On Referential Parallelism and Compulsory Binding[*]

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Abstract

Binding and ellipsis are empirically and theoretically symbiotic: each reveals otherwise hidden facts about the other. Here I investigate a case where a theory of binding is entwined with a problematic ellipsis licensing mechanism, with the result that there are strong reasons to abandon both. The ellipsis licensing mechanism in question is Referential Parallelism (Fox 2000), according to which a bound pronoun may support strict identity under ellipsis. Jettisoning this mechanism forces us to abandon theories of binding that involve what I call compulsory binding, which encode a grammatical preference for binding over coreference and for local over nonlocal binding (Reinhart 1983, Grodzinsky & Reinhart 1993, Fox 2000, Büring 2005). In their place, I suggest that we adopt what I call the violation equivalence approach to binding (Heim 1993, Reinhart 2006, Roelofsen 2010) and a Fox-style ellipsis licensing mechanism based on formal alternatives (Katzir 2007, Fox & Katzir 2011).

1 Introduction

Theories of ellipsis and binding are intimately bound up with one another, given the central role that diagnostics from each domain have played in providing evidence for the other. Here I investigate a particular such entanglement: that between Referential Parallelism and compulsory binding. I will suggest that there are strong reasons to question the theoretical palatability of Referential Parallelism. This, in turn, raises doubts about the theoretical viability of compulsory binding, which depends on an ellipsis licensing mechanism like Referential Parallelism.

Referential Parallelism, initially proposed by Fox (2000) and subsequently adopted by Büring (2005), is an ellipsis licensing mechanism that permits a pronoun interpreted as a bound variable to support strict identity under ellipsis. As the name suggests, a requirement of this licensing mechanism is that the binder of the pronoun in the ellipsis antecedent be a referential DP. For example, Referential Parallelism licenses strict identity in a configuration like (1).

(1) $John_1$ $\lambda 2$ t_2 loves his_2 mother and $Bill_3$ $\lambda 4$ t_4 does \<love his_1 mother\> too.

Compulsory binding is my name for a family of proposals that require binding over coreference (Rule I; Grodzinsky & Reinhart 1993) and local binding over nonlocal binding (Rule H; Fox 2000) when they are semantically indistinguishable. Büring (2005) conjoins these two principles into one he calls Have Local Binding! We can see right away that compulsory binding requires a theory of ellipsis that contains Referential Parallelism or a functional equivalent. In (1), compulsory binding (in particular, Rule I) requires binding of *his* in the antecedent clause. Since strict identity is available, compulsory binding depends on a theory of ellipsis where a bound pronoun can be read strict. I call this a binding–strict configuration.

As I show below, in cases where we can tell binding apart from coreference, it is clear that binding in an ellipsis antecedent does not support strict identity. There is thus reason to be suspicious of an approach that relies on the availability of binding–strict configurations. The theoretical picture is clouded somewhat by the fact that Fox's definition of Referential Parallelism was not formulated with the relevant cases in mind, so we must provide our own guidance as to how to interpret its predictions. The resulting picture, if not indisputably fatal for Referential Parallelism, is not an altogether happy one. What is more, when compared to other ellipsis configurations in which binding in the antecedent licenses something other than sloppy identity, Referential Parallelism remains an outlier in both its interpretation and its distribution. What emerges is the sense that Referential Parallelism is a theoretical construct for which we would prefer stronger supporting arguments than the ones we have.

The more momentous consequences are for binding. For if Referential Parallelism falls, then compulsory binding must fall too. In its place, we can adopt what I call the violation equivalence approach to binding, which prohibits LFs that are semantically equivalent to an LF that violates a binding condition, but does not directly regulate competitions between binding and coreference or local and nonlocal binding (Heim 1993, Reinhart 2006, Roelofsen 2010). This approach meshes well with Fox's approach to ellipsis (minus Referential Parallelism), allowing us to maintain its many interesting results regarding scope and accommodation.

2   Compulsory Binding vs. Violation Equivalence

We begin with binding, and a word of clarification at the outset. The interpretation of pronominals is governed by two distinct sets of conditions: the binding conditions themselves (Condition B being of primary interest here) and the transderivational economy constraints that restrict LFs containing pronominals. The proposals assessed below all belong to the latter category. They presuppose some formulation of the binding conditions or other, and then specify transderivational constraints on the LFs that conform to those binding conditions. In assessing approaches, we are comparing one set of transderivational constraints against another; the underlying assumptions about Condition B need not change substantially (or at all).

2.1   Compulsory Binding

Our point of departure is a family of proposals that constitute what I will call the COMPULSORY BINDING approach to pronominal interpretation. The group includes Rule I of Grodzinsky & Reinhart (1993) (and its forebear, the Coreference Rule of Reinhart 1983), Rule H of Fox (2000), and Have Local Binding! (HLB) of Büring (2005). Their definitions are in (2).

(2)   a.   Rule I: NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation (Grodzinsky & Reinhart 1993: 79)

        b.   Rule H: A pronoun, α, can be bound by an antecedent, β, only if there is no closer antecedent, γ, such that it is possible to bind α by γ and *get the same semantic interpretation* (Fox 2000: 115; emphasis original)

        c.   HLB: For any two NPs α and β, if α could semantically bind β (i.e., if it c-commands β and β is not semantically bound in α's c-command domain already), α must semantically bind β, unless that changes the interpretation (Büring 2005: 270)

Rule I regulates the availability of pronominal coreference, barring it in favor of semantic binding when the two are semantically equivalent. Rule H regulates the availability of nonlocal binding, barring it in favor of local binding when the two are semantically equivalent. HLB combines Rule I and Rule H, enforcing maximally local binding on a given interpretation; in combining the restrictions on coreference with those on nonlocal binding in a single rule, Büring points to commonalities between the two domains first discussed by Heim (1993), though Heim's theory is not in the compulsory binding camp.

By way of example, consider the sentences in (3) and (4). In (3), *John* and *his* are coconstrued; this reading could be generated either by the LF in (3a), where *his* is free and corefers with *John*, or by the LF in (3b), where *his* is interpreted as a variable bound by *John*. The effect of Rule I (and HLB) is to discard the coreference LF in favor of the binding LF. Likewise, in (4), the effect of Rule H (and HLB) is to discard the cobinding LF in (4a), where *every man* binds both pronouns, in favor of the transitive binding LF in (4b), where *every man* binds the intermediate pronoun and the intermediate pronoun binds the lower pronoun.[1]

(3)   John$_i$ loves his$_i$ mother.

        a.   ~~John$_1$ $\lambda 2$ t$_2$ loves his$_1$ mother.~~   COREFERENCE

        b.   John$_1$ $\lambda 2$ t$_2$ loves his$_2$ mother.   BINDING

(4)   Every man$_i$ said that he$_i$ loves his$_i$ mother.

        a.   ~~Every man $\lambda 1$ t$_1$ said he$_1$ $\lambda 2$ t$_2$ loves his$_1$ mother.~~   COBINDING

        b.   Every man $\lambda 1$ t$_1$ said he$_1$ $\lambda 2$ t$_2$ loves his$_2$ mother.   TRANSITIVE BINDING

In cases where the presence of an operator like *only* yields a truth-conditional difference between coreference and binding, Rule I/HLB permits both LFs; and Rule H/HLB does the same for cobinding and transitive binding:

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[1]The notation in these examples closely mirrors that of Büring (2005), which is in turn inspired by the double indexing convention of Heim (1993); cf. also Higginbotham (1983). An individual-denoting DP bears a subscript index that determines its semantic value via the operative assignment function. When a DP is c-commanded by a coindexed λ, it is interpreted as a variable abstracted over by that λ; it is bound by the sister of the λ-abstract (*John$_1$*, in (3)). The subscript index is thus a bindee index, corresponding to Heim's inner index. When a DP moves, it creates a predicate abstract and introduces a binder index (Heim's outer index) that binds its trace and any other bindee-coindexed elements in its c-command domain. The moved DP's binder index is distinct from its bindee index and is indicated on the adjacent λ (cf. Büring's β notation); for example, in (3) *John* has a subscript/bindee/inner index of 1 and a λ/binder/outer index of 2. A consequence of this system is that a moved DP bears a subscript/bindee/inner index distinct from that of its trace, whose subscript/bindee/inner index is identical to the moved DP's λ/binder/outer index. Quantificational DPs like *every man*, which are nonreferential, do not bear an inner index.

(5) Only John$_i$ loves his$_i$ mother.

    a. Only John$_1$ λ2 t$_2$ loves his$_1$ mother.   COREFERENCE
        'John loves John's mother and no one else loves John's mother.'

    b. Only John$_1$ λ2 t$_2$ loves his$_2$ mother.   BINDING
        'John loves John's mother and no one else loves their own mother.'

(6) Every man$_i$ said that only he$_i$ loves his$_i$ mother.

    a. Every man λ1 t$_1$ said that only he$_1$ λ2 t$_2$ loves his$_1$ mother.   COBINDING
        'Every man x said that x loves x's mother and that no one else loves x's mother.'

    b. Every man λ1 t$_1$ said that only he$_1$ λ2 t$_2$ loves his$_2$ mother.   TRANSITIVE BINDING
        'Every man x said that x loves x's mother and that no one else loves their own mother.'

On the compulsory binding approach, then, coreference and cobinding LFs are permissible just in case they yield truth conditions distinct from those of their binding and transitive binding counterparts, respectively.

2.2 Violation Equivalence

An alternative approach to binding, variously implemented by Heim (1993), Reinhart (2006), and Roelofsen (2010), does not adopt the compulsory binding camp's premise that there is a grammatical preference for maximally local binding. In this family of theories, which I call VIOLATION EQUIVALENCE theories, what is impermissible is any LF whose interpretation is indistinguishable from a competitor that violates a binding condition.

An initial comparison between the families of approaches is shown in (7) and (8). Compulsory binding is represented here by HLB, whose definition is repeated in (7). For the violation equivalence approach, I follow the implementation of Roelofsen (2010), who formulates a condition he dubs Rule S, defined in (8).

(7) HLB: For any two NPs α and β, if α could semantically bind β (i.e., if it c-commands β and β is not semantically bound in α's c-command domain already), α must semantically bind β, unless that changes the interpretation (Büring 2005: 270)

(8) Rule S: Any interpretation of a given clause X that could be obtained via a logical form of X that violates Condition B (or other syntactic constraints on binding) is illicit (Roelofsen 2010: 134)

A virtue of both approaches is that they fit well with a very simple formulation of Condition B, a point emphasized by both Büring and Roelofsen. In particular, they permit the formulation of a Condition B that regulates only semantic binding (i.e. configurations in which the pronoun is interpreted as a bound variable), imposing no restrictions on syntactic binding (coindexation with an antecedent DP).[2] Consider the sentence *John$_i$ loves him$_i$*, for which syntactic binding is shown in (9a) and semantic binding is shown in (9b).

(9) a. John$_1$ λ2 t$_2$ loves him$_1$ (syntactic binding)
    b. John$_1$ λ2 t$_2$ loves him$_2$ (semantic binding)

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[2]In my LF representations here, semantic binding amounts to binding by the sister of a c-commanding coindexed λ. Everything that I have to say here is equally compatible with approaches in which binding (semantic or syntactic) does not require c-command (Fiengo & May 1994, Safir 2004, Barker 2012).

The sentence is ungrammatical on this indexing/construal. If Condition B regulates only semantic binding, then Condition B cannot tell the whole story of its ungrammaticality: it rules out the LF in (9b), but not the one in (9a). The pronoun in (9a), despite being syntactically bound, is semantically free and is thus assigned a reference, one that coincides with that of the coindexed c-commanding proper name.

In compulsory binding theories, the LF in (9a) is ruled out by the transderivational constraint (Rule I or HLB) barring coreference where it is semantically indistinguishable from binding. In violation equivalence theories, (9a) is instead ruled out because it is semantically indistinguishable from an LF that violates Condition B, namely (9b). What is crucial is the fact that (9b) violates the binding conditions; the fact that it involves local semantic binding is purely incidental to Rule S's enforcement mechanism.

The two approaches part ways in cases where local binding does not violate Condition B, a point emphasized by Büring (2005) in his comparison of Heim (1993) and Fox (2000). In (10), where the local domain for possessive *his* is the possessive DP rather than the whole clause, compulsory binding will rule out the syntactic binding LF in (10a) (via Rule I or HLB) due to its semantic indistinguishability from the semantic binding LF in (10b). Rule S, by contrast, will permit (10a), since the semantically indistinguishable (10b) does not violate Condition B.

(10) a. John$_1$ λ2 t$_2$ loves his$_1$ mother   (syntactic binding)
      b. John$_1$ λ2 t$_2$ loves his$_2$ mother   (semantic binding)

Rule S thus permits both the coreference/syntactic binding LF in (10a) and the (semantic) binding LF in (10b), unlike HLB, which permits only the latter. On this basis, compulsory binding and violation equivalence can make divergent empirical predictions when combined with particular assumptions about ellipsis licensing.

3   Referential Parallelism

The compulsory binding approach entails a particular view of identity under ellipsis. Specifically, an ellipsis antecedent that contains binding must be able to license both strict and sloppy identity. In an example like (11), where the strict and sloppy readings are both available, Rule I/HLB rules out the coreference LF in (11a-i), leaving the binding LF in (11a-ii) as the only available ellipsis antecedent for both the strict and sloppy LFs in (11b).

(11)   John$_i$ loves his$_i$ mother and Bill$_j$ does too.
      a. Antecedent LF: binding only (per Rule I/HLB)
          (i)   ~~John$_1$ λ2 t$_2$ loves his$_1$ mother~~   ~~COREFERENCE~~
          (ii) John$_1$ λ2 t$_2$ loves his$_2$ mother   BINDING
      b. Ellipsis LF: binding…or not
          (i)   Bill$_3$ λ4 t$_4$ does <love his$_1$ mother> too   STRICT
          (ii) Bill$_3$ λ4 t$_4$ does <love his$_4$ mother> too   SLOPPY

The licensing of the sloppy reading is unsurprising: a pronoun with a bound-variable interpretation in the elided VP corresponds to a pronoun with a bound-variable interpretation (bound from a parallel syntactic position) in the antecedent. All theories of ellipsis licensing are designed to generate this core

result. The challenge for compulsory binding comes from the strict reading, where the bound-variable pronoun in the antecedent corresponds to a free pronoun in the elided VP.

With this challenge in mind, Fox proposes the following condition on ellipsis licensing:

(12)   NP Parallelism (Fox 2000: 117):
        NPs in the antecedent and elided VPs must either
        a.   have the same referential value (Referential Parallelism) or
        b.   be linked by identical dependencies (Structural Parallelism)

On Fox's approach, the strict reading of (11) is licensed by Referential Parallelism: the referential value of the bound-variable *his* in the ellipsis antecedent is identical to the referential value of its binder, *John*, which in turn permits ellipsis of a VP in which *his* has that same value. The sloppy reading is licensed by Structural Parallelism: the bound-variable pronouns in the antecedent and elided VPs are bound by the subject in each clause, and the pronouns themselves occupy parallel positions vis-à-vis the subjects.

Referential Parallelism (or a functional equivalent) is necessary in order to reconcile the compulsory binding approach to pronominal interpretation with the existence of strict readings under ellipsis. Violation equivalence theories, by contrast, require no such addendum. Since binding does not violate Condition B in (11a), violation equivalence theories permit both the coreference and binding antecedent LFs. With this much in place, the strict reading is licensed by taking the coreference LF as the ellipsis antecedent (on just about any theory of ellipsis licensing).

What are we to make of Referential Parallelism, and what are the stakes of the investigation? The remainder of the paper constitutes an attempt to answer these questions. First, note that the appropriateness of Referential Parallelism cannot be straightforwardly assessed on the basis of examples like (11), where the coreference and binding antecedent LFs are semantically indistinguishable. Instead, we must look for cases where coreference and binding come apart semantically, and check the ellipsis facts. As to the stakes: a clear result, if we can obtain one, will have important consequences for binding. Given compulsory binding's reliance on Referential Parallelism to derive core ellipsis facts, a convincing demonstration of Referential Parallelism's failings would spell trouble for compulsory binding more broadly.

4   Binding–Strict Configurations

That Referential Parallelism might overgenerate strict readings was noticed by Roelofsen (2010), who gives the example in (13) (his (28)). As Roelofsen notes, Referential Parallelism appears to predict that this example should have an available reading on which Bob was the only person who called their own mother yesterday, and Max is the only person who called Bob's mother today; this is the reading generated when *his* is bound in the antecedent VP and free in the elided VP, licensed via Referential Parallelism. No such reading is available.

(13)   Yesterday, only Bob_i called his_i mother. Today, only Max_j did.

Roelofsen (2010: 126) concedes the possibility that "there may be constraints on VP ellipsis *besides* [NP] Parallelism that rule out the relevant readings"; Roelofsen does not pursue the matter further, and as far as I am aware it has not been taken up elsewhere in the literature. Here I show that the

overgeneration of strict readings is systematic, and I suggest that there is nothing that would lead us to expect Referential Parallelism to be suspended in the relevant cases.

The crucial characteristic of Roelofsen's example is that coreference and binding in the ellipsis antecedent are truth-conditionally distinct (in this case, due to the presence of *only*). Unlike examples like (11), where the semantic neutralization of coreference and binding makes it impossible to directly assess correlations between the LF structure of the antecedent and the range of available readings under ellipsis, cases like (13) make the structure of the antecedent semantically transparent, which in turn opens up the ellipsis correlations to investigation.

What we find in such cases is a systematic correlation between the LF structure of the antecedent and the range of available readings under ellipsis: coreference in the antecedent is associated only with a strict reading, and binding in the antecedent only with a sloppy reading. This runs counter to the prediction of compulsory binding and Referential Parallelism, which license thoroughgoing strict/sloppy ambiguity when there is binding in the antecedent.[3] Examples are shown in (14) and (15).

(14)   Only John$_i$ called his$_i$ mother. Bill$_j$ didn't.

    a.   Coreference–strict: 'John called John's mother and no one else called John's mother. Bill didn't call John's mother.'

    b.   *Coreference–sloppy: 'John called John's mother and no one else called John's mother. Bill didn't call Bill's mother.'

    c.   *Binding–strict: 'John called John's mother and no one else called their own mother. Bill didn't call John's mother.'

    d.   Binding–sloppy: 'John called John's mother and no one else called their own mother. Bill didn't call Bill's mother.'

(15)   Mary only said that JOHN$_i$ called his$_i$ mother. Alice added that Bill$_j$ did too.

    a.   Coreference–strict: 'Mary said that John called John's mother and Mary didn't say that anyone else called John's mother. Alice added that Bill called John's mother.'

    b.   *Coreference–sloppy: 'Mary said that John called John's mother and Mary didn't say that anyone else called John's mother. Alice added that Bill called Bill's mother.'

    c.   *Binding–strict: 'Mary said that John called John's mother and Mary didn't say that anyone else called their own mother. Alice added that Bill called John's mother.'

    d.   Binding–sloppy: 'Mary said that John called John's mother and Mary didn't say that anyone else called their own mother. Alice added that Bill called Bill's mother.'

Of particular interest here is the unavailability of the binding–strict configuration in (14c) and (15c), where the bound reading of the pronoun in the ellipsis antecedent (now distinguishable from its coreferential counterpart) is paired with strict identity under ellipsis. This is precisely the configuration that Referential Parallelism is devised to permit, in order to license strict readings for cases where coreference and binding are indistinguishable in the antecedent (and thus where, per compulsory binding, only binding is permitted). Once we make it possible to detect correlations between the LF structure of the antecedent and the available readings under ellipsis, we find correlations that are

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[3]Of course, the availability of a strict reading ultimately depends on the presence of a referential binder for the elided pronoun's bound correspondent in the ellipsis antecedent. Referential Parallelism does not predict a strict reading for an example like *Every boy$_i$ called his$_i$ mother, and John$_j$ did too.*

systematic and that cast serious doubt on Referential Parallelism. This, in turn, dims the prospect of pairing compulsory binding with a satisfactory theory of ellipsis licensing.[4]

Turning to transitive binding and cobinding, we find an analogous state of affairs. In cases where transitive binding and cobinding are semantically equivalent (and where compulsory binding thus mandates transitive binding), an ambiguity is available under ellipsis, as in (16). But when an operator like *only* allows us to distinguish transitive binding from cobinding in the antecedent, we observe strict correlations between cobinding and strict identity on the one hand, and between transitive binding and sloppy identity on the other, as shown in (17).

(16) Every boy$_i$ claims that he$_i$ loves his$_i$ mother and knows that John$_j$ does too.

    a.   Strict: 'Every boy b claims that b loves b's mother and knows that John loves b's mother.'

    b.   Sloppy: 'Every boy b claims that b loves b's mother and knows that John loves John's mother.'

(17) Every boy$_i$ claims that only he$_i$ loves his$_i$ mother but secretly knows that John$_j$ does too.

    a.   Cobinding–strict: 'Every boy b:
        (i)   claims that b loves b's mother and no one else loves b's mother but
        (ii)   secretly knows that John loves b's mother'

    b.   *Cobinding–sloppy: 'Every boy b:
        (i)   claims that b loves b's mother and no one else loves b's mother but
        (ii)   secretly knows that John loves John's mother'

    c.   *Transitive binding–strict: 'Every boy b:
        (i)   claims that b loves b's mother and no one else loves their own mother but
        (ii)   secretly knows that John loves b's mother'

    d.   Transitive binding–sloppy: 'Every boy b:
        (i)   claims that b loves b's mother and no one else loves their own mother but
        (ii)   secretly knows that John loves John's mother'

It should come as no surprise that transitive binding and cobinding obey a set of restrictions analogous to what we observe for binding and coreference. The parallels between these two sets of phenomena—and the notion that they point to a common grammatical basis—are the subject of Heim's (1993) groundbreaking work. But they spell further trouble for compulsory binding theories, making plain the generality of the ellipsis licensing problem they encounter.

All told, the facts appear rather damaging for Referential Parallelism and compulsory binding. Heeding Roelofsen's advice, we cannot exclude the possibility that some unknown condition on VP ellipsis rules out the binding–strict configuration on independent grounds. But it is remarkable, to say the least, that the binding–strict configuration should vanish just as soon as we have identified a reliable means of detecting it. Certainly nothing in Referential Parallelism leads us to expect that an ellipsis antecedent with a locally bound pronoun should cease to license a strict reading just in case it has a truth-conditionally distinct counterpart LF with a free (or nonlocally bound) pronoun.

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[4]For (14c), one might object that since a binding LF in the antecedent entails the sloppy reading—if no one other than John called their own mother, then it follows that Bob didn't call his own mother—the strict reading is independently disfavored. (One could just as easily imagine that this setup might favor the strict reading, since the strict reading conveys new information rather than affirming an entailment of what has already been said.) No such entailment, however, is found in (15), where the focused embedded subject *John* associates with *only* in the matrix clause and the binding–strict configuration remains unavailable.

5 Binding–Strict: A Closer Look

A defender of Referential Parallelism might at this point object that the antecedents of the problematic strict pronouns discussed above do not in fact have referential values. If that is the case, then Referential Parallelism is not satisfied and no strict reading is predicted to be licensed; more broadly, the binding–strict problem for Referential Parallelism and compulsory binding might vanish upon closer inspection. In this section, I investigate this possibility. As we will see, the conclusions we draw will depend on how we choose to flesh out and formalize the definition of Referential Parallelism, since Fox (2000) leaves certain key issues unaddressed. Ultimately, I conclude that it will take a relatively unmotivated constellation of choices to eliminate the binding–strict problem.[5]

Here is how the objection goes. The exclusive particle *only* composes with a prejacent proposition. *Only* presupposes the truth of the prejacent and asserts that no available alternative to the prejacent is true.[6] A sentence like *Only John$_i$ called his$_i$ mother*, on a binding LF with focus on the subject, presupposes that John called John's mother and asserts that no relevant alternative to John is such that that person called their own mother. That is to say, the pronoun *his* is interpreted as a bound variable whose binder varies across the alternatives negated by *only*. It thus fails to have a referential value: it has the value John in the presupposed prejacent, but its value in the assertion varies with the values quantified over by *only*. If this sentence serves as an ellipsis antecedent, it will therefore license only sloppy identity. Absent a referential value for the bound pronoun in the ellipsis antecedent, Referential Parallelism fails and no strict reading is licensed.

The question we must answer, then, is what qualifies a bound pronoun in an ellipsis antecedent as having a referential value. Fox's original definition distinguishes referential from quantificational binders of such pronouns. What is left for us to determine is whether variation across alternatives is analogous to quantification for present purposes, whether it matters which semantic dimension such variation occurs in, and possibly other related questions. I address the first two here.

Does a pronoun bound by a focused referring expression have a referential value? We implicitly answered this question in the affirmative above in section 4, when arguing that Referential Parallelism erroneously licenses ellipsis in binding–strict configurations. Our hypothetical defender of Referential Parallelism in the present section instead answers in the negative, on the grounds sketched immediately above. It is somewhat difficult to bring independent evidence to bear, as identity under ellipsis—precisely the matter at issue here—is one of the few diagnostics available to us.

We can observe that the phrase *only John* makes John an anaphorically available discourse referent: even on the binding reading of *Only John$_i$ called his$_i$ mother*, we can continue the discourse by saying *Then he$_i$ ate dinner*. Insofar as the antecedent's referential availability is a necessary condition for a bound pronoun to have a referential value, the condition would be satisfied here if we could take John to be the antecedent. But it is not clear that we can. Fiengo & May (1994: 114ff.), for instance, take the phrase *only John* to be a quantificational DP with an index distinct from that of *John*. Büring (2005: 263) observes that focused DPs exhibit their exceptional binding behavior even when they associate with *only* at a distance instead of forming a syntactic constituent with *only*. Heim (2009) counters that even in such cases of long-distance association, the index associated with the focused DP is distinct from the index of the (larger) focus phrase itself, which she takes to include a syntactic head, F, as in

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[5]The discussion in this section was prompted by a particularly thoughtful and probing set of comments from an anonymous reviewer, to whom I am grateful.

[6]Accounts differ on the status of *only*'s prejacent, but most everyone agrees that the negation of alternatives is part of the asserted content (for a recent overview, see Coppock & Beaver 2014).

(18).[7]

(18)   [[John$_1$] F] λ2 t$_2$ called his$_2$ mother   (after Heim 2009)

If we adopt this basic syntactic picture, then it is the larger focus phrase (and not the focused DP within) that serves as the binder of the pronoun. The crucial questions for Referential Parallelism then are whether this larger focus phrase has a referential value and, if not, whether the pronoun it binds may take on the referential value of the focused DP within.

Let us stipulate that the answer to the latter question is no: the larger focus phrase is the binder and thus the pronominal antecedent, and only its semantic value is relevant for determining whether the bound pronoun can have a referential value. Even with this much in place, it is hard to arrive at a principled answer to our remaining question. On the one hand, the semantic value of the bound pronoun will vary along with the alternatives to the phrase in focus, something that is semantically akin to quantification (indeed, something that explicitly involves quantification over this position in many implementations of the semantics of *only*) and thus speaks against the pronoun's having a referential value. On the other hand, in Rooth's (1992a) widely adopted theory of focus interpretation, the ordinary semantic value of a focused referring expression is simply that expression's reference; all else being equal, we would expect this referential value to be available to any pronoun the focus phrase binds. Absent a principled way of resolving the matter, I leave it unsettled here, hoping simply to have clarified the stakes for Referential Parallelism.

As to the second question raised above, we can observe that the absence of binding–strict readings holds across semantic content types. Our hypothetical objector, in claiming that a pronoun bound by a focused referential DP lacks a referential value, cannot base this claim on the prejacent proposition's being relegated to the nonasserted portion of the sentence's semantic content. This claim works for *only*, as sketched above, but fails for *even*. With *even*, the prejacent proposition is asserted and the alternatives contribute either a presupposition or a scalar implicature, depending on the implementation (for a recent overview, see Erlewine 2014). Consider (19).

(19)   Even John$_i$ called his$_i$ mother, but Bill$_j$ didn't.
   a.   Coreference–strict: 'John called John's mother, though John was the person least likely to call John's mother. Bill didn't call John's mother.'
   b.   *Coreference–sloppy: 'John called John's mother, though John was the person least likely to call John's mother. Bill didn't call Bill's mother.'
   c.   *Binding–strict: 'John called John's mother, though John was the person least likely to call their own mother. Bill didn't call John's mother.'
   d.   Binding–sloppy: 'John called John's mother, though John was the person least likely to call their own mother. Bill didn't call Bill's mother.'

The binding–strict configuration remains unavailable with *even*. This is important, as it shows that the unavailability of binding–strict configurations in examples like (14c) and (15c) is not merely an artifact of the presuppositional status of the prejacent of *only*. In other words, if we restrict our attention to the asserted content of an example with *only*, one might plausibly claim that the bound pronoun lacks a referential value, as detailed above. But doing the same with *even* yields a proposition

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[7]Heim (2009) parts ways from Heim (1993), Büring (2005), and others in proposing that contraindexing precludes the possibility of coconstrual. I do not adopt this assumption here.

where the bound pronoun has a referential value by just about anyone's lights. To argue that a pronoun bound by a focused referential DP cannot have a referential value, then, our objector must base the argument on the totality of the sentence's semantic content, across content types.

Finally, note that we can reproduce the unavailability of binding–strict across *only* and *even*: (20a) cannot mean that yesterday John was only person who called their own mother while today even Bill called John's mother, and (20b) cannot mean that yesterday John was the least likely own-mother-caller while today only Bill called John's mother.

(20)   a.   Yesterday, only John$_i$ called his$_i$ mother. Today, even Bill$_j$ did.
        b.   Yesterday, even John$_i$ called his$_i$ mother. Today, only Bill$_j$ did.

To summarize: the question of whether Referential Parallelism licenses binding–strict configurations depends on the underlying question of whether a focused referential DP has a referential value. To arrive at an answer, we must fill in some blanks left by Fox (2000), and this requires us to make a variety of choices, with limited independent evidence to turn to. I maintain that the resulting picture, if not as dire as it may have appeared in section 4, is not altogether rosy for Referential Parallelism. In particular, to eliminate the threat of binding–strict licensing, the defender of Referential Parallelism must say that a focused referential DP fails to have a referential value even when that is its Roothian ordinary semantic value in the asserted content of the sentence. Meanwhile, the broader theoretical stakes are not confined to ellipsis. Insofar as compulsory binding depends on Referential Parallelism to account for core cases of strict identity, a blow against Referential Parallelism will shake the foundations of compulsory binding.

6   Referential Parallelism in the Ellipsis Landscape

Referential Parallelism provides a way for semantic binding in an ellipsis antecedent to license something other than sloppy identity. In this section I briefly review other configurations that share this profile. As we will see, Referential Parallelism does not appear to form a natural class with any of them. This, in turn, reinforces the impression that Referential Parallelism is theoretically isolated and thus a good candidate for elimination.

Quantificational binding in an ellipsis antecedent sometimes supports a reading akin to strict identity (Dalrymple, Shieber & Pereira 1991, Fiengo & May 1994, Elliott, Nicolae & Sudo 2014). Consider the examples in (21), from Elliott, Nicolae & Sudo (2014).

(21)   a.   None of the authors proofread his paper. So the editor did instead.
        b.   John told me that every boy revised his paper. In that case, Prof. Jones mustn't have.

In (21a), we can understand VP ellipsis to be resolved such that the editor proofread the authors' papers, and in (21b) such that Prof. Jones mustn't have revised the boys' papers. The occurrences of *his* in these ellipsis antecedents thus support something other than sloppy identity despite being quantificationally bound. Could Referential Parallelism be an instance of this same phenomenon?

There are at least a few reasons to doubt that it is. Elliott, Nicolae & Sudo propose that the elided VP in a case like this contains an E-type pronoun, not an ordinary free pronoun. While we could treat the free pronoun found in ordinary strict identity as a limiting case of an E-type pronoun (where the description involved is that of being identical to the antecedent's referential value), this move is

otherwise unmotivated and may entail various complications.[8] Moreover, there is a key empirical disparity: the E-type readings shown in (21) are sensitive to discourse coherence relations in a way that ordinary strict identity is not. As Elliott, Nicolae & Sudo (2014: 650) put it, such readings "should not be found in the canonical examples of VPE of the form 'DP VP, and DP <VP>, too'". But these are just the core VP ellipsis cases where Referential Parallelism is called upon to explain strict identity.

Another case where we find strict identity with an apparently bound correspondent in the ellipsis antecedent is that of strict reflexives, as in (22) (Dahl 1973, Sag 1976).

(22)   John voted for himself, but Bill didn't.

There is an available reading of (22) where we understand that Bill didn't vote for John. The antecedent VP contains the reflexive *himself*, which is obligatorily bound according to Condition A. Do strict reflexives constitute a licit instance of the type of binding–strict configuration required by compulsory binding with Referential Parallelism?

Once again, there is reason to doubt the parallel. Fiengo & May (1994: 205ff.) propose an analysis in which reflexives come in two varieties, with the pronominal portion of the reflexive (i.e. the *him-* in *himself*) able to be either referentially dependent or referentially independent. That is, their account of strict reflexives depends on something like a violation equivalence approach to binding. The existence of strict reflexives is thus not in and of itself a point in favor of compulsory binding and Referential Parallelism.

What this brief review shows is that, even among VP ellipsis cases where binding in the ellipsis antecedent is paired with something other than sloppy identity, Referential Parallelism remains an outlier. It is far from clear that it can be classified as an instance of some independently attested case. Rather, it constitutes a genuine addition to the theoretical fold, one for which we continue to find the strength of supporting evidence wanting.

7   Implications for Binding

Compulsory binding requires the adoption of Referential Parallelism—or a theory of ellipsis licensing in which Referential Parallelism falls out as a theorem—in order to account for core cases of strict identity. In this section I consider more closely the stakes of abandoning compulsory binding.

Büring (2005) cites as an advantage of compulsory binding the fact that it affords a simple and straightforward definition of Condition B: specifically, one in which Condition B regulates only semantic binding. This, in turn, allows us to dispense with Heim's (1993) notion of codetermination, which is invoked to rule out LFs in which a pronoun is semantically bound at a distance by an item coconstrued with an illicitly close potential binder. As Roelofsen (2010) observes, however, violation equivalence theories can also rule out such sneaky derivations without complicating the definition of Condition B. We saw this above in the discussion of (9), but it holds quite generally: the existence of a semantically equivalent LF that violates Condition B (i.e. an LF with illicit local semantic binding of the pronoun in question) will be enough to trigger a violation of Rule S. Giving up compulsory binding thus does not entail giving up a conceptually simple and straightforward Condition B.

Another advantage claimed for compulsory binding by Fox (2000) and Büring (2005) is the ability

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[8] For approaches utilizing E-type pronouns to explain unexpected sloppy readings, see Tomioka (1999), Elbourne (2008), and Keshet (2013).

to account successfully for Dahl's puzzle (Dahl 1973). This is an ellipsis identity puzzle involving an unexpected paradigm gap in which a sloppy pronoun cannot be c-commanded by a strict pronoun when their correspondents in the ellipsis antecedent are coconstrued. For example, (23) lacks a reading of the elided clause on which Bill said that John called Bill's mother (a strict–sloppy reading; meanwhile, the strict–strict, sloppy–sloppy, and sloppy–strict readings are all available).

(23)   John$_i$ said that he$_i$ loves his$_i$ mother, and Bill$_j$ did too.

Dahl's puzzle specifically implicates Rule H, as the missing reading is one that would be derived if the lowest pronoun (*his*) could be semantically bound by something other than the structurally closest potential binder on the reading in question. Violation equivalence theories will permit such an LF for the ellipsis antecedent, leaving them without a straightforward account of the strict–sloppy reading's unavailability (on standard assumptions about ellipsis licensing).

While the classic Dahl cases remain a challenge for violation equivalence theories of binding, it is not clear that compulsory binding fares better on the whole in this area. Roelofsen (2011) identifies a number of cases where sloppy identity is licensed at a distance even when there is a closer coconstrued binder in the ellipsis antecedent, something that Rule H (together with Fox and Büring's reliance on licensing via structural parallelism) incorrectly rules out. Consider (24), where the elided VP can be understood to mean that the professor loved every student's paper.

(24)   Every student$_i$ said that she$_i$ loved her$_i$ paper and added that the professor$_j$ did too.

We should thus be wary of according too much weight to the classic Dahl cases in assessing the benefits of compulsory binding. But such cases do bear quite a significant burden in motivating the compulsory binding approach. As Heim (2009) puts it, "It is worth…pointing out how much rides on the Dahl puzzle…. The discussion in Fox and Büring did not convey this impression. It rather suggested that the solution to this puzzle came as an added benefit to an independently motivated solution to the problems of native B[inding]T[heory]." In moving to jettison Referential Parallelism and compulsory binding, we would not necessarily be losing things we cannot do without.

8   Consequences for Ellipsis Licensing

Finally, it bears emphasizing that the violation equivalence approach to binding is quite compatible with Fox's (2000) approach to ellipsis licensing, stripped of its Referential Parallelism clause. Fox's approach is essentially an adaptation of Rooth (1992b) stated on syntactic LFs rather than semantic values; for discussion, see Fox (2000: 85, fn. 8).[9] Many of the interesting results of Fox's framework regarding scope and accommodation in ellipsis licensing can survive the shift from compulsory binding to violation equivalence completely intact.

There is a further interesting consequence of Fox's adaptation of Rooth: it allows us to state a licensing condition that is sensitive to the difference between binding and coreference (or local and nonlocal binding) even when they are semantically indistinguishable. It thus offers a straightforward way to avoid licensing binding–strict configurations altogether. I show Rooth's semantic licensing

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[9]In this respect, Fox's licensing mechanism has important features in common with Fiengo & May's (1994) notion of a *reconstruction*.

condition alongside Fox's condition (restated in terms of formal alternatives; Katzir 2007, Fox & Katzir 2011) in (25).[10]

(25)   Semantic licensing condition on VP ellipsis: there is a constituent E dominating the elided VP and a nonoverlapping constituent A dominating the antecedent VP such that:

    a.   *Stated on semantic values* (Rooth 1992b, Heim 1997):[11]
        The ordinary semantic value of A is an element of the focus semantic value of E;
        Schematically: $[\![A]\!]^g_o \in [\![E]\!]^g_f$, for all g

    b.   *Stated on LFs* (after Fox 2000; cf. Fiengo & May 1994):
        A is a formal alternative of E;
        Schematically: $A \in F(E)$

The mapping from LF to semantic interpretation is the point of neutralization for semantically indistinguishable LFs. A licensing condition stated on semantic values, such as Rooth's, will be insensitive to the binding/coreference distinction in such cases, since it is defined on the post-neutralization objects. A licensing condition stated on LFs, such as Fox's, will be able to tell binding and coreference apart, since it is defined on the pre-neutralization objects.

If we assume that formal alternatives preserve binding relationships, then a semantic licensing condition like the one in (25b) will bar binding–strict configurations across the board.[12] As discussed in section 5, it is difficult to bring independent evidence to bear on the question of whether binding–strict configurations are predicted to be licensed in the crucial cases where binding and coreference are semantically distinguishable. But given the doubt cast above on Referential Parallelism, I take it as an interesting and promising sign for the condition in (25b) that its very design prohibits the licensing of binding–strict configurations. Note further that Rooth's syntactic licensing condition also follows from the semantic condition in (25b): if A is formal alternative of E, then the VP in A will be structurally identical to the elided VP in E.[13]

9   Summary

Our point of departure was the fruitful intertwinedness of binding and ellipsis, the ways in which each phenomenon reveals otherwise hidden facts about the other. We arrive at the end having seen how the need to prune back proposals in one area can entail root-and-branch extraction in the other. We

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[10] Formal alternatives are LFs formed by replacing focus-marked constituents in the source LF (subject to certain restrictions that do not concern us here).

[11] Rooth and Heim also assume a syntactic licensing condition, according to which the elided and antecedent VPs must be structurally identical modulo indices.

[12] The only exception to this in principle would be in cases of accommodation (Fox 2000: ch. 3). It is not clear that an appropriate case can be constructed in practice, given Fox's constraints on accommodation-seeking material.

[13] An intriguing exception is in cases where there is focus-marked material within VP. This occurs, for example, with passive subjects that undergo scope reconstruction at LF, as in (i). Merchant (2018: 258) argues (contra Heim 1997) for the admissibility of such configurations, writing "F-marking per se inside an ellipsis site is fine, as long as the pitch accent associated with the F-marked material is outside the ellipsis site at PF." The condition in (25b) successfully licenses ellipsis in (i), even under the assumption that the indefinites are reconstructed back inside their respective VPs at LF.

(i)   A unicorn was hoped for, and [a dragon]$_F$ was too.   (Merchant 2018)

have seen a number of reasons to question the inclusion of Referential Parallelism in the theory of ellipsis licensing. While independent factors conspire to prevent us from finding definitive evidence against it, the circumstantial case is strong. This, in turn, imperils compulsory binding.

Happily, there is an alternative framework for understanding the transderivational constraints on pronoun interpretation—violation equivalence—that we can adopt in place of compulsory binding. The broader consequences for our understanding of ellipsis largely remain to be explored. The Fox-style semantic licensing condition in (25b) has a number of potentially interesting features: prohibition of binding–strict configurations, semantic and syntactic licensing under one roof, and the ability to license ellipsis in cases of VP-internal focus. Further investigation of these properties, and of the condition's integration into the wider world of ellipsis licensing, must await future work. For now, I hope to have shown that a detailed consideration of Referential Parallelism, culminating in its suggested removal, has led us to an interesting point.

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