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FREEING POSSESSED NPS FROM BINDING THEORY*

Jeffrey T. Runner
University of Rochester

The assumed complementarity of pronouns and reflexives in possessed "picture" noun phrases (NPs), e.g., *Bill$_j$'s picture of him$_{i/*j}$/himself$_{j/*i}$*, has led to the standard analysis that the Binding Theory (BT) is responsible (

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by Binding Theory, the reflexive in (1a) can take the subject as its antecedent, contra Binding Theory.

The arguments in favor of treating these reflexives as BT-exempt rather than structurally bound reflexives are laid out in Section 4, and come from the observation that they are a type of "coreferential" rather than "bound variable" anaphora; this is revealed by their behavior in the *only* construction, as well as in VP ellipsis and NP ellipsis constructions. Further empirical support for this claim comes from an eye-tracking study reported by Runner (2003), which also found that in NP ellipsis constructions participants interpreted these reflexives as coreferential anaphora.

Finally, having settled on the claim that th8 Tm(e)Tj12 0 12 0 0 12 223um(839.6801 Tm( )Tj 77.28 60

2. Background

2.1 Basic Binding

Consider (2)-(4):

(2) a. [$_S$ Bill$_i$ saw him$_{j/*i}$]
b. [$_S$ Bill$_i$ saw himself$_{i/*j}$]
(3) a. [$_S$ Bill$_i$ saw a picture of himself$_{i/*j}$]
b. [$_S$ Bill$_i$ saw a picture of him$_{j/*i}$]
(4) a. John$_i$ saw [$_{NP}$ Bill$_j$'s picture of himself$_{j/*i}$]
b. John$_i$ saw [$_{NP}$ Bill$_j$'s picture of him$_{i/k/*j}$]

Examples like these have motivated the important observation that reflexives and pronouns appear to be in complementary distribution. In particular, reflexives must find an antecedent (=must be "bound") and pronouns must not find an antecedent (=must be "free"), within (the same) local domain, roughly a clause or NP containing a possessor. The now traditional approach to accounting for the patterns illustrated in (2)-(4) is Chomsky's (1981) Binding Theory, a simplified version of which is given here:

(5) Binding Theory
Condition A: a reflexive must be bound in D.
Condition B: a pronoun must be free in D.

D, the local domain in which binding must or must not take place given the examples in (2)-(4), is S or possessed NP. Binding is defined as follows:

(6) Binding: A binds B iff A c-commands B, and A and B are coindexed.
C-command: a node A c-commands a node B iff the first branching node

(8) a. I told Albe

b. *JOHN$_i$ didn't tell Mary that there was a picture of himself$_i$ in the post office;
S

2.4 A Way to Save Binding Theory?

Some researchers have proposed a way to "save" BT from the criticisms based on picture NPs. The proposal is that a picture NP reflexive is indeed locally bound--to a null pronominal possessor (PRO) in NP. Then it is possible to claim that the null pronominal possessor is what is sensitive to discourse factors, being pronominal (cf., Chomsky 1986, and more recently Davies & Dubinsky 2003).

For example, a sentence like (21a) would have a structure something like (21b), which would be interpreted roughly doul

Without an independent analysis of each of these issues, the PRO-in-NP approach seems to create more problems than it solves.[1]

2.5 In Search of a Binding Theory

What is needed is a binding theory that can account for basic binding as well as picture NPs. There are (at least) two such approaches in the literature: Pollard & Sag (1992, 1994) and Reinhart & Reuland (1993).

Both Pollard & Sag (P&S) and Reinhart & Reuland (R&R) argue that there are two types of reflexive in English. One class obeys a structural Binding Theory; and the other class, sometimes called "logophors", are "exempt" from Binding Theory and are sensitive to pragmatic conditions. The reflexives in possessor-less picture NPs are these logophors, or exempt anaphors.

2.5.1 Pollard & Sag's (1994) HPSG Binding Theory

The intuition guiding P&S's Binding Theory is that binding is calculated on the (lexical) c

(28) a. $Bill_i$ saw $himself_i$
[Arg-St <NP_1, NP_2>]

b. $John_i$ saw [$Bill_j$'s picture of $himself_{j/*i}$]
[Arg-St <NP_1, NP_2>]

c. $John_i$ saw [a picture of $himself_i$]
[Arg-St <NP_1>]

d. $John_i$ said that there was [a picture of $himself_i$] in the post office.
[Arg-St<NP_1>]

In (28a) the predicate *see* has two arguments, *Bill* and *himself*. Since the reflexive does have a more prominent ("o-commanding") co-argument, it must be locally o-bound, which in this case it is. In (28b) the picture noun *picture* is the relevant predicate; it has two arguments, *Bill* and *himself*. Again, the reflexive does have an o-commanding co-argument--the possessor--and thus must be locally o-bound. This requires the reflexive to take *Bill* as its antecedent and not the NP-external *John*.

In (28c) and (28d) the relevant predicate is again the picture noun *picture*; here, though, the predicate has only one argument, the reflexive *himself*. Since

reflexive *himself* cannot be a SELF anaphor, since that would requi

3. A Probe for Binding Theory

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2. The latency measurement, which indicates how long it takes to resolve the interpretation. This can help us understand how much "competition" from other interpretations is present under various conditions. In cases where BT allows multiple interpretations, latency should increase since multiple readings should be available.
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NPs probabilistically avoid taking a sentence-internal antecedent, and reflexives in possessed picture NPs probabilistically prefer to take a possessed picture NP-internal antecedent.

Since the claim of this hypothesis is that these conditions are (only) probabilistic, "violations" will occur on some proportion of trials. Thus, on a

Figure 2. Predictions of Probabilistic Binding Theory

Condition	*Pron preference for Subj*	*Refl pref for Subj*
Subj 1st (more remote)	lower	higher
Subj 2nd (less remote)	higher	lower

Before turning to the results of the lead-in order manipulation, let's look at the overall results. The overall results replicated the findings of the previous experiment. On 88.9% of the pronoun trials, participants chose the relevant picture of the subject or lead-in, violating BT on a

4. BT-exempt Reflexives in Picture NPs with Possessors?

Recall that most approaches to binding assume that reflexives in picture NPs with possessors must be bound to the possessor of the NP (cf., the discussion of (10b), above). This is true of the "basic" (Chomsky 1981) Binding Theory, as well as the approaches pursued by Pollard & Sag (1992, 1994) and Reinhart & Reuland (1993). As we have seen, however, none of these approaches accounts for the observed data: that the reflexive in a possessed picture NP may take the subject of the sentence as antecedent.

Having set aside a probabilistic BT for reflexives and pronouns in possessed picture NPs, two other possible hypotheses seem plausible to consider. The STRUCTURAL

Two constructions are often used to illustrate the distinction between bound variable and coreferential interpretations: the "only" and ellipsis constructions. Consider the following examples (based on R&R, p. 674, Grodzinsky & Reinhart, p. 74):

(36) a. Only Alfred things he is a

What is of interest to us is the fact that sentences like the following seem to be ambiguous in a way similar to the pronoun examples:

(38) a. Only Lucie liked the picture of herself.
b. Lucie liked the picture of herself, and Lili did [e], too.

(38a) can have an interpretation like, "Lucie is the only x, such that x liked the picture of x," or an interpretation like, "Lucie is the only x, such that x liked the picture of Lucie." The former, bound variable, reading is compatible wi

Though judgments can be a bit tricky, given the variability pointed out above, it

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4.3 Ellipsis

4.3.1 VP-ellipsis

Consider the following example:

(41) So Madonna bought Leibowitz's picture of herself before anyone else had the chance to [e]. [e]=[buy Leibowitz's picture of herself]

There are two bound variable interpretations of this sentence, depending on whether *herself* is bound by the possessor or the subject of the sentence. If it is bound by the possessor it can be paraphrased as, "Madonna bought Leibowitz$_x$'s picture of x before anyone else had the chance to [buy x's picture of x]." If the BV is bound by the subject of the sentence there is another possible interpretation, paraphrased as, "Madonna$_x$ bought Leibowitz's picture of x before [anyone else]$_y$ could by Leibowitz's picture of y." In each BV interpretation the *herself* within the elided VP is bound by an antecedent within its local clause.

The coreferential interpretation is one in which the reflexive within the elided phrase takes as its antecedent something in the previous discourse. In (41) that could be *anyone else*, Leibowitz or Madonna. Since the BV interpretation also allows the reflexive to be bound by *anyone else* or by Leibowitz, the only reading that is particular to the coreferential interpretation is one in which Madonna is the antecedent for the reflexive within the elided VP. That particular coreferential interpretation can be brought out in the following context: Consider a galler

Recall from the previous subsection that one way to test the structural vs. BT-exempt reflexive hypotheses is to investigate possessed picture NPs with NP-ellipsis. This study tests this. Participants were again seated in front of a display containing three male dolls and photographs of each of the dolls arranged in a column behind each doll (see photo of display in Figure 1, above). Sample instructions included sequences of such as (45a) followed by (b):

(45) a. Pick up Joe. Have Joe touch Ken's picture of him/himself.
b. Now have Joe touch Harry's <picture

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5.1 Simplest Extension

5.1.1 HPSG

Perhaps the simplest way to extend the HPSG Binding Theory would be

5.2 Argument Structure for Picture NPs?

The simple approach outlined above builds on a commonly held assumption about picture NPs: that they have an argument structure containing both the possessor and the PP. For the approach to work at all we recognize that a noun like *picture* has two arguments. However, since the possessor is not a "subject" or external argument BT does not constrain the reflexive: it is BT-exempt.

5.2.1 Reflexives in Concrete Nominals

A recent article by Davies & Dubinsky (2003) challenges this basic assumption. Based on extraction patterns, Davies & Dubinsky (D&D) argue that there are essentially three different classes of nominal. The differences among the three classes are arguably due to their different types of argument structures.

(59) Complex nominals: *examination*

5.2.3 Reflexivity

The claim that concrete nominals like our picture NPs have no argument structure has consequences for the reflexivity theory. Recall that Condition A refers to syntactic predicates:

(63) A. A reflexive-marked (syntactic) predicate is

5.2.4 HPSG

5.2.4.1 Reflexives

I would like to take D&D's claim that concrete nominals have no participants to mean that they have an empty Arg-St list. This immediately makes a prediction with respect to the HPSG Binding Theory. If a reflexive is associated with a concrete nominal, it will by definition not be locally o-commanded since it will not be associated with an Arg-St. If the reflexive is not locally o-commanded then it is automatically exempted from BT.

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5.2.4.2 Pronouns and Other Dependents in Concrete Nominals

My extension of D&D's analysis of concrete nominals also makes predictions with respect to pronoun binding. Condition B requires that pronouns be o-free; we have seen that indeed pronouns are not bound by the possessor of the picture NP. This suggests that for the purposes of Condition B the possessor and the pronoun are on an Arg-St list associated with the head noun *picture*. So, extending the D&D approach to reflexives in concrete NPs means offering a new explanation for the pronoun facts.

What we need then is a way to talk about how the possessor and the PP associated with a concrete nominal are related, since Condition B is sensitive to this relation. At the same time we do not want to claim that their relation is one of co-arguments on an Arg-St list, since that would entail that a reflexive in such a PP would be a structural reflexive and not a BT-exempt one.

In a recent paper, Bouma, Malouf & Sag (2001) proposed that associated with a head are two structures relevant to what sorts of phrases the head combines with. They maintain the standard assumption that an Arg-St list is lexically specified by a particular head. This list will contain all of the semantic arguments of the head (as well as certain syntactic ones, such as "raised objects", etc.). In addition to this list, however, is a general "dependents" (Deps) list. This new list is made up of all of the elements from the Arg-St list plus

Let's look at each proposal in more detail. The first would require defining re

Now, if all of the binding conditions are stated over the Deps list, then this implies Condition C would be as well. Since these adverbial clauses would be present on the Deps list of the heads *give* and *prepare* in (81) we would have a straightforward explanation for what is wrong with them.[6] This would leave us with the following Binding Theory:

(82) Binding Conditions (final revision)
- A. A locally o-commanded reflexive must be locally d-bound.
- B. A pronoun must not be locally d-bound.
- C. A non-pronoun must not be d-bound.

I will settle on this version of Binding Theory, though it is certainly possible that other considerations may lead us to prefer one of the others outlined in this section.

6. Conclusions and Examples

This article argued that pronouns and reflexives in possessed picture NPs are not in complementary distribution and t

(83) Binding Conditions
A. A locally

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References

Arnold, Jennifer E., Janet G. Eisenbaand, Sarah Brown-Schmidt & John C. Trueswell. 2000. 'The Rapid Use of Gender Information: Evidence of the Time Course of Pronoun Resolution from Eye-Tracking', *Cognition* 76, B13

Manning, Christopher and Ivan A. Sag. 1998. 'Argument Structure, Valence, and Binding', *Nordic Journal of Linguistics*, 107-144.
Pollard, Carl & Ivan Sag. 1992. 'Anaphors in English and the Scope of Binding Theory', *Linguistic Inquiry* 23, 261-303.
Pollard, Carl & Ivan Sag. 1994. *Head-driven Phrase Structure Grammar*, CSLI, University of Chicago Press, Chicago.
Reinhart, Tanya & Eric Reuland. 1993. 'Reflexivity', *Linguistic Inquiry* 24, 657-720.
Ross, John R. 1970. 'On Declarative iij12 0 0 12 247m(i) 0 0 . 187.92 629.52 en29.52 en29.52 12 90. n/0m

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