1-1-1995

Why `Minimize Restrictor'?

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1   Introduction

I argue that the framework proposed in Reinhart&Reuland(93) is successfully able to account for Condition B effects which so far had needed a reconstructional analysis. I discuss cases where the 'Minimize Restrictor' condition proposed in Chomsky(92) rules out valid co-indexings. Based on this and some other facts, I propose that the 'Minimize Restrictor' condition is only needed to derive Condition C effects.

2   Background Assumptions

In this paper, I utilize the framework proposed by Reinhart&Reuland (1993). This framework consists of the following principles/conditions:

(1)   [Condition A] A reflexive-marked syntactic predicate is reflexive.

(2)   [Condition B] A reflexive semantic predicate is reflexive-marked.

(3)   [Chain Condition] A maximal A-chain $(\alpha_1, \ldots, \alpha_n)$ has exactly one link: α_1, which is both +R and marked for structural case and exactly one θ-marked link.

A predicate is reflexive-marked if at least one of its arguments is an anaphor. The conditions A and B of Reinhart&Reuland (1993) reproduce most of the effects of the conditions A and B of GB theory. From this point onwards, I shall refer to conditions A and B of Reinhart&Reuland (1993) as conditions A_{RR} and B_{RR} and to conditions A and B of GB theory as A_{GB} and B_{GB}.

(4)   a.   * John$_i$ likes himself$_j$.

       b.   * Ed$_i$ likes him$_i$.

In (4a), Condition A_{RR} forces *John* to be coreferent with the anaphor *himself* since the presence of an anaphor as an argument of *like* makes *like* reflexive. If *John* and the anaphor are not coindexed, we have a non reflexive reflexive marked predicate which is ruled out by Condition A_{RR}. Similarly in (4b), Condition B_{RR} forces *Ed* to be disjoint with *him*. If

Ed and *him* were coindexed, *like* which is not reflexive-marked would become a reflexive predicate - this would be ruled out by Condition B_{RR}.

The Chain Condition is however quite different from Condition C of the standard binding theory (Chomsky (1981, 1986a)). So while a sentence like (5) would be ruled out by Condition C_{GB}, it would not be ruled out by the Chain condition.

(5)   * She$_i$ thought that Ed liked Janet$_i$.

This is not a gap in the framework proposed by Reinhart&Reuland (1993). They consider binding theory to consist only of Conditions A and B, and to govern only bound variable anaphora - Condition C is argued in Reinhart (1983a) and Grodzinsky&Reinhart (1993) to belong to a separate inferential module.

3   Reconstructional Phenomena

Reinhart&Reuland(93) note that adopting a theory of logophoric anaphora eliminates the need for reconstruction mechanisms in the case of Condition A. (give page no.)

Consider the examples in (6a) and (6b). In both of these the embedded subject *Bill* can be coindexed with the moved anaphor. Assuming the minimalist assumptions that binding theory conditions apply at LF and also assuming that c-command is one of the relevant conditions, this fact provides evidence that the moved wh-phrase can be construed lower, as the object of the embedded clause at LF. at some

(6)   a.   John$_i$ wondered [which picture of himself$_{i/j}$]$_k$ [Bill$_j$ saw t$_k$]

b.   [Which picture of himself$_{i/j}$]$_k$ does John$_i$ think Bill$_j$ likes t$_k$?

It should be noted that the reconstruction in (6a) and (6b) is optional. The anaphor can be bound by either the matrix or the lower binder reflecting under minimalist assumptions, the LF position of the anaphor.

Reinhart & Reuland account for the above data by a very different theoretical device. Note that the definitions of Conditions A_{RR} and B_{RR} involve the word predicate. A predicate is formed only when there is an external argument. This captures the intuition seen in several versions of binding theory that there is something special about the Subject. This was reflected in the use of notions such as Accesible Subject. In NPs like 'which picture of himself', *picture* does not form a predicate since it does not have an external argument. As a result neither Condition A_{RR} nor Condition B_{RR} apply to the anaphor in question - as a result it can act like a logophor and refer freely subject to pragmatic constraints. So in both (6a) and (6b) , the anaphor can refer to either the matrix or the embedded subject.

Reinhart&Reuland (1993) also note, however, that this does not entail that the problem of reconstruction is eliminated altogether. So far, reconstruction may still be needed for cases of Condition B and C.

In the following sections, I show that we need not appeal to reconstruction to obtain Condition B effects within Reinhart&Reuland (1993). I also show that obligatory reconstruction of the kind enforced by the principle of 'Minimize Restrictor' rules out certain legal coindexings.

3.1 Condition B and reconstruction

Based on the examples in (6a) and (6b), Chomsky (1993) claims that we need a conception of binding theory which distinguishes condition A, which does not force reconstruction, from conditions B and C, which do.

(7)   John$_i$ wondered [which picture of Tom$_j$]$_k$ [he$_{i/*j}$ liked t$_k$]

(8)   John$_i$ wondered [which picture of him$_{i/*j}$]$_k$ [Bill$_j$ took t$_k$]

(9)   John$_i$ wondered [what attitude about him$_{i/*j}$]$_k$ [Bill$_j$ had t$_k$]

While in (6a) and (6b), the reconstruction was optional (7), (8) and (9) are all cases of obligatory reconstruction. If like in the case of (6a) or (6b) the reconstruction was optional we would expect that in (7), *Tom* and *he* can be coreferent. Similarly for (8) and (9).

As discussed earlier, in the framework of Reinhart & Reuland (1993) Condition C is not part of the binding theory which only consists of Conditions A, B and the Chain Condition. (7) involves Condition C, hence since I am using the framework of Reinhart & Reuland (1993) I will put it aside for now.

My analysis of (8) and (9) starts with the observation that they are both cases of NPs that involve an idiomatic reading - they have also been analyzed as having a PRO subject. Note the contrast in (10a) and (10b).

(10)   a. John$_i$ saw [a picture of him$_i$].

       b. * John$_i$ took [a picture of him$_i$].

(11)   * John$_i$ had [an attitude about him$_i$].

Chomsky (1986b) argued that (10b) (or 11) had a structure that contained a PRO element controlled by the matrix subject as shown in (12).

(12)   * John$_i$ took [PRO$_i$ picture of him$_i$].

Thus the standard Condition B rule out the following sentence.

The PRO analysis has the problem that while the PRO is needed for the 'take a picture' cases, it's presence in 'see a picture' produces illicit readings. The problem is that if the PRO in 'a picture of...' is obligatory (10a) should be ungrammatical while if it is optional (10b) should be grammatical. The insight being missed is that the presence of PRO/external

argument of the NP is conditioned by the predicate. This insight is captured by Williams (1985, 1987) implicit arguments analysis.

Further Williams (1982, 1985, 1987) has argued that such a PRO analysis is not feasible - these apparent control effects surface even where a PRO is not possible. Instead he proposes that the N-agent role which is not syntactically realized, is satisfied in the lexicon and can get a referential value either by control or from the context. Cf. (10b) and (11)

Chomsky (1993) does not use the PRO solution and instead argues that the idiomatic reading is available only when 'take...picture' forms a unit at LF. This can be seen in the (minimalist) LFs for (8) and (9) given in (13a) and (13b) respectively:

(13)   a. $John_i$ wondered [which x][$Bill_j$ took [x picture of $him_{i/*j}$]](LF for (8))

        b. $John_i$ wondered [what x][$Bill_j$ had [x attitude about $him_{i/*j}$]](LF for (9))

The notion of 'unit at LF' refers to string contiguity at LF. Chomsky(92) rules out LFs like (14a) by having a principle called 'Minimize Restrictor' - minimize the restrictor wherever you can - This principle forces reconstruction in all Condition B and C environments.

(14)   a. # $John_i$ wondered [which picture of him x][$Bill_j$ took [x]]

        b. $John_i$ wondered [which x][$Bill_j$ took [x picture of him]]

(14a) is ruled out because of the existence of the convergent (14b) where the restrictor has been minimized.

Both (8) and (9) can be handled within Reinhart&Reuland(93) - these are both examples where the lexical semantics of the verb causes the N-agent roles of the noun to be instantiated as identical to the agent of the verb. Now Condition B_{RR} is enough to rule out any coindexing between 'Bill' and 'him' since this would cause the semantic predicate 'picture' to be reflexive even though it is not reflexive-marked.

Requiring 'Minimize Restrictor' to apply in all Condition B environments seems to be too strong as it rules out several cases of legal coindexation. Consider (15).

(15)   Mary wondered [which picture of $him_i]_k$ [$Bill_i$ submitted t_k for the fashion show].

If the restrictor needed to be minimized in all cases, (15) would be out since it would have the LF in (16):

(16)   Mary wondered [which x] [Bill submitted [x picture of him] for the fashion show].

(16) violates the standard binding condition B and hence (15) should be ungrammatical.

A PRO analysis would get us (15) but would have problems as discussed earlier with sentences like (17).

(17)   * Mary wondered [which picture of $him_i]_k$ $Bill_i$ took t_k for the fashion show.

If the picture NP had a PRO (15) could have the following legal LF:

(18)   Mary$_j$ wondered [which x] [Bill$_i$ submitted [x PRO$_j$ picture of him$_i$] for the fashion show].

However this would lead us to expect the grammaticality of the ungrammatical (17) since it would have an LF very similar to (18). This problem arises, as discussed before, because the relationship between *take* and the picture-NP is not taken into consideration.

Reinhart & Reuland (1993) are able to account for this reading. *take* instantiates the implicit argument of the picture-NP as its agent and thus causes the formation of a non-reflexive marked reflexive predicate and hence a Condition B$_{RR}$ violation. The lexical semantics of *submit* are different and coindexing the pronoun in the picture-NP with the agent of *submit* does not lead to a Condition B$_{RR}$ violation.

3.2   Reconstruction for Interpretation

In the previous section, we have seen that we do not need a special operation of reconstruction to derive Condition B binding effects. Further in the case of Condition B, reconstruction is obligatory only in idiomatic environments such as 'take a picture'. Reconstruction for reasons of interpretation is however not ruled out. Cf.(19)

(19)   Who wanted John$_i$ to destroy how many pictures that he$_i$ had painted?

Heycock (1993)(following Kroch (1989)) claims that (19) has two readings: a nonreferential reading(LF in (20a) and a referential, non D-linked reading(LF in (20b)).

(20)   a.   [How many x][who y] y wanted John to destroy [x pictures that he had painted]

   b.   [How many pictures that he had painted x][who y] y wanted John to destroy [x]

With minimization of restrictor, (20b) would not be a legal LF. However, the reading in (20b) does seem to be available. If following the argumentation in Kroch (1989) we assume that the LF in (20b) is the correct representation for the referential, non D-linked reading then Minimize Restrictor would rule out such representations a-priori. This does not seem desirable.

3.3   Problems with anaphors

In Chomsky (1993), Condition A environments such as (21a) do not obligatorily reconstruct because the anaphor can cliticize to the matrix verb yielding the (non reconstructing) LF in (21b):

(21)   a.   John wondered [which picture of himself]$_i$ [Bill likes t$_i$]

   b.   John self-wondered [which picture of t$_{self}$ x] [Bill likes x]

Minimizing the restrictor will lead to deletion of t_{self}, breaking the chain (self, t_{self}) and leaving the reflexive element without a θ-role at LF. A reconstructing derivation also exists(22), in which the anaphor cliticizes onto 'likes'.

(22)   John wondered [which x][Bill self-likes [x pictures of t_{self}]].

The crucial thing is that LF-cliticization of the anaphor is deemed sufficient to block Minimize Restrictor - It is ranked below other principles. If there are two convergent derivations from the same numeration only one of which minimizes restrictor, then the one with the minimized restrictor blocks the other. However if the derivation crashes as a result of minimizing restrictor, then it is legal not to minimize restrictor. There are some conceptual problems with this approach. Consider the (illegal) reconstructing derivation in which *self* cliticizes to *wonder* and we also minimize restrictor:

(23)   John self-wondered [which x] [Bill likes x picture of self]

Note that since in the minimalist program, we have a copy theory of movement, the lower copy is left intact - the upper copy which had had movement of *self* out of it is deleted since we are minimizing restrictor. While it is clear that (23) is an illegitimate derivation, it is not clear whether this derivation is bad because it converges as semi-gibberish at LF(no θ-role for *self*) or because it crashes. In order to allow the non-reconstructing derivation to get through we have to stipulate that it crashes. That this is so is non-obvious.

    Further consider (24) where the same ambiguity obtains:

(24)   [Which picture of himself$_{i/j}$]$_k$ does John$_i$ think [Bill$_j$ likes t_k]

Minimizing restrictor with *self* cliticized to the embedded predicate *like* gives us the reading where the anaphor is coindexed within the embedded clause. Applying LF-cliticization from the landing site leads to a *lowering* movement: such movements result in an ungoverned trace and there is considerable evidence that suggests that such movements should not be permitted at all. On the other hand applying LF-cliticization from the position of the intermediate trace creates an illicit LF. Further it is not clear if intermediate traces exist at LF. Considering the close similarity between (24) (21a), we expect an analysis given for (21a) to carry over to (24). The LF-cliticization analysis does not do well on this account. Reinhart &Reuland (1993) are able to explain this straightforwardly and also capture the similarity between (21a) and (24). In both (21a) and (24), the anaphor is in a picture-NP where predicate formation does not take place. As a result, it can act as a logophor and refer freely constrained only by discourse.

4   So where do we need 'Minimize Restrictor'?

'Minimize Restrictor' is still needed to derive Condition C effects as in (25a) and (25b).

(25)   a.   John$_i$ wondered [which picture of Tom$_j$]$_k$ [he$_{i/*j}$ liked t$_k$]

          b.   * Who wanted him$_i$ to destroy how many pictures that John$_i$ had painted?

5   Conclusions

We see that 'Minimize Restrictor' is not needed to derive Condition A and B effects. Adopting Reinhart & Reuland (1993)'s framework allows us to account for these cases without having special rules of reconstruction like 'Minimize Restrictor'. Further it is not just redundant but also problematic since it rules out certain LFs which are independently motivated. Its basic purpose is to drive LF-lowering of R-expressions to feed Condition C violations.(see Heycock (1993)) The existence of a principle such as 'Minimize Restrictor' is puzzling since some kind of 'least effort' principle would work in the opposite direction and would argue for maximization of restrictor since it is easily demonstratable that pruning the search space at the source makes for a more efficient search strategy.

The fact that Conditions A and B pattern together in not needing 'Minimize Restrictor' versus Condition C which does and the fact that Conditions A and B are in a sense *local* while condition C is non-local. suggests that treating the binding theory as only consisting of Conditions A and B is on the right track. Then if 'Minimize Restrictor' was part of the grammar, it would be part of the same inferential module to which Condition C belongs.

References

[1] N. Chomsky. *Lectures on Government and Binding*. Foris, Dordrecht, 1981.

[2] N. Chomsky. *Knowledge of Language:Its nature origin and use*. Praeger, New York, 1986.

[3] Noam Chomsky. A Minimalist Program for Linguistic Theory. In Kenneth Hale and Samuel Jay Keyser, editors, *The View from Building 20*. MIT Press, 1993.

[4] Caroline Heycock. Reconstructing Referentiality. Technical report, Department of Linguistics, Yale University, New Haven, CT, 1993.

[5] Hilda Koopman and Dominique Sportiche. Pronouns, Logical Variables, and Logophoricity in Abe. *Linguistic Inquiry*, 20:555–588, 1989.

[6] Tanya Reinhart and Eric Reuland. Reflexivity. *Linguistic Inquiry*, 24:657–720, 1993.

[7] Spyridoula Varlokosta and Norbert Hornstein. A Bound Pronoun in Modern Greek. *Natural Language and Linguistic Theory*, 9:175–195, 1993.

[8] Edwin Williams. PRO and subject of NP. *Natural Language and Linguistic Theory*, 3:297–315, 1985.

[9] Edwin Williams. Implicit arguments, the binding theory and control. *Natural Language and Linguistic Theory*, 5:151–180, 1987.