

# Kinds of Derivational Binding<sup>\*</sup>

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## 1. Introduction

Recent work in syntactic theory has been much concerned with the issue of derivationality vs. representationality in the application of syntactic principles. Arguments for an essentially derivational approach to syntactic relations, whereby syntactic principles apply in an on-line fashion, during the course of the derivation, rather than at independently identified levels of representation such as Surface Structure (SS), Logical Form (LF) and so on, go back to Belletti & Rizzi 1988, and more recently have been revived in various forms in Kitahara 1997, Epstein et al 1998, Grewendorf & Sabel 1999, Epstein & Seely (eds) 2002 and the papers therein, Saito 2003, 2005, and for Russian in Bailyn 2007, as well as in many other places. Theoretical arguments for a derivational approach to syntactic relations, stemming from the Minimalist Program of Chomsky 1995, accompany the empirical ones discussed in many of the works cited above; I will not review these arguments in detail – naturally a theory that can dispense with reference to particular levels of representation is superior to one that cannot, all else being equal (although see Brody 1995 and elsewhere for the opposite view). My purpose in this article is to show evidence from binding that argues in favor of a certain kind of derivationality, which I call “applicational derivationality” (AD) while at the same time to argue against another kind of derivationality, represented by work

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on Control (Hornstein 1999) and Binding (Zwart 2002 and Kayne 2002), which I will label “reductionist derivationality” (RD).

## 2. Arguments for Applicational Derivationality (AD)

AD claims that syntactic principle apply in an on-line fashion, during the course of a derivation, rather than at arbitrarily pre-determined levels of representation. The classic work in this regard is Epstein et al 1998:

*Syntactic relations, in our view, are not properties defined on representations generated by syntactic rule but are properties inherent to and established by the application of the rules Merge and Move themselves.* (Epstein et al 1998, p. 7)

- (1) **Applicational Derivationality (AD):** A simplification of syntactic theory such that no syntactic principles or constraints apply at representationally defined “levels” (DS, SS, LF)

Below, I review basic evidence from anaphor binding in favor of AD.

### 2.1 Psych-verbs

Original arguments in favor of AD come from English psychological verbs, where anaphor binding is possible despite the lack of a clear c-command relation at Surface Structure (or LF, on the standard assumption that A-raised arguments do not reconstruct). English and Italian examples from Belletti & Rizzi 1998 are reproduced here:

- (2) a. [Pictures of **himself**] worry **John**.  
b. [The stories about **themselves**] were told \_\_ by **the women**
- (3) a. Questi pette golezzi su di sé preoccupano **Giani**  
these pieces of gossip about himself worry Gianni  
b. \*Questi pette golezzi su di sé descrivono **Giani**  
these pieces of gossip about himself describe Gianni

Versions of AD in the syntactic literature are given in (4)-(5):

- (4) Principle A of the Binding Theory can be satisfied at any point in the derivation (Grewendorf & Sabel 1999, p. 13)
- (5) Information on the antecedent/binder of an anaphoric element is sent to semantics at any point of the derivation. (Saito 2005, p. 16)

## 2.2 A-movement of Antecedents

It is well-known that A-raised elements acquire the ability to bind anaphors they did not c-command before movement, a fact that is entirely consistent with the AD approach. Thus English A-movement such as the Raising and Passive constructions in (6)-(7) derive new binding relations, whereas A'-movement such as Topicalization (8) does not.

- (6) a \*It seems to [**each other**<sub>i</sub>'s friends] that [**the men**<sub>i</sub> are happy]  
b. **The men**<sub>i</sub> seem to [**each other**<sub>i</sub>'s friends] [ \_\_\_ to be happy].
- (7) a \*[**Each other**<sub>i</sub>'s friends] spotted **the men**<sub>i</sub>.  
b. **The men**<sub>i</sub> were [ spotted \_\_\_ ] by [**each other**<sub>i</sub>'s friends]
- (8) a \*[**Each other**<sub>i</sub>'s friends] spotted **the men**<sub>i</sub>.  
b. \***The men**<sub>i</sub> [**each other**<sub>i</sub>'s friends] [ spotted \_\_\_ ]
- (9) demonstrates the crucial difference in this regard between Raising (9)a, (where previous stage of the derivation showed a well-formed binding relation) and Control in (9)b, where no such relationship existed.
- (9) a. [Friends of **each other**<sub>i</sub>] seemed [ \_\_\_ to amuse e **the men**<sub>i</sub>].  
b. \*[Friends of **each other**<sub>i</sub>] wanted [PRO to amuse **the men**<sub>i</sub>].

There is considerable evidence in the so-called 'free' word order languages such as Russian and Japanese that certain non-subjects can undergo A-movement into subject position (usually taken to be SpecTP), as argued in Miyagawa 1997, 2001 for Japanese, and Babyonyshev 1996, Preslar 1998, Lavine 2000, Bailyn 2004 for Russian (see also Nevins & Anand 1998). Some common cases in Russian are summarized in (10):

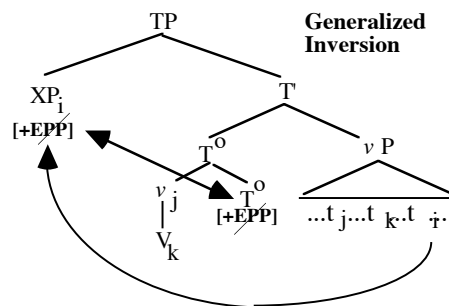
- (10) Possible subject-oriented anaphor binders in Russian:
  - a. Nominative subjects ((11)
  - b. Possessive PP (*u* + Poss) ((12)
  - c. Accusative 'subjects' ((13)
  - d. Dative experiencers ((14)

In the derived A-position, these elements can bind anaphors they did not previously c-command, in a fashion consistent with AD:

- (11) a. [Petrovy<sub>i</sub>] ljubjat [svoix<sub>i</sub> detej] SVO  
 the Petrovs<sub>NOM</sub> love [self's children]<sub>ACC</sub>  
 "The Petrovs love their (own) children." (14)
- b. ??? [Svoix<sub>i</sub> detej] ljubjat [Petrovy<sub>i</sub>]
- (12) a. [U Petrovyx<sub>i</sub>] byla [svoja<sub>i</sub> komnata] PP-V-S  
 at the Petrovs was [self's room]<sub>NOM</sub>  
 "The Petrovs had their own room."
- b. ???[Svoja<sub>i</sub> komnata] byla [u Petrovyx<sub>i</sub>]
- (13) a. Ego<sub>i</sub> tošnit [ot svoej<sub>i</sub> raboty] O-V-PP  
 him<sub>ACC</sub> nauseates from self's work  
 "He is sickened by his work."
- b. ???[Ot svoej<sub>i</sub> raboty] tošnit ego<sub>i</sub>
- (14) a. Ivanu<sub>i</sub> nužen vrač<sub>k</sub> v svoem<sub>i</sub>/\*<sub>k</sub> dome  
 Ivan<sub>DAT</sub> necessary doctor<sub>NOM</sub> in self's house  
 "Ivan needs a doctor in his house." Dat-A-S-PP
- b. ???V svoem<sub>i</sub> dome vrač nužen Ivanu<sub>i</sub>

A schematic view of how such constructions are possibly derived, taken from Bailyn 2004, is shown in (15):

(15) Schematic View of Generalized Inversion (Bailyn 2004)<sup>1</sup>



<sup>1</sup>Some recent work (Slioussar 2005, Kallestinova & Slabakova 2008) has concluded that evidence for the verb movement argued for in Bailyn 2004 is weaker than originally thought. This component of the Generalized Inversion analysis is however tangential to the issue of A-movement under discussion here. Those works do no present evidence against the A-movement account of Bailyn 2004. In fact, Williams 2006 has argued for the existence of *several* A-positions in the left edge of the Russian clause, which is entirely consistent with the AD account of binding argued for here.

Interestingly, not all Slavic languages allow non-Nominative binders as easily as Russian does (Bailyn 2007). Thus is Serbo-Croatian, constructions that appear superficially similar to the Russian cases do not easily allow the raised element to bind:

- (16) a. \*[Kod **Jovana**<sub>i</sub>] je bila **svoja**<sub>i</sub> kuća (SC) PP-V-S  
           at Jovan aux was [self's house]<sub>NOM</sub>  
           ‘‘Jovan had my own house.’’ (cf Russian ((12)a))
- b. \***Jovanu** se svidja **svoj** posao Dat-V-S  
       Jovan<sub>DAT</sub> refl like [self's work]<sub>NOM</sub>  
       ‘‘Jovan likes his work.’’ (cf Russian ((14)a))
- c. \***Jovanu**<sub>i</sub> treba doktor<sub>k</sub> u **svojoj**<sub>i</sub> kući Dat-V-S-PP  
       Jovan<sub>DAT</sub> necessary doctor<sub>NOM</sub> in self's house  
       ‘‘Jovan needs a doctor in his house.’’  
       (≠ *Jovan*; *doktor* ok for some speakers) (cf Russian ((14)b))

The proper generalization appears to be that the Russian fronted elements in (12)–(14) are in A-position while in Serbo-Croatian the fronted XPs in (16) are in A'-position. An immediate question arises as to why there should be such a stark difference in otherwise similar language types. Although a full explanation of this micro-variation is beyond the scope of this article, one possibility should be mentioned, namely that an important distinction in the diachronic development of the two languages with regard to A-positions in TP and *pro*-drop (see Kwon 2008) is responsible for the synchronic distinction seen here.<sup>2</sup>

In particular, it is well-known that Old Russian, Old Church Slavonic were grammatical *pro*-drop languages, as is modern Serbo-Croatian, but not modern Russian. On a particular view of the TP-level EPP, *pro*-drop languages satisfy the EPP by strong verbal agreement in T (Alexiadou & Anagnostopoulou 1998). If this view is correct, when the copular auxiliary dropped in the history of Russian, the EPP parameter was reset as involving SpecT. The set of EPP-satisfiers broadened to include non-agreeing ‘subjects’. By contrast, SC maintained the older system.

<sup>2</sup> Miyagawa 1997, Grewendorf & Sabel 1999, Saito 2003, 2005 and others have shown that in Japanese, local scrambling of antecedents over subjects containing anaphors, creating an OSV configuration, can result in new binding relations. Crucially, old binding relations that were successful in the basic SOV structures do not get undone by such movement. This has led some to conclude that scrambled positions have mixed properties (Webelhuth 1989), a complication that is unnecessary under AD derivational binding. In SOV constructions with successful anaphor binding, further movement does not undo that successful binding, whereas in OSV constructions where the O serves as antecedent, AD results in successful post-movement binding. Only AD binding can easily account for this asymmetry.

### 2.3 The Issue of Ditransitives

Ditransitives in Russian show a particular kind of asymmetry that strongly supports the AD style of derivational binding. Consider the reciprocal binding facts in (17)-(20).

- |       |  |            |                            |                            |         |
|-------|--|------------|----------------------------|----------------------------|---------|
| (17)  | Ivan   | predstavil | <b>Petrovyx</b>            | <b>drug drugu</b>          | ACC-DAT |
|       | Ivan   | introduced | the Petrovs <sub>ACC</sub> | each other <sub>DAT</sub>  |         |
|       | “Ivan introduced the Petrovs to each other.” |            |                            |                            |         |
| (18)  | Ivan   | predstavil | <b>Petrovym</b>            | <b>drug druga</b>          | DAT-ACC |
|       | Ivan   | introduced | the Petrovs <sub>DAT</sub> | each other <sub>ACC</sub>  |         |
| (19)? | Ivan   | predstavil | <b>drug drugu</b>          | <b>Petrovyx</b>            | DAT-ACC |
|       | Ivan   | introduced | each other <sub>DAT</sub>  | the Petrovs <sub>ACC</sub> |         |
|       | (derived from ((17))                         |            |                            |                            |         |
| (20)* | Ivan   | predstavil | <b>drug druga</b>          | <b>Petrovym</b>            | ACC-DAT |
|       | Ivan   | introduced | each other <sub>ACC</sub>  | the Petrovs <sub>DAT</sub> |         |

On an approach to ditransitives in which Accusative Themes begin in structurally superior position to Dative Goals (Larson 1988, Bailyn 1995, 2009), the facts above follow naturally under AD. (17) and (20) are base-generated, predicting the successful binding in (17) and its failure in (20). In (18), local A-scrambling of the Dative over the Accusative derives successful binding. In (19), successful binding relations existed before scrambling, which are maintained even after movement. (The slightly degraded status of (19) is presumably related to other factors, such as the language’s general distaste for backwards pronominalization). However, a non-derivational view, whereby binding relations are calculated at a particular level of representation, cannot square the fact that both (17) and (18) are fine with the strong contrast found between (19) and (20). (For similar arguments from Principle B effects, see Asarina 2005).<sup>3</sup>

### 2.4 A'-derived Bindees

It is well-known that overt A'-movement of phrases containing anaphors can feed new binding relations, as shown in (21).

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<sup>3</sup> There is considerable debate about the internal structure of ditransitives (Bailyn 1995, 2009, Antonyuk 2006, 2009, Franks 1995, Pereltsvaig 2001, Dyakanova 2007). Full presentation of the various arguments lies outside the scope of this article. However, data from scope, Weak Crossover and Information Structure strongly favor the Acc > Dat view taken here. It is not at all clear how the Dat > Acc view of Dyakanova and others can account for the reciprocal binding facts given above.

- (21) a. \***John<sub>i</sub>** knows that Mary showed [pictures of **himself<sub>i</sub>**] to Susan.  
 b. **John<sub>i</sub>** wonders [which pictures of **himself<sub>i</sub>**] Mary showed \_\_\_ to Susan.

A similar phenomenon has recently been discussed in Antonenko 2006 with regard to Russian long-distance scrambling, which is acceptable out of subjunctives. Thus movement of the phrase containing an anaphor in (22) allows it to be bound by an antecedent that was too far away before movement. (Examples from Antonenko 2006. A similar phenomenon has been reported for Japanese in Saito 2005)

- (22) a. Ty<sub>i</sub> xoeš, čtoby **Saša<sub>k</sub>** našel [**svoego<sub>\*i/k</sub>** druga]?  
 You<sub>i</sub> want that Sasha<sub>k</sub> find<sub>SUBJ</sub> self<sub>\*i/k</sub> friend  
 “Do you want that Sasha find his friend?”  
 b. Ty<sub>i</sub> [**svoego<sub>i/k</sub>** druga] xoeš, čtoby **Saša<sub>k</sub>** našel *t* ?  
 You<sub>i</sub> self<sub>\*i/k</sub> friend want that Sasha<sub>k</sub> find<sub>SUBJ</sub>  
 “Do you want that Sasha find his/your friend?”

Long-distance scrambling is known to be A'-movement (Saito 1992, Grewendorf & Sabel 1999, a.o). The data in (22) is thus particularly strong evidence in favor of an AD approach to anaphor binding, in that it is generally accepted that long-distance A'-scrambling obligatorily reconstructs (Saito 1992, 2003, Bošković & Takahashi 1998), occupying its base position at Logical Form (LF). Therefore it is clear that anaphor binding cannot be run at LF after reconstruction – if it were, we would expect no difference between the (a) and (b) sentences of (22), contrary to fact. Long-distance scrambling of bindees (or phrases containing bindees) is thus even stronger evidence for AD than A-movement of antecedents, since cases of antecedent movement could result from LF binding after reconstruction, whereas all A'-movement cases require reconstruction, and yet allow surface binding. This is the expected result under AD.

Thus we have seen various kinds of arguments from binding in favor of AD. In the next section we turn to a different derivational view of binding, namely Reductionist Derivationalism RD, and see that significant problems arise that are not found under the AD approach.

### 3. Arguments against Reductionist Derivationality

Various recent approaches to syntactic relations attempt to derive various lexical and syntactic primitives from the derivation itself. This is what I call “reductionist derivationality” (RD):

- The best-known example of RD is Hornstein's "Movement Theory of Control" which claims that the PRO element commonly claimed to be the subject of non-tensed clauses such as infinitives is in fact the trace of a certain kind of A-movement. The primary argument in favor of such an approach involves the locality of A-movement and the requirement that PRO subjects have local controllers in A-positions, a correlation that falls out from the Hornstein approach. I will not try to review the arguments for and against the RD approach to Control, noting simply that case facts in Russian and Icelandic (Landau 2003, 2006, 2008, Bobaljik & Landau 2009), along with long-known intractable distinctions between raising and control (such as those found in (9)), and the viability of Theta Theory module of the grammar, all speak against reducing Control to Movement. However, our concern here is with binding theory, and so I will limit the discussion to Binding Theory under an RD approach.<sup>4</sup>

<sup>4</sup>There are some additional challenges to the Movement theory of Control from the Slavic languages involving case marking in small-clause predicates. Some of these are discussed in Landau 2008. Others concern distinctions between Subject and Object control not predicted by the movement approach. In Russian, for example, case transmission from the controller occurs in Subject control configurations while in Object control configurations Dative (a case inherent to PRO in Russian) is marked on certain secondary predicates. This is not predicted to be possible by the movement theory. Also, in Serbo-Croatian dialects that allow control infinitives (primarily Western dialects), subject control is available and object control is not, as shown in (i)–(ii)

- (The same facts hold with Accusative controllers.) It is unclear how the movement theory of control could handle these distinctions between subject and object control.



Naturally, it would be a simplification of syntactic theory if binding could be reduced to movement in the manner suggested in the RD literature. However, there are significant problems with even the most basic RD approaches to binding, which I discuss below. After looking at the RD approaches to binding and the problems they encounter, we will be left with the conclusion that the most empirically and theoretically adequate theory is one that does not eliminate anaphors or pronouns, or the Binding Principle themselves, contrary to RD, but rather maintains them, while eliminating their application to derivationalal stages in the AD style.

Hornstein 2001 argues that anaphors are traces of A-movement, just as PRO is. Thus a standard reflexive construction should be represented as in (24)b and not as in (24)a:

- The locality of Principle A then falls out from the locality of A-movement. This renders Raising the same as Control:

- Crucially, traces in case positions surface as overt anaphoric elements, whereas traces that are in non-case positions (PRO), are null. Thus the distinction between reflexivization and Control reduces to the requirement, in reflexive cases, that some case-marked element surface, which is forced by the *Inverse Case Filter* (ICF) (Martin 1999, Bošković 2002).

This approach to anaphor binding encounters numerous theoretical and empirical problems, as noted even in Kayne 2002, a leading RD account of its own that is discussed below. First, Hornstein's RD approach requires allowing one element to carry two theta roles, which contradicts a basic tenet of classic Minimalism (Chomsky 1995), namely that Merge is motivated by thematic relations. Second, as mentioned above, this approach requires the Inverse Case Filter to distinguish appearance of *-self* from PRO/trace. A version of the ICF is given here:

(27) The Inverse Case Filter:

“The requirement that (traditional) Case-assigners must assign their Case-feature, which in the checking theory can be interpreted as a feature-checking requirement” (Bošković 2002)

Specific instantiations of the ICF are as in (28):

(28) Instances of the Inverse Case Filter:

- a. [+T] must assign /check Nominative on an overt element
- b. non-defective *v* must assign Accusative on an overt element

On the ICF account, it then follows automatically that all tensed clauses must have Nominative subjects. This implication is clearly false, as can be shown by numerous examples, such as the impersonal and Dative subject constructions in (29) that show no Nominative case, and standard unergative verbs in (30) that show no Accusative case:

- (29) a. Temneet                      b. Mne    nužno                      knigu  
     gets dark                      me-Dat necessary[-agr] book-Acc  
     “It is getting dark.”                      “I need a book.”
- (30) a. Saša    begaet po utram                      b. Borya smeetsja  
     Sasha runs in mornings                      Borya laughs  
     “Sasha runs in the mornings.”                      “Borya is laughing.”

Now consider some standard cases of anaphor binding in (31):

- (31) a. Saša    ljubit    **sebj**a  
     Sasha loves self-Acc  
     “Sasha loves himself.”
- b. Mne       nužen    **svoj**       dom.  
     me-Dat needs [self’s house]-Nom  
     “I need my own house.”

The RD/ICF account argues that anaphors appear because of case requirements forced by case assigners, so that in (31)a the appearance of *sebj*a is forced by *v* and in (31)b the appearance of *svoj dom* is forced by [+T]. If their presence is due to case, and is a requirement of *v* and [+T], then the account would predict that the sentences in (29) and (30) would be ill-formed, since there are no such case manifestations there. Clearly

this is not the case. So the ICF cannot explain the difference between true anaphors and PRO/trace, which is central to the ICF/RD account.<sup>5</sup>

Finally, the Hornstein ICF/RD account requires the addition of new elements (the reflexive form itself) in the course of the derivation. This violates the Inclusiveness Condition, a central tenet of minimalism (Chomsky 1995). We therefore have four reasons why the Hornstein RICE/D binding account cannot obviously be implemented in the form imagined in Hornstein 2001. It is beyond the scope of this article to consider possible adjustments to the Hornstein account of binding that might address these issues. Next we turn to another kind of RD binding.

### 3.2 Coreference (co-indexation) as co-constituency

There are two versions of the kind of RD binding (Kayne 2002, Zwart 2002), that start from the notion that coreferent elements<sup>6</sup> (such as *John* and *him(self)*) begin as *co-constituents*, and then the antecedent moves away from the pronoun/anaphor to a local c-commanding position, *deriving* the standard binding configuration. On such accounts, pronominal/anaphoric elements do exist as distinct lexical items (contra Hornstein 2001), but the Binding Principles themselves, and especially their locality and reliance on A-positions, derive from other factors. The two accounts share the notion that co-constituency is the *source* of binding-type relations. This is captured by a particular kind of Merge of two co-referent elements, as stated in (32) and exemplified in (33):

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<sup>5</sup>Nominative possessive anaphors like *svoj* have been claimed to be elements distinct from true anaphors, given their unique interpretation as ‘own’. However, *svoj* still require standard binding configurations, as we can see by violations of c-command (i) and locality (ii) which render binding unacceptable:

- (i) \***Moej** sestre nužen **svoj** dom.  
[my sister]-Dat needs [self’s house]  
“My sister needs my own house.” (out if bound by ‘my’)
- (ii) \* **Saša** uveren, što **svoj** dom prodastsja očen’ dorogo.  
Sasha sure that [self’s house]-Nom will sell very expensive  
“Sasha is sure that his house will sell very expensively.”

Thus *svoj* requires binding, and as such on the ICF / RD account, its presence should be forced by [+T], or we would expect it to be null. The argument here thus goes through.

<sup>6</sup>I assume that the relevant notion is in fact co-indexation, and not coreference, but the distinction appears not to be relevant to the discussion.

(32) Co-constituency: An element A is coreferential with B iff A is merged with B (Zwart 2002, p. 274)

(33) [*John he*]-DC

Such constituents are known as “doubling constituents” (DC), and underly all derivations in which *John* is coindexed with *he* (or *himself*).

The notion of the doubling constituent is quite appealing, and has various advantages. For both Kayne 2002 and Zwart 2002, Principle C is eliminated from the grammar by the principle shown in (34):

(34) Doubling Extraction Principle: Extraction of a phrase from within a DC like [*John he*] is limited to extraction of the Spec

(34) forces the doubling constituent to be resolved by the specifier (*John*) moving into a c-commanding A-position, deriving the usual binding configuration, and disallows constructions like (35)<sup>7</sup>:

(35) a. thinks [*John-he*] is smart → (b) \*He thinks John is smart.

Beyond the account of Principle C, however, the two RD co-constituency accounts diverge significantly, and must be discussed separately.

### 3.3 Zwart’s (2002) RD Binding

For Zwart, the pronominal element of the DC carries the “acquired feature” [+coreferent], which leads it to be spelled out as the relevant reflexive form. The specifier of the DC, *John*, raises into the external argument position. Thus in (36), the head of the DC, *he*, receives the internal argument thematic role from the verb, and due to the [+coreferent] feature, surfaces as *himself*.

(36) loves [*John he*<sub>[+COREF]</sub>] → John loves himself

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<sup>7</sup>It should, however, be pointed out that neither Kayne nor Zwart provides a mechanism that rules out DC’s of the form [*he John*], (rather than [*John he*], without which the account of Principle C loses its force.

Pronouns and R-expressions that are apparently coreferent in cases like (37) are crucially not examples of DC's, but are rather 'accidental' (hence the inherent anti-locality of pronouns). Thus in a sentence like (37), the apparent coreference between *John* and *he* is accidental, and crucially does not arise from an initial DC, in exact opposition to (36).

(37) John thinks that he is a genius.

Zwart's account encounters various difficulties. First, it is unclear how it would handle bound variable anaphora (BVA) cases such as:

(38) Every body thinks that he is a genius.

On the face of it, (38) and (37) are maximally similar. However, note that BVA does *not* involve co-reference of the kind found in a DC construction. (38) would then fall under the rubric of 'accidental' under Zwart's account, as in (37). However, this means that there is no reason why a quantified expression such as *every boy* could not appear in the same clause as a bound variable such as *him*. The account then rules in (39)a:

- (39) a. \*Every boy<sub>i</sub> loves him<sub>i</sub>.  
b. \*John<sub>i</sub> loves him<sub>i</sub>.

Recall that Zwart's RD account dispenses with Binding Theory entirely. (39)b is ruled out because the *only* source of coreference is being derived from a DC, resolved by local A-movement of the antecedent. The pronoun in a DC carries the [+coref] feature, and therefore surfaces as a reflexive. (39)b either carries such a feature, and surfaces as *John loves himself*, or it is not coreferent. However, the same account cannot be carried over to (39)a. No [+coref] feature is present here, since BVP cases do not strictly co-refer, and the 'accidental' coreference possible in (37) should be available. But it is not. This is the first problem with Zwart's RD account of binding phenomena.

Second, Zwart's RD account does not allow for the subject orientation of anaphors in language such as Russian, as exemplified in (40):

- (40) **Ivan** sprosil Boris o **sebe**  
Ivan asked Boris about self  
'Ivan asked Boris about himself.' (himself = Ivan only)

The problem here is that there is no obvious reason why the Specifier of the DC could not move into object position, rather than subject position, wrongly allowing reflexives to be bound by the object *Boris*. The Subject Condition is usually accounted for by covert movement of the anaphor (Cole & Sung 1994, among many others), with the distinction among languages stemming from the different morphological nature of the anaphors, an effect unavailable under Zwart's RD account as it stands.

Finally, Zwart's DC as it stands account cannot handle long-distance binding cases, such as (41), since such instances would require long distance A-movement of the antecedent, a violation of the both Improper Movement (no Long-Distance A-movement) and Relativized Minimality (no movement over positions of the same kind) (Rizzi 1991).

- (41) **Ivan** poprosil **Borisa** narisovat' **sebj**a  
 Ivan asked Boris to draw self  
 'Ivan asked Boris to draw himself.' (himself can be Ivan)

Naturally, additional adjustment to the Zwart RD approach might be able to overcome some or all of these problems. However, the stated purpose of RD accounts is to *simplify* the grammar, in this case by eliminating the need for distinct binding module, but the complications that ensue require *complicating* well-known aspects of the grammar, thus significantly mitigating the advantages. The burden of proof is on the RD account to show that the advantages outweigh the complications, a burden that has not been met as things currently stand. Similar issues are encountered by the RD account envisioned by Kayne 2002, to which I now turn.

### 3.4 Kayne's (2002) RD Binding

Kayne 2002 also uses the notion of the doubling constituent (DC) to *derive* coreference, and to eliminate the need for a distinct binding module. The basic notion of the Doubling Constituent (DC) and the account of Principle C is exactly the same as in Zwart 2002. However, Kayne primarily applies the RD account to cases of coreferent *pronouns*, without recourse to the 'accidental' coreference for cases such as *John thinks he is a genius*. Thus for Kayne, (42)b is also derived from a DC, as in (42)a, followed by A-movement of the antecedent.

- (42) a. thinks [John he] is a genius → b. John thinks [ *t* he] is a genius

Bi-clausal cases such as (42) are thus accounted for. However, standard mono-clausal Principle B violations such as (39)b, and standard instances of local anaphor binding such as (36), the cases best handled by Zwart's version of RD, require significant additional stipulation. Consider (43):

- (43) a. \*John thinks highly of [ *t* him].  
b. \*John considers [*t* him] intelligent.

As Kayne acknowledges, a DC that could be resolved by local A-movement would derive the ungrammatical sentences in (43), all else being equal. Therefore, an additional requirement is added to the derivation, quoted in full here (from Kayne 2002, p. 145, emphasis mine):

“in moving from within the doubling constituent, ‘*John*’ *must move through an intermediate position*. This required intermediate position will be available in ((42)a but not in ((43)a-b. One way to formulate this idea would be to say that *John* must pass through an *intermediate A'-position*. The question why Condition B effects exist would then become the question why such successive cyclicity need hold.” (p. 145)

This solution *requires* that A-movement of anaphors be preceded by A'-movement, which forces a reformulation of standard notions of the inherent locality of A-movement. Furthermore, contra Zwart, Kayne disallows any notion of accidental coreference, explicitly claiming that *any* coreference of R-expressions and pronouns *must* be derived from underlying DCs, even across sentence boundaries. Cases such as (44) and (45) must then be derived by (long-distance) A-movement across conjoined sentences that are later transformed into 2 distinct sentences:

- (44) a. John is famous and [ \_\_ he's] smart too. →  
b. John is famous. He's smart too.  
(45) a. Watch out! That man, [ \_\_ he's got a knife] →  
b. Watch out! He's got a knife!

The consequences of claiming that distinct sentences are derived from conjoined structures are beyond the scope of this article, but are clearly

far from trivial, not to mention the need to abandon the Coordinate Structure Constraint (Ross 1967). This is the first problem for Kayne.

The second problem for Kayne's account of pronominal coreference involves c-command: On the one hand, the A through A'-movement requirement, however stipulative, captures the anti-locality usually embedded within Principle B. However, the (anti) c-command component of Principle B does not fall out from the proposal. As is well-known, one way pronouns can be free is by not being c-commanded by their antecedents as in (46):

- (46) a. [Friends of **John**] love **him**. (cf \**John loves him.*)  
b. [Everyone who knows **John**] loves **him**.

Recall that for Kayne *all* cases of coreference must be derived from DCs. Therefore to derive examples such as (46), the grammar must allow movement into a non-c-commanding position. This is of course incompatible with Bare Phrase Structure and basic tenets of Minimalism (Chomsky 1995) and thereby complicates the grammar as much if not more than the claimed elimination of Principle B simplifies it. If the underlying justification of the RD approach is parsimony, this issue, without further stipulation, neutralizes the advantages.

The third issue for Kayne concerns anaphor binding, which is handled differently than in Zwart. (Recall that Zwart derives anaphors from [+coref] pronouns.) For Kayne, reflexive morphemes are distinct lexical items (a weakening of the basic tenets of an RD approach), that introduce the required A'-position that allows antecedents to move locally. Thus the logic is as follows: anything coreferent comes from a DC that is resolved by A-movement of the antecedent. By stipulation, A-movement must pass through an A'-position, hence the anti-locality of pronouns. By further stipulation, anaphors *introduce* such an A'-position, hence their locality. In essence this account restates the problem – anaphors are locally bound because they introduce the ability for the antecedent to move locally; pronouns must not be locally bound because their antecedent must move to a non-local position. It is not clear what has been gained.

Finally, the same issues that occur with Zwart's account involving the subject condition on anaphor binding and the existence of long distance anaphor binding arise for Kayne – nothing rules out movement of the antecedent into object position, and movement across another more local subject is required to derive long-distance anaphora.



#### 4. Conclusion

We have seen in this article two distinct kinds of derivational binding – Applicational Derivationality (AD) and Reductionist Derivationality (RD). We have seen that the former is an old idea that has empirical and theoretical advantages further supported by data from scrambling languages such as Russian and Japanese. The latter, on the other hand, encounters significant theoretical and empirical difficulties in accounting for basic binding phenomena, and requires significant complication in other areas of the grammar, rendering its claimed advantages in parsimony suspicious at best. RD accounts may, of course, turn out to be correct; but significant additional work is required before they can be accepted as a standard part of grammatical theory.

#### References

- Alexiadou, A & E. Anagnostopoulou. 1998. Parametrizing AGR: word Order, V-Movement and EPP-checking. *Natural Language & Linguistic Theory* 16: 491-539
- Antonenko, A. 2006. Scrambling in Russian and the Subjunctive/Indicative Distinction. Ms. Stony Brook University
- Antonyuk, S. 2006. The Scope of Quantifier Phrases in Russian: A QR Analysis. *Linguistics in the Big Apple*.
- Antonyuk, S. 2009. Long-Distance Scrambling, VP Ellipsis, and Scope Economy in Russian. U. Penn Working Papers in Linguistics 15.1: Proceedings of PLC 32, ed. L. MacKenzie, 1-9.
- Asarina, A. 2005. Russian Binding Theory: Two Improved Movement Approaches. ms. MIT
- Babyonyshev, M. 1996. Structural Connections in Syntax and Processing: Studies in Russian and Japanese. Doctoral Dissertation, MIT
- Bailyn, J. 1995a. A Configurational Approach to Russian “free” Word Order. Doctoral Dissertation, Cornell University, Ithaca, NY.
- Bailyn, J. 2004. Generalized Inversion. *Natural Language and Linguistic Theory* 22: 1-50.
- Bailyn, J. 2007. A Derivational Approach to Microvariation in Slavic Binding. *Proceedings of FASL* 15.
- Bailyn, J. 2009. What’s Inside VP? New Evidence on VP Internal Structure in Russian. Paper given at FASL 18, Cornell University, Ithaca NY, May 17, 2009.
- Belletti, A & L. Rizzi 1988. Psych-verbs and theta-theory. *Natural Language and Linguistic Theory* 6: 291-352.
- Bobaljik, J. & I. Landau 2009. Icelandic Control is not A-movement: The Case from Case. *Linguistic Inquiry* 40: 113-132.

- Bošković, Ž. 2002. A-movement and the EPP. *Syntax*
- Bošković, Ž. & D. Takahashi 1998. Scrambling and Last Resort. *Linguistic Inquiry* 29: 347-366.
- Brody, M. 1995. *Lexico-Logical Form: A Radical Minimalist Theory*. MIT Press.
- Chomsky, N. 1995. *The Minimalist Program* MIT Press.
- Cole, P. & Sung, L-M. 1994. Head movement and long-distance reflexives. *Linguistic Inquiry* 25: 355-406.n
- Dyakanova, M. 2007. Russian Double Object Constructions. *ACLC Working Papers* 2:1: 3-30.
- Epstein, S. (et al) 1998. *A Derivational Approach to Syntactic Relations* Oxford University Press.
- Epstein, S. & D. Seely (eds) 2002. *Derivation and Explanation in the Minimalist Program*. Cambridge University Press
- Franks, S. 1995. *Parameters of Slavic Morphosyntax*. Oxford University Press.
- Grewendorf, G. & J. Sabel 1999. Scrambling in German and Japanese: Adjunction versus multiple specifiers. *Natural Language and Linguistic Theory* 17: 1-65.
- Hornstein, N. 1999. Movement and control. *Linguistic Inquiry* 30: 69-96.
- Hornstein, N. 2001. *Move! A Minimalist Theory of Construal* Blackwell.
- Kallestinova, E. & R. Slabakova 2008. Does the Verb Move in Russian? *Proceedings of FASL 16*.
- Kayne, R. 2002. Pronouns and their Antecedents. In Epstein & Seely.
- Kitahara, H. 1997. *Elementary Operations and Optimal Derivations*. MIT Press.
- Kwon, K. 2008. *pro-drop* in Old North Russian. Paper presented at AAASS, Philadelphia.
- Landau, I. 2003. Movement Out of Control. *Linguistic Inquiry* 34: 471–498.
- Landau, I. 2006. Severing the Distribution of PRO from Case. *Syntax* 9: 153-170.
- Landau, I. 2008. Two Routes of Control: Evidence from Case Transmission in Russian. *Natural Language and Linguistic Theory* 26: 877-924.
- Larson, R. 1988. On the Double Object Construction: *Linguistic Inquiry* 19: 33-91.
- Lavine, J. 2000. Topics in the Syntax of Nonagreeing Predicates in Slavic. Doctoral Dissertation, Princeton University.
- Martin, R. 1999. Case, the EPP and Minimalism. In S. Epstein et al (eds) *Working Minimalism*, MIT Press.
- Miyagawa, S. 1997. Against Optional Scrambling. *Linguistic Inquiry* 27(1): 1-26.

- Miyagawa, S. 2001. EPP, scrambling, and wh-in-situ. In M. Kenstowicz (ed.) *Ken Hale: A Life in Language*. MIT Press, 293-338.
- Nevins, A. & P. Anand. 2003. Some AGREEMENT Matters. In G. Gardina and M. Tsujimura, eds, *WCCFL 22 Proceedings* pp. 101-114.
- Pereltsvaig, A. 2001. On the Nature of Intra-Clausal Relations: A study of copular sentences in Russian and Italian. Doctoral Dissertation, McGill University.
- Preslar, M. 1998. The Subject Position in Russian Impersonal Sentences. *Linguistic Analysis* 28, 1-2: 33-66.
- Rizzi, L. 1990. *Relativized Minimality*. MIT Press.
- Ross, J. R. 1967. Constraints on Variables in Syntax. Doctoral Dissertation, MIT.
- Saito, M. 1992. Long Distance Scrambling in Japanese. *Journal of East Asian Linguistics* 1: 69-118.
- Saito, M. 2003. A Derivational Approach to the Interpretation of Scrambling Chains. *Lingua* 113: 481-518.
- Saito, M. 2005. Further Notes on the Interpretation of Scrambling Chains. In M. Saito and J. Sabel (eds) *The Free Word Order Phenomenon*. Mouton de Gruyter.
- Slioussar, N. 2005. Some properties of Russian scrambling. In A. Asbury, I. Brasileiro, and S. Mahanta (eds.), *UiL OTS Yearbook*. Utrecht, 81-94.
- Williams, E. 2006. Subjects of Different Heights. In J. Lavine et al, (eds) *FASL 14: Michigan Slavic Publications*.
- Zwart, J-W. 2002. Issues relating to a derivational theory of binding. In S. Epstein & D. Seely (eds) *Derivation and Explanation in the Minimalist Program*, pp. 269-304.