, Chomsky (1981) is in part based on the observation that A-traces that arise from movement distribute largely the way that local anaphors subject to principle A do. This is what enables GB to reduce movement effects to A-chain restrictions. Similarly, within GB, PROs and traces are understood to be identical at LF once indexing has occurred, thus allowing their substantial similarity to be theoretically accommodated. In sum, it has long been recognized that the outputs of the grammar (movement chains) and the subjects of construal (binding/control relations) are empirically very similar.

There was a second motivation behind the early resistance against banishing construal to the interface hinterlands. It stems from our present epistemological position with respect to our understanding of the properties of grammar versus those of the interfaces. We understand the first far better than we do the second. As such, treating construal as consequences of interface operations functions to weaken our theoretical

obligations. All things being equal, grammatical proposals are easier to evaluate, develop and understand than those based on interface principles and properties that we have barely begun to develop. Methodologically, then, treating phenomena in terms of the grammar -- especially those that have grammatical fingerprints all over them -- is the right way to go.

These two lines of reasoning have clearly resonated with the Minimalist community for it is now largely accepted that (at least some) construal relations reflect operations of the core computational system.⁶ It is the basic outlines of these proposals that we will discuss in what follows.

One more point: we will focus exclusively on Binding rather than Control. The reason for this is strategic. There already exists considerable literature and debate about control theory and various ways of approaching it within a minimalist context.⁷ There has been less debate about how binding is to be addressed within a minimalist framework. Given space limitations, we have chosen to travel the path less frequently explored.

2. The Explanans: Two Grammatical Approaches to Construal

There are currently two minimalist approaches to construal. The first treats construal as parasitic on movement. The second ties construal to the output of agreement. To fix ideas, consider the abstract structure in (2):

(2) [... Antecedent F0.....Anaphor.....]

CBC treats the relation between antecedent and anaphor as that between links in a chain.

Thus the theoretical representation of (2) would be (3).

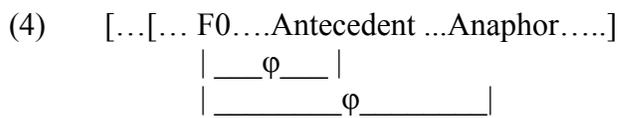
(3) [...Antecedent1 F0.....Antecedent1...]

What we see in (3) is a movement chain between two copies of the antecedent. An anaphor, in effect, is the morphological offspring of a copy of the antecedent. In cases of local binding, this can surface as a reflexive; in cases of control, as a phonetic gap. The object interpreted at the CI interface is, in this case, an A-chain bearing multiple θ -roles. Two points are worth keeping at the mind's forefront with respect to this proposal: (i) The morphology is largely an afterthought. The form of the anaphor (e.g. the reflexive) plays no real role in the interpretation afforded. The relevant property is the multi-thematic chain at CI. This means that the agreement features are essentially bereft of semantic interpretation. Whatever one sees is essentially a reflex of low-level morphology.⁸ (ii) The antecedence relation, which is an inter-nominal relation semantically (the anaphor is dependent on the antecedent for its interpretation), is a relation between DP positions syntactically. There is thus a smooth path from the syntactic relation to its semantic interpretation. In the simplest case the syntax to semantic conversion rule is as follows: α antecedes β iff α and β are links in a common chain. We get binding/construal when both α and β , links in a common chain, sit in θ -position.

The CBC has two distinctive “minimalist” features. First, it relies on the possibility of movement into θ -positions. This is not an option in a theory that assumes D-structure (DS). As minimalism has proposed the elimination of DS, such movement is a conceptual option.⁹ Second, it is reductive in that it aims to reduce reflexivization (a construal

process) to another grammatical operation (movement). If successful, this constitutes a step towards the simplification of the grammar by eliminating a distinctive class of rules and thus advances the aim of simplifying UG that is characteristic of the minimalist program

ABC analyzes construal differently. The relevant syntactic structure is something akin to (4) and the syntactic engine relating antecedent to anaphor is the operation of Agree.¹⁰



Note that in (4) the antecedent and anaphor relate to one another indirectly. The direct grammatical relations hold between the functional head F0 and each of the antecedent and anaphor. The antecedent and anaphor only relate to one another in virtue of the ϕ -feature relations established with a common functional head. A DP is interpreted as an antecedent of an anaphor in virtue of this indirect ϕ -feature agreement. This contrasts with CBC, which sets up a direct relation between the nominal relata. Note three further contrasts: (i) If there are chains at all in ABC they are feature chains, or so it appears at first sight (see below). Movement is not integral to the analysis, though it may also occur depending on the features of F0, (e.g. an “EPP” feature might force movement).¹¹ (ii) As construal is essentially parasitic on feature agreement, the specific features involved are likely to be of the utmost importance. To the degree that morphology reflects these features, then the morphology will not be at all adventitious, again in contrast with the CBC.¹² (iii) Reflexivization is syntactically an inter-chain relation, the antecedent and anaphor being independent chains related via Agree. Thus, the ABC is consistent with

some version of the θ -criterion, in contrast to the CBC.¹³

What makes the ABC minimalist? First, there is the reliance on Agree as the basic operation relating antecedent and anaphor. Second, ABC shares the reductive impulse we noted in the case of CBC. This approach too aims to analyze construal as just a special case of another kind of grammatical relation, taking it to be a by-product of agreement via Agree.

In what follows we sketch versions of these theories by going over some core cases and seeing how they treat them. We will then return to highlight their differences and discuss their technology, raising problems for them. After a brief overview of post-GB developments in binding (§2), we begin with a discussion of local reflexives (§3), compare and contrast these with their counterparts in other languages (§4), proceed to a brief discussion of some residual facts regarding reflexives (§5), move onto a discussion of bound pronouns (§6) and then end with a brief rhetorical flourish. Before proceeding we would like to make one point clear. Though we have our favorite strategy (as will become clear) we believe that both approaches are worthy of development and that the respective technologies for implementing these proposals hide the large extent that the two converge concerning the proper way of treating Binding in a minimalist framework. It might well be the case that the CBC and ABC are two implementations of the very same theory when one clears away the technological debris. In particular, both theories agree that a minimalist theory of binding will have the following characteristics (to be discussed in further detail):

- i. In both theories, reflexivity is reduced to a chain relation and the anaphoric relation between reflexive and antecedent is formed by general grammatical

- operations used in other parts of the grammar. In this sense, both approaches are reductive in that they aim to eliminate a specific binding module. Where antecedents are taken to be heads of chains, and reflexives are interpreted as bound variables
- ii. Something like a c-command restriction obtains between binder and bindee but the restriction follows from general principle of grammar rather than being a restriction specific to binding rules.
 - iii. Some ungrammatical sentences, such as “John expects herself to like Mary”, are ruled out by conditions on the well-formedness of chains, not the elementary operations that create those chains.

Given those similarities, it will be useful to state the points of divergence. The theories do not agree on the answers to the following questions:

- i. Are chains primitive objects?
- ii. How are chains formed?
- iii. What is the utility of phi-features within derivations?
- iv. Do anaphors all belong to a natural class? In particular, are simplex anaphors (like *zich* in Dutch) generated by the same operations and subject to the same principles as complex anaphors (like English *himself* or Dutch *zichself*)?

3. The Explanandum

3.1 The Core Data

We take the target of explanation to be facts accounted for by the classical Binding Theory (Chomsky 1981, 1986), with a few modifications.¹⁴ The modifications include the following:

- Following Reinhart (1983) we distinguish binding from co-reference and assume that the grammar concerns itself exclusively with the former. This leaves a residue of well-known problems concerning the distribution of pronouns, in particular the unacceptability of co-reference in cases like *John likes him*. We follow Reinhart in assuming that such cases are unacceptable because they are blocked by the availability of bound readings such as *John likes himself*.¹⁵ This assumes that binding is subject to economy considerations and that bound readings of an inter-nominal relationship where available trump co-referential interpretations in the same context.
- We assume that a reflexive within a picture noun phrase that is bound from outside its containing noun phrase is not a “true” reflexive subject to principle A. Rather, it is a pronominal with special logophoric requirements.¹⁶

With this much as background, let’s look at the theories:

3.2 CBC

Here are some core cases of local reflexivization.

- (6)
- a. John washes himself
 - b. John believes himself to be intelligent
 - c. *John believes himself is intelligent
 - d. *John believes Mary to be imitating himself
 - e. *John’s book exposed himself to ridicule

The sentences in (6) exemplify the local binding requirements on reflexives. The CBC approach to local reflexives is based on the LGB analysis (Chomsky 1981). Here Chomsky observes the parallel between the sentences in (6) and those in (7).

- (7)
- a. John washes *t*
 - b. John was believed *t* to be intelligent
 - c. *John was believed/believes *t* is intelligent
 - d. *John believes Mary to be imitating *t*
 - e. *John's book exposed *t* to ridicule

The sentences in (7) are A-movement analogues of those in (6). The unacceptability of the sentences in both (6) and (7) have the same source in an LGB account. They each violate Principle A of the Binding Theory on the assumption that both reflexives and A-traces are anaphors.

The CBC likewise collapses reflexives and A-traces but does so by proposing that each is formed by movement. Just as movement is blocked in (7c,d,e), so too is reflexivization in (6c,d,e). There are various accounts of *what* blocks movement in the examples in (7). However, whatever it is, it can also do so in (5) if reflexives are residues of movement. For concreteness, let's assume that something like the Case Freezing, Minimality, and Extension regulate A-movement. These three principles seriatim block (7c,d,e) as well as (6c,d,e). Note that CBC can remain agnostic as to the exact mechanisms forcing local A-movement. The crux of the proposal is that whatever they may be they extend to reflexives in virtue of the claim that they are also the outputs of such movement. Of course, any complete theory must provide an account of what drives the locality.

There is one additional assumption that CBC requires. It presupposes that movement into θ -positions is possible. Sentences like (6a) have the interpretation in which John is both 'liker' and 'likee,' i.e. John has two theta roles. The underlying

structure of (6a) is roughly like (8). Note that there is a copy of *John* as complement of *like* and the specifier of *v*. Thus the *John*-chain in (8) spans two θ -positions. This encapsulates the central claim of CBC: reflexive interpretations arise when a chain spans multiple θ -positions. Reflexivization is an *intra*-chain relation that arises when movement creates chains which contain multiple θ -roles.

(8) [TP John Pres [_{VP} John v [_{VP} like John]]]

Importantly, representing the syntax of reflexives in this way supports a trivial mapping to the logical form in (9). (8) represents the fact that *John* has two θ -roles. It is both the logical subject and the logical object of *like*. (9) says the same thing; reflexivization has the semantic effect of forming complex monadic predicates (‘complex’ as one than one variable is bound, ‘monadic’ as all the variables are satisfied by a single element) with the head of the reflexive chain serving as value for the roles abstracted over. The copy theory makes the translation of (8) into (9) a very simple process.¹⁷

(9) John $\lambda x[x \text{ likes } x]$

One last point: the reflexive itself plays no important semantic role in these structures. Its primary function is to check the case of the transitive verb. The interpretively active object is the A-chain spanning several θ -positions formed by *John*. The reflexive is not part of this object and so is semantically inert.¹⁸

3.3 ABC

ABC can avail itself of a similar explanatory strategy. Given standard assumptions, Agree is a sub-part of the complex operations Move. Move is the compilation of Agreement plus Internal Merge (the latter driven by EPP requirements of the probing head). In cases of local anaphoric binding, the Probe is T (recall that Probes

are heads with uninterpretable features) and there are twin goals: the subject and the bound element. As will become clear shortly, Reuland does not treat English *himself* as a local anaphor in the normal sense, so this probing relation is best illustrated with Dutch *zich*.¹⁹ According to Reuland's theory, (6a) has an initial structure like (10) prior to probing.

(10) [TP T [vP John v [VP washes zich]]]

T has unvalued ϕ -features and probes into its sister (*vP*) to find a DP with valued ϕ -features that can value them. *John* has valued ϕ -features and these can value those of *T*. For reflexivization to be an instance of Agree, we must further assume that *T* can *multiply* probe its sister, thus also coming to Agree with *zich*. The result of this multiple Agreement is (11).²⁰

(11) [TP T [vP John v [VP washes zich]]]



Whence the reflexive interpretation? It is assumed to arise from that fact that both *John* and *zich* Agree with a common probe, *T* in (11). There are some problems of detail that arise, however, if ABC is to be made compatible with much of the Agree-Probe-Goal technology and if it is to undergird the antecedence interpretation witnessed in reflexives.

Namely:

- (i) The anaphor *requires* probing by *T*.
- (ii) How does the binding relation supervene on the separate Agree relations established between *T* and the DPs?

Let's consider these.

First, as stated, the anaphor *requires* probing by *T*. After all, multiple Agree is a permitted grammatical option, not a universal requirement. Here, however, *zich* must be probed so as to (eventually) allow *John* to be interpreted as its antecedent. One way of forcing *T* to probe *zich* in (11) is to assume that *zich* has unvalued features. Multiple Agree would then be required in (11) to value the unvalued features of *zich*. Though this assumption would give us what is needed in (11), it is incompatible with standard versions of the Probe-Goal theory. For one thing, giving *zich* unvalued phi features breaks the connection proposed in Chomsky (2001) between the valued/unvalued and interpretable/uninterpretable distinctions. However, following Pesetsky (2004), Reuland proposes that these are two orthogonal properties. Thus, *zich* is specified for unvalued – but interpretable – phi features. The assumption that *zich* in (11) has unvalued features in turn creates problems for the standard cyclic assumption that unvalued features must be valued in the projection of the most local head.²¹ This is not a problem if only heads have unvalued features as these can be valued before the projection is “closed off,” but if anaphors have them as well, this is a problem because *zich* in (11) has clearly not had its features valued within VP or vP. One way of finessing this problem is to propose that while both unvalued and uninterpretable features license Agree, only checking the former is subject to cyclicity. On the whole, we feel that the additional technology required by Reuland’s theory is costly within a minimalist setting.

The second problem we mentioned above had to do with the connection between Agree relations and binding. Even given the above technology, it is not clear how the antecedence relation between *John* and *zich* in (11) supervenes on the Agree relation that each has with *T*. The problem can be made more clear by comparing (6a) with (12).

(12) [TP T [vP John v [VP washes Bill]]]

After all probing and valuation is complete in (11) and (12), the feature values of *T* in each will be the same, as will the ϕ -feature values of the relevant DPs. *John*, *Bill*, *zich* and *T* in both will have valued ϕ -features, presumably the ϕ -values {3rd person, singular, masculine}. However, whereas we want this three-way ϕ -feature identity to license the interpretation that *John* is the antecedent of *zich* in (11)/(6a) we don't want this interpretation to be licensed in (12). Given that the feature configurations are the same, how is this to be avoided? Clearly, what we want is some way for the ϕ -feature agreement in (11) to be understood as *the result of Agree applying* whereas this is not the case in (12). Thus, it is not merely the final state of the ϕ -feature configuration that counts but also its etiology; whether the features are the result of Agree or not. So, if it is assumed, as is the standard assumption (Chomsky 2001), that all features once valued are identical, then a problem arises of distinguishing those that count from those that don't.

There are two conceivable ways of solving this "identity" problem. One is to assume that the features that get copied track the identity of their host. This would follow, if, for example, ϕ -features are indexed and thereby identify the expression that hosts them. In (12) this would mean that there is a difference between ϕ_{John} and ϕ_{Bill} . Given this assumption, the ϕ -valued structure of (11) would be (13) and (12) would be (14).

(13) [TP T ϕ_{John} [vP John ϕ_{John} v [VP washes himself ϕ_{John}]]]

(14) [TP T ϕ_{John} [vP John ϕ_{John} v [VP washes Bill ϕ_{Bill}]]]

These are clearly distinct and it would be easy to map a structure like (13) into the required semantic structure (9). Note what this indexing accomplishes. It allows the grammar/interface to retrieve the inter-nominal dependency between DPs that is only

indirectly coded in their mutual agreement with T.²² The inter-nominal dependency is recovered via the indexing of features.

Reuland (2001: 456-457) proposes that this is indeed what is taking place. Recall, the interpretable D-features of *zich* under Agree with T can be deleted as they are recoverable from those of the antecedent *John*.²³ Reuland states: “by their very nature, formal features such as category and person are interpretive constants.” Hence, “the contribution they make is not contextually determined (for person features, at least within one reprotive context). All occurrences of such features are therefore interchangeable.” This allows the members of one to delete those of another for the occurrences of such features are “just copies of one another.” Antecedence occurs as a by-product of recovering the deleted features. Thus *Oscar* can bind *zich* in virtue of serving to recover its features; “deletion of a feature F_α in DP_1 and recovery of F_α under identity with F_α in DP_2 is tantamount to treating F_α in DP_1 and F_α in DP_2 as copies, and in fact as occurrences of the same feature...” Thus, Reuland adopts a version of the indexed feature theory noted above, proposing that it follows from the recoverability of deletion.²⁴

Despite its serviceability, this fix raises some important issues. First, it considerably expands the class of features, as well as expanding the kinds of features available.²⁵ In effect, there are as many ϕ -feature sets as there are possible DPs and each feature can be indexed as to its host (the latter being a feature of a feature like strength in previous accounts). There is little morphological evidence for this kind of feature multiplication. Furthermore, this proposal essentially reduplicates a movement account of binding, albeit here it is features that move rather than categories. As Chomsky (2000) notes, this considerably complicates the grammar and so should be rejected *ceteris*

paribus for it duplicates the machinery of movement and complicates the definitions of chains. It will also complicate the mapping to PF and LF. Note that it is very unlikely that the morphophonology of agreement is affected by the indexed ϕ -value of a feature. Thus, there may be morphophonological effects for $\langle\{+1^{\text{st}} \text{ person, +Male, -Plural}\}\rangle$ versus $\langle\{+2^{\text{nd}} \text{ person, -Male, +Plural}\}\rangle$ but it is dubious whether morphophonology ever distinguishes feature sets indexed to *Bill* from those indexed to *Sam*. To “capture” this, it would be necessary to further complicate the grammar by having operations that strip the subscripts from feature sets when Spell Out applies. In sum, though technically implementable, this solution is undesirable if avoidable. This said, it is worth noting that *if* adopted, it indicates a point of convergence between CBC and ABC; both exploit copies to mediate the semantic binding relation. The main difference is that in CBC, copies arise as a natural by-product of the Copy Theory of Movement, whereas a novel and sophisticated theory of features and their values is required in the context of the ABC.

A second possible way of solving the “identity” problem builds on a similar difficulty in Chomsky (2005). Chomsky here considers a puzzle put forward by Sam Epstein: how if valued features are all identical can one distinguish the interpretable ones from the uninterpretable ones at the CI interface? Chomsky suggests that this problem can be resolved by assuming that Agree is a sub-part of the Spell-Out operation. This means Spell-Out applies *as* valuation applies, i.e. simultaneously with Agree.²⁶ One could similarly take “binding” to be part of Spell Out. In effect, as the relevant features are valued they are spelled out and the antecedence relation is computed. This allows the grammar to track the fact that some features arise as a result of Agree and to tie

interpretation to this fact. As Chomsky notes, this envisages a grammar in which many operations take place “all at once”; series of Merges, Agreements, and Movements can all take place simultaneously.²⁷ We are not currently in a position to evaluate the workability of this proposal for we are not sure what it means exactly.

Let’s assume that one of these approaches is workable and consider how ABC handles the data in (6c,d). If one assumes that Probing is subject to Minimality and something like Case Freezing, then the unacceptability of (6c,d) and (7c,d) can be made to follow. The relevant structures are provided in (15).

- (15) a. [T [_{VP} John v [_{VP} was believed/believes [_{TP} himself is intelligent]]]]
 b. [T [_{VP} John v [_{VP} believes [_{TP} Mary to be imitating himself]]]]

The probe in (15) is *T*. Its ϕ -features are unvalued and it probes its sister to find a goal that can value these features. Multiple Agreement allows *T* to agree with multiple DPs in its domain. It can agree with *John* and its valued ϕ -features can value those of *T*.

However, *T* cannot further probe *himself* as it is in a case frozen position. One way of understanding this is to suppose that *John*’s ϕ -features are inaccessible once *John* has received case.²⁸ This is completely analogous to the assumption made in the CBC story above. Similarly, in (15b) *T* probes into its sister and finds *John*. What of *himself*? It is presumably “too far away” and so is out of the reach of the matrix *T*. One option is to say that *Mary* or the embedded *T* restricts matrix *T*’s reach due to Minimality. The desired effect is that *T* cannot see “through” *Mary* or embedded *T* to probe *himself*.

This leaves one more case: (6e) represented in (16).

- (16) [T [_{VP} [_{DP} John’s book] v [_{VP} exposed himself to ridicule]]]

To explain the unacceptability of (6e) we need to disallow T from probing *John* thereby valuing its features and then probing *himself* and thereby valuing its features. There are two ways of blocking this. The first is to assume that DP constitutes a phase and that the PIC prevents T from probing *John* in (16). This requires the further assumption that in the phrase [_{DP} *John's book*], *John* is not at the edge of the DP (pace the standard assumption, e.g. Abney 1987) for thus residing on a phase edge would make it visible. A second way of blocking Agree is to assume that it is subject to something like the A-over-A principle. This is to suppose that the DP that contains *John* blocks *John* from valuing the features of T. This is plausibly just another instance of Minimality.²⁹

3.4. Some Remarks on *zich*, *zichself* and *himself*

Reuland has the most fully worked version of an ABC theory of binding. Of particular relevance here is the distinction Reuland makes between *zich* and *him*. As we noted, *zich* is only specified for category and person features, whereas *him* has a category and a full set of ϕ -features (the same goes for *zichself* and *himself*). From this distinction, it follows that *zich* may be goal to higher probes, whereas the feature specifications of *him* forbid this. More accurately, the reduced feature set of *zich* can be deleted and recovered while the fuller ϕ -set of *him* cannot be. This is why, for example, sentences like (17a) will allow *John* to antecede *zich* while this “binding” is not possible in (17b).

- (17) a. John₁ heard [*zich*₁ sing]
 b. *John₁ heard [*him*₁ sing]

More specifically, *because zich* is only specified for person (we put category aside here) Agree in (18) allows the deletion of its person feature *and* its recoverability from the head of the chain formed with *John*. Recall that Reuland proposes that the person feature in

John is (contextually) identical (i.e. an occurrence of the very same feature) as that in *zich* which was deleted under Agree with the person feature in the probe T.

(18) [T [John heard [zich sing]]]

|____|_____|

This contrasts with (19), with *him* in place of *zich*. *Him* has a full ϕ -feature set, and though the person feature may be contextually identical in *John* and *him*, the number and gender feature cannot be. Consequently, the full ϕ -set of features of *him* cannot be deleted as they cannot be recovered. Thus, binding cannot occur in this case.

(19) [T [John heard [him sing]]]

In sum, on the assumption that deletion of partial ϕ sets is illicit, the contrast above follows from the feature specifications of the two expressions.

Observe, Reuland adopts a few other assumptions. In particular, he assumes that different lexical items can *never* have the same (contextual) features, for otherwise it should be possible to optionally generate *him* with features recoverable from (i.e. contextually identical to) those of an antecedent. This must even hold for cases like *he heard him sing* (where *he/him* denote the same person) or cases of two names of the same person such as *Tully heard Cicero sing*. Different instances of the same lexical item (or different lexical items) can never have the same number and gender features.

Reuland notes that *zich* is often locally unbindable. Consider the contrast in (19).

(20) a. John likes zichself

b. *John likes zich

Without *self* the *zich* cannot be co-valued with *John*. Reuland argues that the predicate that results would be ill-formed. But why? One possibility is a condition first proposed in

Reinhart and Reuland (1993): predicates with co-valued arguments must be reflexive marked. The problem with (20b), then, is that the predicate is not reflexive marked. This would account for why predicates marked reflexive in the lexicon allow analogues of (20b), e.g. *John washed zich*. This, in effect, codes the anti-locality condition on pronouns we find in Principle B. So, in addition to the Agree system and the feature system, Reuland requires a specification of how predicates become reflexive; either inherently (in the lexicon) or through some process like *self*-marking.

Interestingly, *self*-marking alone can support a reflexive interpretation. Recall that English does not have *zich*-reflexives. It employs a full pronoun form. Nonetheless, sentences like *John likes himself* and *John heard himself sing* carry reflexive interpretations. This cannot be because of an Agree relation relating *John* and *him* in these cases for *him* has a full ϕ -feature specification. Consequently, it must be that *self* suffices to provide the reflexive reading in these cases. This fact, however, must be handled gingerly for it seems to obviate the need for agreement altogether in Reuland's system. After all, if reflexivizing the predicate yields co-valuation, then there will be co-valuation in (19a) even without the mediating effects of agreement.³⁰ This results in two entirely separate routes to reflexive interpretations; one via reflexively marked predicates and one via licensing of *zichs* via Agree. This is not an optimal state of affairs theoretically.

Space restrictions do not permit a full exploration of Reuland's subtle account. However, we hope to have demonstrated that the specific ϕ -feature specifications of the relevant anaphors contribute to how reflexive readings are derived within one ABC style account.

To conclude, we have outlined how the basic cases of reflexivization could be handled in terms of analyses based on Move or Agree. Though there are apparent differences between the two approaches, it is worth ending with a recap of their similarities. Both exploit the locality conditions on Move/Agree to restrict the reach of reflexivization. Both produce chains (in terms of which antecedence is interpreted) at the CI interface (see 2.2 for details). Moreover, both CBC and (some versions of) ABC define chains using copies. All in all, despite different technologies, the two approaches share key similarities.

4. Crosslinguistic variation

Perhaps the deepest and most interesting distinction between CBC and ABC is in their approach to cross-linguistic variation (though this may not be immediately obvious, given that the CBC has yet to be applied extensively outside English). Following LGB, the CBC assumes that anaphors are subsumed within a natural class. Rather than caching out this assumption in terms of a +/-anaphor feature, the CBC states that an anaphor is simply the overt spellout of one of the copies in an A-chain which spans multiple theta positions. We must maintain that this notion of anaphor – suitably generalized – is one of universal significance, and not parochial to English or related languages. The property of “being an anaphor”, then, is essentially a relational one rather than a lexical one, in a manner reminiscent of the functional determination of empty categories (Chomsky 1982).³¹

In contrast, if the ABC is on the right track, we expect (at least in principle) to find a wide variety of anaphoric/pronominal elements across languages. Since the

properties of a dependent element are determined by its feature specification, we expect variation between languages simply as a consequence of lexical variation. The cross-linguistic implications of the ABC have already been explored in the literature, so we would like to say a few words on how various facts might be accommodated by the CBC. As should be clear, we face essentially the same problems as the LGB binding theory in accounting for cross-linguistic variation. However, the research the past three decades has provided us with a box of tricks that was not available to the standard LGB theory.

To give one illustration, the economy-based nature of the theory allows us to account for a fact that was a genuine puzzle in the 1980s. In many languages, there are dedicated third-person reflexive forms, but ordinary pronouns doubles up as reflexives in the first and/or second person. For example, Safir (2004, 61) points to the following Norwegian data:

- (21) a. Jon skammer seg/*ham
John shames self/*him
“John is ashamed.”
b. Jeg skammer meg/*seg.
I shame me/*self.
“I am ashamed.”
c. Jon fortalte Ola om meg.
Jon told Ola about me.

A locally bound pronoun is impossible in the third person – (21a) – but permitted in the first person – (21b) – even though *meg* can also function as an ordinary non-reflexive pronoun – (21c). In the CBC (and indeed the ABC), these facts can be made to follow on the assumption that the Norwegian lexicon simply does not contain a dedicated first-person reflexive form. Thus, since no more economical derivation is available, a pronoun may be used instead as a last resort.

Continuing this extremely brief and incomplete cross-linguistic survey, let us consider Romance SE. Here, we can do little more than indicate the kinds of analysis that the CBA urges, since the associated phenomena are enormously subtle and complex. If we are to maintain that local anaphora is an essentially unitary phenomenon, we must reject the analysis of SE as a valence-reducing operator over argument structure (see for example Reinhart and Siloni (1999), Marantz (1984)). Therefore, for genuine reflexive uses of SE (which by no means exhaust the range of its use), we expect that there will be a chain linking the external argument to the internal argument, and finally, to the matrix subject position:

$$(22) [{}_{TP} DP \dots SE \dots [{}_{VP} t_{DP} [{}_{VP} \dots t_{DP} \dots]]]$$

This kind of analysis, argued for in Alboiu, Barrie and Frigeni (2004), is certainly not unreasonable as far as it goes. The real challenge is to integrate it with an overall account of how SE functions in its multitude of other roles. ABF propose that there are essentially two sources of SE: it may either be entered in the numeration as a DP specified only for person, or introduced at PF as the spellout of a lower copy. These options correspond to the reflexive and indefinite/impersonal readings respectively. There are strong parallels here with the account of bound vs. referential pronouns we give in section 6. There are of course many other properties of SE which remain puzzling, and which we must hope will be explained as our understanding of verbs and VP/argument structure increases. For example, the distinction in meaning between Spanish *voy* (“I go”) and *me voy* (approx. “I go away/I leave”). Another problem is posed by “impersonal” SE, which is not associated with any genuine reflexive meaning, and which forces third-person agreement on the verb.

It would be interesting to attempt an analysis of Dutch *zich* along the same lines as SE, though SE differs from *zich* in a number of problematic respects.³² Much depends on the explanation of the factors governing the competition between *zich* and *zichself*. Though *zich* seems to be absolutely preferred to *zichself* in inherently reflexive environments, we suspect that in other environments, the competition may crucially involve pragmatic factors (see e.g. Guerts 2004). Thus, a narrow syntactic account of the distinction between the two may not necessary for these cases.

5. Some Additional Facts

Let's now consider four additional kinds of data.

5.1. Reflexives Are Low, Antecedents are High

First, how are we to block (23):

(23) *Himself/Zich V John

A CBC approach blocks cases like these as follows: Since reflexives distribute like traces, a sentence like (23) must arise by lowering *John* from a higher position to a lower one. This kind of movement is banned in all current minimalist accounts by a principle analogous to the Extension Condition. Thus, *if* reflexives are residues of A-movement and A-movement like all movement obeys extension, it is impossible to generate sentences like (23) as they involve DP lowering in overt syntax, an illicit operation.³³

How is (23) handled in an ABC account? The structure of (23) would be something like (24) with *T* probing both *zich* and *John*. What, if anything is wrong with this?

(24) [T [himself/zich v [V John]]]
 |_____|_____|

At first blush, nothing. Note that the predicate is either reflexive marked or inherently reflexive so the co-valuation is licit. Note too that T establishes an indirect Agree relation between *John* and *zich*. If this sufficed to allow *John* to value the features of the reflexive and thereby bind it, we should be able to get the reflexive reading here, contrary to fact. To block this, we must add an additional assumption, made explicit in Reuland (2001). The Agreement indicated in (24) results in the formation of a chain like object at CI. Chains are defined as objects in which the expression whose features are recovered must be at the tail-end while the DP whose features drive the recoverability are in the head-position. Reuland executes this by defining a notion of an A-CHAIN which results from combining two A-chains. A-CHAINS are subject to the same “chain” conditions that A-chains derived by movement are. The following definitions are employed.

(25) Chain: (α, β) form a Chain if (a) β 's features have been (deleted by and) recovered from α and (b) (α, β) meets standard conditions on chains such as uniformity, c-command and locality.

(26) CHAIN : If (α_1, α_2) is a chain and (β_1, β_2) is a chain and $\alpha_2 = \beta_1$, then $(\alpha_1, \alpha_2 / \beta_1, \beta_2)$ is a CHAIN.

The definitions in (25) and (26) allow for chain composition so that the relevant CHAIN for evaluation is (α_1, β_2) . What is important with respect to (23) is that the standard conditions on chains apply to the CHAIN (α_1, β_2) for this explains why the reflexive must be the second (lower) member of the chain.³⁴

This proposal clearly descends from the Chain Condition in Reinhart and Reuland (1993). Both conditions function to extend the notion of ‘chains’ from structures derived via movement to structures derived using some other mechanism, agreement and feature recoverability in this instance. Note that the Chain Condition must be added to ABC to derive the facts in (23). It does not follow from how chains are constructed or how Agree functions in the context of construal. This contrasts with CBC accounts in which reflexivization is the product of movement (“reflexives” just being a species of trace/copy) and so we expect the output of movement to yield chains with the structure typical of chains, viz. with the head of the chain c-commanding the tail.³⁵ In other words, the Chain Condition follows from the CBC supposition that reflexives are residues of movement, while it must be added to ABC approaches to explain data like (24).

There remains one important question for the CBC with regard to (24), especially if one adopts the Copy Theory of Movement (a mainstay of minimalist accounts). What CBC posits is that reflexives are (essentially) traces. However, Minimalism does not have traces, it has copies and, by assumption, all copies are created equal. How then does one go from (27) to (28)?

(27)[John T [John v [like John]]]

(28) John likes himself

One of the copies in (27) must be converted into a reflexive at the AP interface. Why is the bottom copy chosen for this honor and not the top one? There are several possible answers. One is that in (27) the top Copy of *John* has both case and theta marking and so is fully well formed at the interface. It has the structure in (29):

(29) [John_{02,+case} T [John_{02,-case} v [like John_{01,-case}]]]

This makes the top copy well formed and hence non-deletable. Consequently, it is the bottom copy that is converted into the reflexive. In effect, reflexivization is an operation that saves an otherwise ill formed PF structure. Note that the chain contains two θ -roles at LF.

A second option is to think of reflexives like doubling structures or a complex DP like *Johon's self*. The underlying form is (30):

(30) [John T [John v [like [John+self]]]]

John then moves from the lower theta position to the higher one getting case. The lower *Johns* delete and *him* is inserted to support the bound morpheme *self*.³⁶ In either case, the higher copy cannot delete as there is nothing “wrong” with it and the lower copy comes to have the form it does for morphological reasons. It is the target of this “fix up” operation as it is not well formed.

In the end, both approaches account for the fact that a reflexive does not c-command its anaphor by adverting to the fact that reflexive structures instantiate chains. In the CBC, relevant chain properties are inherent in the basic account, in the ABC these properties must be added.

5.2. Reflexive Binding without C-command

There appear to be cases in which the antecedent need not c-command the reflexive.

Consider cases like (28):³⁷

(31) After PRO spotting the police, there quietly departed several men without PRO/themselves being detected.

The *without* adjunct presumably hangs at the VP level and *several men* is inside the VP, complement to *arrive*. Thus, it is plausible that *several men* does not c-command *themselves* or *PRO*.

Such cases are not particularly problematic for ABC accounts as the relation between the antecedent and reflexive is mediated by agreement with T and so c-command between the two DPs is not required for the grammatical operation to be established. The relevant structure will be that in (32):

(32)...[there T [_{VP} [_{VP} arrive several men] [_{adjunct} without themselves....]]]

In (32) T can probe both *several men* and *themselves* and establish the relevant agreement relation. One more ingredient is required: to fully accommodate these data with the preceding facts, it will be necessary to redefine chains so that the c-command condition is relaxed. Recall, that CHAINs were defined as species of chains and the latter incorporate a c-command condition on chain links. Here, *several men* does not, by hypothesis, c-command the reflexive and so an ill formed chain (and CHAIN) is expected. We assume that the relevant technical changes can be made.

What of CBC accounts? Constructions like these are considered in Hornstein (2001) and are used to argue for the utility of sideways (inter-arboreal) movement. Nunes (2001) proposed that it is possible to move between two sub-trees; or, more exactly, to copy from one sub-tree and merge to another. This is the source of (32). The derivation proceeds as follows:

(33)i. Form the adjunct: [_{adjunct} without several men....]

ii. Copy 'several men' and merge with 'arrived' forming two sub-trees: [_{VP} arrived several men] [_{adjunct} without several men....]

- iii. Merge the two sub-trees: [_{VP} [_{VP} arrived several men] [_{adjunct} without several men.....]]
- iv. Merge T and ‘there’: [There T [_{VP} [_{VP} arrived several men] [_{adjunct} without several men.....]]]
- v. reflexivize the lower A-trace copy: [There T [_{VP} [_{VP} arrived several men] [_{adjunct} without themselves.....]]]

Thus, to accommodate reflexive binding without c-command, CBC accounts rely on the possibility of sideways movement, a possibility opened up with the minimalist analysis of movement as a complex process comprised of the simpler operations Copy and Merge. Note that if these cases actually involve movement, then the chain like properties witnessed here are expected to hold.

There is another possible case of reflexive binding where c-command does not hold. This sort of binding travels under the name of ‘sub-command’ and occurs in many East Asian languages. Consider an illustration from Chinese.

An antecedent in Chinese can bind a local reflexive *taziji* even when contained within a DP (i.e. without c-commanding the reflexive).³⁸

(34) Zhangsan de guiji hai-le taziji/??ta

Zhangsan de trick harm-perf himself/him

Zhangsan’s tricks harmed himself/him

(35) Zhangsan de shu zhi jiaoyu-le taziji/*ta

Zhangsan’s book educated-PERF himself/him

Zhangsan’s book educated himself/him

Note that here the reflexive is in complementary distribution with a bound/coreferential pronoun, as it should be if it is truly a locally bound reflexive. This sort of binding is easily derived assuming sideways movement. The derivation is in (iii) (English glosses used):

- (36)a. merge: [John self]
 b. merge: [educate [John self]]
 c. copy *John* and merge (sideways movement): [John book]
 d. merge: [[John book] [educate [John self]]]
 e. Finish derivation in usual way to check case etc.
 f. Delete non-case marked residues and add pronoun to reflexive morpheme:
 [[John book] T [~~John~~book [educate [~~John~~self]]]]

With this derivation *John* becomes the antecedent for the reflexive though it does not c-command it. It is another illustration of the possibility of binding without c-command which is expected if reflexives are formed by movement and if sideways movement is a grammatical option.

What would an ABC analysis of sub-command look like? Presumably it would involve T probing and agreeing with both *Zhangsan* and *taziji*, as in (37):

- (37) [T [VP [DP Z's book] v [VP educate taziji]]]
 _____|_____

This agreement pattern licenses a CHAIN headed by *Zhangsan* and footed by *taziji*.³⁹

5.3. Binding within *picture* NPs

We noted at the outset that we would be assuming that reflexives within picture NPs are logophors. However, it behooves us to be somewhat more precise here.

Consider

(38) John likes (Mary's) pictures of himself/him

The reflexive related to *John* in (38) is a logophor. The relation between *John* and *himself* is logophoric. However, not all binding of a reflexive within a picture NP is logophoric.

Consider (40).⁴⁰

(40) John likes Mary's₁ picture of herself/*her₁

Here, *Mary* is antecedent of *herself* and note that it is in complementary distribution with *her*. This suggests that the relationship is one of binding. It is not logophoric. How do the two theories “derive” these data?

CBC accounts simply treat this as another case of movement, this time within the DP. The relevant derivation is depicted in (40):

(40) John likes [Mary's₁ [picture of Mary]]

The lower copy assumes reflexive form in one of the ways discussed above.

Consider now an ABC account requires assuming that there is some probe within the DP that c-commands both *Mary* and *herself*. However, there is no obvious candidate for this probe. Furthermore, it requires that *Mary* begin its derivational life in some position below D. The general assumption is that a possessive DP like *Mary's*, especially if interpreted as meaning something like *the one that Mary possesses/owns* is directly generated in Spec D where it receives the “possessor” θ -role. If this is correct, it is not clear how an ABC account could establish the relevant binding relation. Note, in addition, that *John* is not a co-argument of *picture*, at least on the possessive/owner

reading. The standard semantics for these sorts of genitives assume that the genitive introduces an additional relation so that the semantics is conjunctive with *John's picture of Mary* having roughly the logical form: 'John R x & picture (x, Mary)'. In other words, *John* is not the external argument of *picture*. Thus, whether or not *Mary* is an internal argument (a debatable assumption), as *John* is not, they cannot be co-arguments. Thus, the only option will be to assume that they are syntactically related via agree through a common probe. The open question for an ABC account is what that probe is.

5.4. Adjuncts

Consider examples like (41) where there appears to be binding into an adjunct.⁴¹ Note that with verbs like *tell* the reflexive is in complementary distribution with a pronoun, suggesting that the reflexive is not logophoric.⁴²

- (41) a. John told Mary about herself/*her
 b. John told Mary about himself/*him

For CBC accounts the problematic example is (41b) as it appears to involve a violation of minimality. (41a) is not particularly troublesome as it simply involves movement from the PP to the object position. The derivation will either involve regular movement if the PP is a complement, or sideways movement if the *about* PP is an adjunct. Two derivation sketches are provided in (42).

- (42) a. [_{TP} John T [_{VP} John v [_{VP} Mary [_{V'} told about Mary-self]]]]
 b. [_{TP} John T [_{VP} John v [_{VP} [_{VP} told Mary] [about Mary-self]]]]

The problematic case is (37b), for here the derivation we need would appear to violate minimality if the *about* PP is a complement, or the CED if it is an adjunct. Of these two

options, the adjunct possibility is the less troubling for it appears that such adjuncts are extremely weak islands given the acceptability of stranding *about*:

(43) Who did John tell Mary about?

This is not atypical of “low” hanging adjuncts like commutative *with*, instrumental *with*, benefactive *for* etc. Thus, CED concerns do not seem to apply to these adjuncts, for reasons that remain somewhat mysterious. Furthermore, if the *about* PP is a VP adjunct, then minimality does not arise as *Mary* in (42b) does not intervene between the PP and spec v as the direct object does not c-command the adjunct phrase.

Thus, these binding cases are problematic for CBC accounts only if the *about* phrase is a complement. The data in (44) suggests that it is:

- (44) a. John told Mary about Sue before I did about Jim
 b. John told Mary about Sue and tell Mary he should have about Sue

If this is correct, then CBC accounts can accommodate these binding into adjunct facts.

What of ABC approaches? If the *about* PP is an adjunct, then (41b) can be represented as (45), with *T* probing *John* and the reflexive. This then becomes converted into the relevant chain relation:

(45) T [_{VP} John v [_{VP} [_{VP} told Mary] [about himself]]]



The cases in (41a) can also be easily accommodated if it is assumed that *v* can replace *T* as the probe. In this is acceptable, then the relevant agreement structure is (46):⁴³

(46) T [_{VP} John v [_{VP} [_{VP} told Mary] [about herself]]]



6. The Complementary Distribution of Bound Pronouns and Reflexives

One of the key empirical findings concerning binding is the fact that reflexives are acceptable where bound pronouns are not and bound pronouns are acceptable where reflexives are not:

- (47) a. John₁ likes himself/*him₁
b. John₁ believes himself/*him₁ to be smart
c. John₁ believes *himself/he₁ is smart
d. John₁ expects Mary to kiss *himself/him₁

Historically, there have been two ways to track this fact within theories of binding in Generative Grammar. Within GB, the complementarity is coded in the basic structure of principles A and B. Reflexives and pronouns have identical domains within which they must meet conflicting requirements, viz. domains in which reflexives must be bound, pronouns cannot be. Within the earlier Standard Theory, the complementarity is the result of the following assumptions: (i) the rules of reflexivization and pronominalization are obligatory (ii) the former precedes the latter and (iii) the former bleeds the context for the application of the latter. What of ABC and CBC, how do they account for the complementarity? Interestingly, both assume that the acceptability of reflexive binding within a certain configuration blocks the availability of pronoun binding in that same configuration. In other words, both adopt a version of the second approach in which the application of reflexivization blocks pronominalization.⁴⁴ Let's consider some details.

Reuland's version of ABC assumes that pronoun binding is an extra-grammatical process. It takes place at the CI interface and is not grammatically coded. Reuland (2001) further assumes that relations that are established *within* a module are more economical than those that require the cooperation of more modules (see also Reinhart 1983). In particular, as reflexive binding is parasitic on the syntactic relation of Agree, which occurs within the grammar proper, it is more economical than pronoun binding, which is not the by-product of pre-interface syntactic relations having been established.⁴⁵ Reuland (2001) cashes out the proposed economy metric in terms of the relations of three modules: the syntax, the CI-interface and discourse structure. Syntactic chains are mapped onto variables at CI and then to discourse objects. The basic idea is that multiple links within a chain are mapped onto the same CI and discourse objects automatically. In contrast, the mapping of links in different chains require a more cumbersome mapping. As reflexives form chains with their antecedents via Agree, while bound pronouns do not, the former create bound variable structures in a more efficient way than the latter. In short, expressions related to one another syntactically are cheaper to map to their semantic and discourse objects than are those related at CI. This is diagrammatically illustrated in (48). Note that just as intra chain binding is preferred to inter-chain binding, so too binding is preferred to co-valuation without binding.

(48) a. Discourse storage (values)	a		a
	↑		↑
C-I objects (variables)	x ₁		x ₂
	↑		↑
Syntactic objects (CHAINS)	C ₁		C ₂
Basic expressions	α	...	β
b. Discourse storage (values)	a		
	↑		
C-I objects (variables)	x ₁	>	x ₁
	↑		↑
Syntactic objects (CHAINS)	C ₁		C ₂
Basic expressions	α	...	β
c. Discourse storage (values)	a		
	↑		
C-I objects (variables)	x ₁		
	↑		
Syntactic objects (CHAINS)	C ₁	>	C ₁
Basic expressions	α	...	β

(Reuland 2001: 474; 71)

Hornstein (2001) proposes a similar analysis along CBC lines. The proposal is essentially an update of the Standard Theory analysis in Lees and Klima (1963). The proposal distinguishes two ways of establishing grammatical dependencies, one via movement, which yields the dependency between a reflexive and its antecedent, and the other via a rule akin to pronominalization, which establishes the relation between a bound pronoun and its antecedent. The latter is considerably more complex than the former and is thus able to apply just in case it is not possible to set up a binding relation via movement. The relative simplicity of movement over pronominalization allow reflexives to pre-empt bound pronouns. As in Reuland's account, it is further assumed that binding trumps semantic co-valuation without grammatical intercession. Thus, coreference is possible just in case one of the two forms of binding are not.

An illustration should help fix ideas. Consider (49). There is a movement relation that can be established between *John* and *himself*. As it can be, it must be and this blocks a binding relation between *John* and *him* (as well as a co-reference relation). This contrast with (46) where there is no possible movement relation between *John* and *himself* and so the relation between *John* and *him* is permitted.

(49) John likes himself/*him

(50) John thinks *himself/he is smart

Note that the logic here is similar the Merge over Move proposals made in Chomsky (1995). Both hinge on taking simpler operations to be more economical than more complex ones and thus to pre-empt their application. In Hornstein (2001), reflexivization is simply the application of Copy and Merge, whereas pronominalization requires demerging of a chain and remerging the head in another θ -position substituting pronoun copies for the links of the demerged chain. This latter is a complex operation and so strongly dispreferred.

One curious consequence of this analysis is that it requires treating reflexives and bound pronouns as *non*-lexical elements.⁴⁶ In particular they cannot form part of the numeration for were they included in the numeration it would not be possible to compare derivations containing reflexives with those containing pronouns and thus it would not be possible to analyze reflexive structures as derivationally more economical than bound pronoun structures. Thus, there is a strong sense in which in which the “morphology” is secondary, in contrast to an ABC account like Reuland’s. Interestingly, if one assumes that the Inclusiveness Condition is a property of UG, this implies that the ϕ -features expressed by bound pronouns and reflexives are not semantically interpretable. This

appears to be correct. As Kratzer has noted expressions interpreted as bound variables (reflexives and bound pronouns) have null feature values, as seen in (51). Why? Because on the bound reading, (51) can be contradicted by (52); *Mary* being feminine, *I* being 1st person, *you* being 2nd person, and *the 25 girls in grade 4* being plural. This should not be possible if the ϕ -features of *he* carried their obvious semantic interpretations of 3rd person, male, singular for it would restrict values of the variable to those carrying these features. In sum, there appears to be some semantic evidence in favor of not taking the specific feature content of bound pronouns (and reflexives) as semantically viable and this appears to follow from a version of CBC that explains the complementarity of pronouns and reflexives in terms of economy of derivation within a minimalist setting.

(51) Only John thinks that he is smart

(52) No, Mary thinks she is smart, I think that I am, you think that you are and the 25 girls in grade 4 think that they are.

In sum, both ABC and CBC approaches return to the pre-GB intuition concerning pronouns and reflexives. Both approach the complementarity of these expressions as a reflection of the workings of economy considerations. Before leaving this topic, we would like to briefly outline another CBC approach to this fact that is not based on economy intuitions and is more akin to the GB idea that what underlies the complementarity are conflicting requirements in similar domains.

Grammars contain two kinds of XP movement, A versus A'. CBC proposes treating reflexivization as a species of A-movement. It is natural to then consider the possibility that bound pronouns are residues of A'-movement. This is natural in one further respect: A'-residues of, e.g. Wh-movement, are already interpreted as bound

variables. Thus treating bound pronouns as products of A'-movement would serve to grammatically unify semantically identical items (see Aoun 1986). An analysis along these lines is given in Kayne (2002), though we will depart from his assumptions in a number of respects (most importantly, by restricting the analysis to bound pronouns).⁴⁷

Let's briefly consider what this kind of analysis might look like. To fix ideas, let's assume that bound pronoun structures arise by moving a DP via an A'-position to another A-position.⁴⁸ If something like this is the source of bound pronouns, what follows?

(53) John thinks [_{CP} John [_{TP} John T [_{VP} John v [_{VP} likes Mary]]]]

First, the c-command restriction on bound pronouns can be explained. Since Reinhart (1983) it has been widely accepted that for a pronoun to be interpreted as a variable it must be c-commanded by its antecedent. If Extension is a condition on the construction of phrases, then the c-command restriction on bound pronouns is a by-product of the extension condition.⁴⁹

Second, bound pronouns would be restricted by the availability of A'-positions. Thus, the unacceptability of (54) could be traced to the absence of an intervening complementizer position through which *John* could transit on his way to his final A-position. Similarly the acceptability of (51a,b) would be due to the availability of the embedded complementizer as an A'-transit point, as in (52).

(54) * John₁ likes him₁

(55) a. John thinks that he is smart
 b. John thinks that Mary likes him

(56) a. John thinks [_{CP} John [_{TP} John(=he) ...
 b. John thinks [_{CP} John [_{TP} Mary likes John(=him)]]]

Note that this account does not rely on economy calculations, unlike the two earlier proposals.

Third, ECM cases fall into line if in such cases the accusative case marked DP moves to the spec of the higher clause for case marking. Once this happens (57) reduces to (54).⁵⁰

(57) *John_i expects him_i to win

This should provide a taste for what we have in mind. We find this option theoretically satisfying as it reduces the two kinds of bound variables to a syntactically unified class. It is also interesting as it allows for a non-economy account of the complementarity of pronouns and reflexives. This said, we raise it as an interesting curiosity, cognizant of the fact that it faces many empirical challenges. (Not least of these, to explain why pronominal binding does not obey island constraints.)

7. Conclusion

Both ABC and CBC approaches to reflexives assumes that binding is mediated by a local syntactic relation; agreement with a higher functional head in the former and A-movement in the latter. This syntactic relation results in having the antecedent and the reflexive in a common chain like object from which the antecedence relation is easily computed. The main difference between the two approaches is how the relation between antecedent and reflexive is established syntactically. In ABC accounts, the relation is indirect, mediated by agreement with a common functional head (usually T). The central technical relation is Multiple Agree; one head probing two different DPs, which typically are in a c-command relation (though they need not be). In CBC accounts, the relevant syntactic relation is movement. Thus there is a direct syntactic relation between

antecedent and reflexive, the latter being the tail of the chain formed by movement of the former. Interestingly, at CI both analyses lead to identical outputs; chain-like objects. However, the derivations appear to proceed in very different ways syntactically. Here we have tried to outline how each would handle the central cases of reflexive binding while at once being responsive to minimalist concerns.

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¹ See Chomsky (1995) chapters 1, 3 and 5.

² See Hornstein (2001), Landau (2003), Lidz and Idsardi (1997), Reuland (2001), Zwart (2002), Kayne (2002).

³ The locality of obligatory control is often reduced to the selectional properties of a higher predicate. Thus, the locality witnessed in OC configurations is attributed to the locality of selection. This is an unsatisfactory account given minimalist predilections for several reasons. First, selectional accounts do little more than stipulate what should be explained. Second, we doubt that selection is the correct account for control construal as it fails to accommodate adjunct control, which also displays locality conditions. Third, the target of construal (PRO) is too far away to be selected by the higher predicate. Thus, even on a selection account the construal relation must be very indirect if selection is involved (i.e. predicate controls C which controls T which controls PRO). The Rube Goldberg nature of this “local” relation argues against so accommodating the locality of OC. For further discussion see Boeckx, Hornstein and Nunes forthcoming)

⁴ So too for Reinhart and Reuland's (1993) extension to syntactic predicates to handle the data in (i) above. We should note that argument structures of the Pollard & Sag type could in principle be related to semantic argument structure, given a sufficiently elaborate semantic theory (see e.g. Klein & Sag 1985).

⁵ This sets aside complications arising in languages like Icelandic. For discussion see e.g. Landau (2003), Boeckx and Hornstein (2004), Bobaljik & Landau (2009), Boeckx, Hornstein and Nunes (2010, forthcoming).

⁶ See the discussion of binding in Chomsky (2004, 2005).

⁷ See Hornstein (2001), Boeckx, Hornstein and Nunes (forthcoming), Boeckx and Hornstein (2003, 2004), for movement approaches to control and see Landau (2001), (2003) for a non-movement approach.

⁸ This is essentially the position taken in analyses of construal in the Standard Theory; see Lees and Klima 1963 for details. Reflexives, bound pronouns and "PRO" here are outputs of syntactic operations that, by assumption, have no impact on semantic interpretation given the Katz-Postal hypothesis (widely accepted at the time).

⁹ Though current minimalism eschews DS, most do not allow movement into θ -positions. Such movement is banned in a variety of ways with the addition of further conditions on licit movement. This said, it is correct to say that the option of movement into θ -positions does not exist in a theory with DS.

¹⁰ Construal here is binding. Control has a far more elaborate agreement structure.

¹¹ The scare quotes acknowledge that current wisdom has it that whatever drives the EPP is not a feature. Whatever it is, however, can combine with Agree relations to force movement.

¹² The centrality of the specific features is central to Reuland's (2001) proposal, for example. We return to borrow from his analysis and integrate it with the Agree based system.

¹³ This is not entirely correct. The system of binding outlined in Reuland (2001) assumes that Agree in these contexts results in the antecedent and reflexive forming chain-like objects. Thus, both ABC and ABC accounts result in multi-thematic chains at the CI interface. If this is correct, then there is a sense in which both accounts violate the θ -criterion, though ABC adheres to something like a conception of DS (preventing from movement into θ -positions) while CBC does not.

¹⁴ We believe that these modifications enjoy wide acceptance and that most (if not all) current approaches to construal adopt them.

¹⁵ A number of questions arise regarding the precise nature of the blocking relation, which we do not have space to address here. Reinhart herself proposed a significantly different account in later work (Reinhart 2006, ch. 4). See also Reinhart & Grodzinsky (1993).

¹⁶ This follows a long tradition of analysis based on the observation that pronouns can felicitously replace these reflexives and can even be bound long distance over intervening subjects and into embedded finite clauses:

- (iv) a. John likes stories about himself/him
- b. John likes Mary's pictures of himself/him

See for example Ross (1970), Pollard and Sag (1992), Reinhart and Reuland (1993), Zwart (2002), Runner, Sussman and Tannenhaus (2003).

¹⁷ Problems remain: for example, why are (7a,c) out but (7a,c) in? The CBA would have to analyze (6a,c) as suffering from a kind of PF deficit. See Hornstein (2001) for some discussion in the context of inherent reflexives like “John washed” and control complements like “John expects to win.”

¹⁸ This is not obviously a positive result given the varying shades of meaning that reflexives can have when compared to “control” structures that are formed similarly. See Lidz (1996) for discussion of the various kinds of reflexive interpretation and Hornstein (2001) for a comparison with control clauses.

¹⁹ See for example Koster (1985) for an overview of Dutch reflexives.

²⁰ Note that multiple Agree requires a reinterpretation of minimality so that *John* in (10) does not block access to *himself*. For discussion of multiple Agree see Hiraiwa (2001); for some criticism see Boeckx (2008) and Hagemann and Lohndal (forthcoming).

²¹ So called “virus theory.” See for example Richards (2002).

²² This is something that CBC codes directly by treating reflexivization as a relation between DP/ θ -positions.

²³ The latest versions of Agree theory assume that what Agree does is “value” unvalued feature sets. Interpretable expressions come with valued feature sets, non-interpretable expressions come with unvalued feature sets. This is intended to replace earlier discussion of deleted –interpretable features versus retained +interpretable ones. Given feature valuation, it is not clear what the status of *zich*’s feature is. Does T furnish a value for the unvalued person feature (i.e. treat *zich* as if it were uninterpretable?), or does it

overwrite the person feature of *zich*, this being permitted as the overwritten value is identical to the interpretable one it has? This is a technical issue that we put aside here.

²⁴ We are less convinced than he is that this is indeed the case, in particular that 2nd and 3rd person features are so indexed and that number (and gender?) features are not.

However, what is relevant here is that assuming that the features are so individuated allows for antecedence to be recovered from an Agree relation that would otherwise underspecify them.

²⁵ Reuland might not agree with this point given his views concerning recoverability above. However, we believe that a consequence of the indexing view is a multiplication of feature values for otherwise “3rd person,” for example, would be insufficiently refined to pick out the actual antecedent. Note incidentally that strictly speaking, on the account provided above it is not the antecedent that “provides” features to the reflexive, but the T that agrees with the antecedent. In short, it is the features of T received from the antecedent that are relevant. Presumably the distinctive indexing of these is carried from the antecedent to T under Agree.

²⁶ These assumptions stem from suggestions in Richards (2002)

²⁷ Note that grammars are no longer Markovian on this conception.

²⁸ Observe three points: First, we cannot allow the valued features of the matrix T to value those of the lower T and then the lower reflexive. Given that multiple Agree is permitted and given that T’s valued features can probe and value those of *himself* in (11) it is not quite clear why this is not allowed. Perhaps some phase boundary intervenes, though this is unlikely in the passive version of (15a). At any rate, we must assume that this is not an option. Second, we do not have the option of dispensing with multiple

Agree as it is an absolutely necessary part of an ABC analysis of reflexives. Third, it is tempting to assume that in the context of the proposal that Agree values unvalued features that the Freezing witnessed in (15a) reflects the fact that the embedded T has had its features valued. However, this cannot be correct for in the embedded clause the only DP available to value the features of the lower T are those of the reflexive and we are assuming that the feature values of a reflexive must themselves be valued. Hence, the embedded reflexive cannot value the features of the embedded T.

²⁹ See Hornstein (2009) for a way of reducing the A-over-A to minimality. See discussion below on cases where the illicit binding in (16) is fine.

³⁰ Reuland (2001: 483) argues that there are additional semantic effects that arise from Agree with *zich*. The relevant cases are also discussed in Lidz (2001).

³¹ With the obvious difference that *himself* is not an empty category. Contra Chomsky (1982), we are not convinced that empty categories are a natural syntactic class, and assume that relatively superficial principles determine whether and how a copy will be pronounced at the PF interface.

³² To take but one example, *zich* cannot be used in the formation of middles, in contrast to Romance SE, which is typically obligatory in middle constructions. Intriguingly, there is a dialect of Dutch (Heerlen Dutch) that does make use of *zich* in the formation of middles (Hulk and Cornips 2000). This dialect also associates certain aspectual properties with *zich* that are also found with Romance *se*.

³³ There are various ways of coding this generalization. See Hornstein (2001), Idsardi and Lidz (1997) for two variants of this approach. Both key on the idea that reflexives are residues of movement.

³⁴ Reuland emphasizes that this approach to *zich*-type anaphors implies that they “*enter into a real dependency with their antecedents in C_{HL}*” (his emphasis). This again is a point of agreement between ABC and CBC.

³⁵ In fact, given a minimalist theory in which movement obeys Extension, the c-command requirement on chains can be derived. For discussion c.f. Hornstein (in press).

³⁶ The first option is roughly the one in Idsardi and Lidz (1997). The second is the proposal in Hornstein (2001).

³⁷ Reuland (2001) cites two cases from Norwegian and Icelandic that he says has a similar structure. They translate out roughly as (i):

- (i) There was introduced a man to *zichself*
- (ii) There came a man with *zich* children
- (iii) Det *ble* introdusert *en mann*₁ for *seg*₁ selv / **ham*₁ selv. [Norwegian]
- (iv) That *kom madur*₁ med börnin *sin*₁ / **hans*₁ [Icelandic]

The case in the text does not involve *zich* but the English reflexive. However, the logic will be the same. We discuss (27) because it is a far clearer version of the example Reuland has in mind. This is because it is not clear that the PP containing the reflexive in (i)-(ii) is actually too high to be c-commanded by *a man*₁ in each case. Moreover, Chomsky (1995) cites examples like (27) as cases in which PRO is controlled by features in T. Following Cardinaletti, he argues that these are indeed cases of control via T as similar structures in French prohibit such binding configurations. In French, the associate

in Existential Constructions does not agree with T, as it does in English, Norwegian and Icelandic. Note the example with an overt reflexive is less acceptable than the one with PRO. Nonetheless, the reflexive here is far more felicitous than is a pronoun similarly indexed.

- (i) *After spotting the police, there quietly departed several men₁ without them₁ being detected

So, for discussion, we assume that the example in (27) with the reflexive is grammatical. One last point: we use *without* for it is able to have both an overt subject and PRO, unlike adjuncts such as *after* and *before*.

³⁸ The long form of the reflexive *taziji* is a local reflexive and contrasts with the short form *ziji*. We thank Ming Xiang for the Chinese data.

³⁹ The availability of sub-command in Chinese raises the question of what distinguishes English from Chinese. The key property that allows the Chinese facts and prevents analogous structures in English appears to be that Chinese reflexives require human antecedents, while English reflexives can be bound by non-human antecedents. This combines with the A-over-A principle to yield the difference in behavior. This has the additional consequence of predicting that in Chinese sentences like (i) *Zhangsan* cannot antecede the reflexive, though it can antecede the pronoun. In other words, the effects in (35) and (i) are reversed.

- (i) Zhangsan₁ de Mama guiji hai-le *taziji₁/ta₁
Zhangsan's mother harmed himself/him

The proposal that sentences like *John's mother loves himself* is out because of something like the A-over-A principle is made in Kayne (1994: 25-6). There it is proposed that

John's mother blocks *John* from being a possible antecedent as it is a more proximate potential antecedent. See Boeckx and Hornstein (2007) for implementation of this idea in a more general context.

⁴⁰ The Norwegian version of (39) has *zichself* in place of *himself* and so should fall under the purview of Reuland's version of ACD.

⁴¹ In languages with distinctive *zich* reflexives, examples like (41a) would not involve the *zich* form. These are limited to cases where the antecedent is a "subject." The scare quotes should be taken as warning that possessive DPs must count as subjects.

⁴² This is of interest because with other cases that appear to be similar, it appears to be marginally possible to get well-formed co-valued readings with pronouns:

- (i) John talked to Mary about herself/?her

See Reinhart and Reuland (1993) and Buring (2005) for discussion of the status of *about* PPs in (i).

⁴³ Note all these analyses assume that adjuncts like these are not inaccessible to syntactic operations, be they movement or Probing for agreement. In other words, they do not sit in "another dimension" that is inaccessible to the syntax. Cf. Chomsky 2004 for such a suggestion.

⁴⁴ For a more detailed exposition of the intuitive kinship between Standard Theory approaches and the approaches outlined here see Hornstein (2001).

⁴⁵ Recall, that strictly speaking, Reuland's account only applies to *zich(self)*. We ignore this detail here for the complementarity clearly extends to English reflexives as well. We conclude that these too must be licensed within a single module and so the economy reasoning outlined above carries over to these as well.

⁴⁶ Note that this proposal has nothing to say about referential pronouns. This raises the question of their status. One potential problem that an approach such as this must countenance is the formal similarity between lexical and *non*-lexical pronouns. On this approach it's not immediately obvious how we can account for this in a principled way. However, it's also possible that this might merely be a case where superficial similarity of pronominal types has led us to lump two distinct categories together. Evidence from Japanese *zibun* suggests that there may be languages that do formally distinguish between bound and referential pronouns. *Zibun* aside, this is really just the flipside of the problem faced by more traditional theories: why is it that the same lexical item can be interpreted either as a referential element or as a bound variable? (In the latter case, with its phi-features being ignored for interpretative purposes.)

⁴⁷ We also offer a slightly different motivation for the intermediate movement (the requirement that variables be bound from an A' position), and do not make use of doubling constituents. For Kayne, the requirement that there be movement to an intermediate position is to be derived from a general requirement on weak pronouns that they must move to the left (interpreted as a requirement that the entire doubling constituent containing the pronoun and its antecedent must move to the left before subextraction of the antecedent can take place).

⁴⁸ We know! This involves improper movement. For the nonce assume that this is not a problem and that such movement is grammatically tolerated. After all, why shouldn't it be? We can move from A-positions to A-positions and from A-positions to A'-positions. Why then shouldn't we be able to move from A' to A-positions? Currently, the impossibility of this movement is simply stipulated, often in terms of chain uniformity,

though clearly A to A' movement (which is permitted) violates chain uniformity too. For those truly exercised by this kind of movement, assume that somehow the pronoun left behind repairs the improper movement that we find. This might follow if improper movement is reduced to Condition C, as suggested in May (1985), and if the inserted pronoun obviates the effects of Condition C.

⁴⁹ See Hornstein (in press) for discussion of c-command and its relation to the Extension Condition. This abstracts from the question of whether there is sideways, inter-arboreal movement. If there is, this claim must be tempered.

⁵⁰ A puzzle:

- (i) *John₁ wants/would prefer for him₁ to leave

A possible avenue towards a solution: *John* moves to Spec P for case reasons and this prevents movement into CP for some reason.