

## SLOPPY IDENTITY, BINDING, AND CENTERING

It is widely believed that sloppy identity in ellipsis is associated with variable binding, so that (1) receives the analysis in (2) (elided material in parens):

- (1) John<sub>1</sub> loves his<sub>1</sub> cat. Bill<sub>2</sub> does too (loves his<sub>2</sub> cat)
- (2) John<sub>1</sub>  $\lambda x$ .  $x$  loves  $x$ 's cat. Bill<sub>2</sub>,  $\lambda x$ .  $x$  loves  $x$ 's cat
- (3) The police officer who arrested John<sup>1\*</sup> insulted him<sub>\*</sub>, and the one who arrested Bill<sup>2\*</sup> did too. (insulted him<sub>\*</sub>) (Wescoat, 1989)

Although this analysis “has become standard in the semantic literature” (Schwarz, 2000), it has long been known that the binding of sloppy pronouns violates well-known locality conditions on binding – the controller need not c-command the sloppy pronoun, as shown in (3). In this abstract I argue that sloppy identity does not involve binding at all; instead, it can be explained in terms of simple, well-established notions about the processing of pronouns. I borrow from centering theory (Grosz *et al.*, 1995) the notion of a *discourse center* – roughly, the most prominent entity currently under discussion. Furthermore, there is a basic preference for pronouns to refer to the current center. I’ll call this the Centering Preference. Since the centering account makes no direct use of configurational notions such as c-command, it avoids the locality problem. In this abstract I will show that it has a striking additional benefit – it provides a uniform solution to two important problems in the interpretation of pronouns: the widely discussed two-pronoun puzzle in ellipsis (see e.g. (Fox, 2000)), and a problem due to (Percus and Sauerland, 2003) involving attitude reports with two pronouns, which I will call the attitude puzzle.

Following (Hardt, 1999), I use \* to indicate the discourse center. This can be thought of as position 0 in the assignment function. The superscript \* indicates that an expression’s denotation becomes the new value for the center. Subscript \* indicates a reference to the current center. Note that the value of the center is also the value of some ordinary position in the assignment function. So, for example, John<sup>1\*</sup> causes *John* to become the value of both 0 and 1 in the assignment function. It is clear that the centering account is not subject to the locality problem. In (3), the pronouns refer to the center, and the occurrence “Bill” causes a center shift from John to Bill. Consider now the ellipsis 2-pronoun puzzle:

- (4) John said he saw his mother. Bill did too (said he saw his mother).

There are potentially four readings for the two pronouns in the ellipsis site: 1. John-John 2. Bill-Bill 3. Bill-John 4. John-Bill. While all four readings are permitted by the variable binding account, in fact the 4th reading (“Bill said John saw Bill’s mother”) is generally agreed to be impossible. There are two key points in explaining this: first, the centering approach rules out “mixed” readings, since sloppy identity is a result of a center shift from John to Bill. Thus, either there is no center shift, in which case all pronouns must remain strict, or there is a center shift, and all pronouns are sloppy. The second key point is that Reading 3 can be represented as an unmixed reading, while this is not possible for Reading 4. This second point is simply an observation that holds independently of the centering proposal.

To see this, let us examine Readings 3 and 4 in more detail: for Reading 3, “he” is sloppy – so there must be a center shift. The “offending pronoun” “his” is interpreted as strict. In Reading 4, the center shift is again required, to allow “his” to get a sloppy reading, and “he” is the offending pronoun. Note that the offending pronoun in Reading 3 is embedded in a larger NP “his mother”, and this larger NP can be interpreted outside the scope of a propositional verb like “said”. A familiar way to achieve this uses QR – we adjoin “his mother” to the matrix VP, leaving a coindexed trace:

- (5) John<sup>1\*</sup> [[his<sub>\*</sub> mother]<sub>3</sub> [said he<sub>\*</sub> saw e<sub>3</sub>]], Bill<sup>2\*</sup> did too (said he<sub>\*</sub> saw e<sub>3</sub>).

With this representation, Reading 3 is permitted – the center shift causes “he” to be interpreted as “Bill”, and  $e_3$  is interpreted as John’s mother. In a dynamic semantics system like that of (Hardt, 1999), the definite description “his mother<sub>3</sub>” sets up John’s mother as the value of 3 in the assignment function, which is made available for the variable  $e_3$  in the following sentence. Finally, note that there is no way to represent Reading 4 in an unmixed way. This is because in Reading 4, the offending pronoun “he” is not embedded. Thus even if one raised “he<sub>\*</sub>”, this would have no effect, since the trace  $e_*$  would remain:

(6) John<sup>1\*</sup> [he<sub>\*</sub> [said e<sub>\*</sub> saw [his<sub>\*</sub> mother]]], Bill<sup>2\*</sup> did too (said e<sub>\*</sub> saw [his<sub>\*</sub> mother]).

We turn now to the attitude puzzle (Percus and Sauerland, 2003), involving the following sentence:

(7) John dreamed that he was marrying his grand-daughter.

In his dream, John believed he was Bill. Percus and Sauerland note that one apparently mixed reading is possible while the other is not – (7) can mean “John dreamed Bill was marrying John’s grand-daughter”, but not “John dreamed John was marrying Bill’s grand-daughter”. Just as in the ellipsis puzzle, we have the following pattern concerning the two pronouns “he” and “his”: 1. John-John 2. Bill-Bill 3. Bill-John 4. John-Bill, with Reading 4 not permitted.

The centering account provides an immediate explanation: just as in the ellipsis puzzle, the offending pronoun “his” can be removed by QR, thus allowing an unmixed representation for Reading 3. The only additional assumption required is that “dream” can optionally cause a center shift, so that the center under the scope of “dream” can shift to Bill. (Note that the account in (Percus and Sauerland, 2003) requires an analogous assumption: propositional verbs like “dream” introduce a set of individual-world pairs  $\langle y, w \rangle$  where  $y$  is a representation of “self” in  $w$ .) We have the following representation for Reading 3, with “his granddaughter” VP-adjoined, as a result of QR:

(8) John<sup>1\*</sup> [his<sub>\*</sub> granddaughter]<sub>3</sub> dreamed<sub>Bill<sup>2\*</sup></sub> he<sub>\*</sub> was marrying  $x_3$

This reading is now permitted because it is unmixed. The only way to derive Reading 4 is the following, which violates the Centering Preference:

(9) John<sup>1\*</sup> dreamed<sub>Bill<sup>2\*</sup></sub> he<sub>1</sub> was marrying [his<sub>\*</sub> granddaughter]

While space does not permit comparison with alternative accounts of these two puzzles, note that the account of the attitude puzzle in (Percus and Sauerland, 2003) does not apply to the ellipsis puzzle, and no alternative account of the ellipsis puzzle applies to the attitude puzzle.

## References

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