1. Introduction

This paper investigates a class of expressions that obviate a Condition C violation predicted under reconstruction. The effect is illustrated in (1).

(1) a. Which picture of Jack$_1$ did he$_1$ like best?
   b. Which claim that Liz$_1$ was guilty did she$_1$ successfully refute?

   These expressions, which contain an R-expression inside a displaced wh-phrase, are predicted to undergo reconstruction, an operation where the lexical restriction of the wh-operator is interpreted in its pre-movement position. Reconstruction in (1a) yields the interpretation in (2). Condition C of the Binding Theory (Chomsky 1981) prohibits coreference between the R-expression and the c-commanding pronoun.

(2) **LF**: [which $x$] did he$_1$ like [x picture of Jack$_1$] best

   Interestingly, many speakers find coreference in expressions such as (1) to be perfectly acceptable. To account for this misalignment, I follow Pesetsky (1987) and Rizzi (1997, 2003) in developing the proposal that the lexical restriction of an argumental D-linked wh-phrase (such as in (1)) is not subject to reconstruction. Under this account, there is an appropriately licensed LF representation for expressions like (1) for which Condition C is satisfied. In discussion, we extend this analysis to account for the lack of a predicted island/locality violation in certain cases of wh-extraction from ellipsis.
2. Background

The term reconstruction refers to cases where some portion of a displaced wh-phrase is interpreted in its pre-movement position. Evidence for reconstruction comes from an interaction between wh-movement and the Binding Theory. The binding conditions are given in (3). For our purposes, binding requires c-command and co-indexation, and the local domain is the clause. The expressions in (4) illustrate the effects of reconstruction.

(3) a. Condition A: An anaphor must be locally bound.
   b. Condition B: A pronoun must be locally free.
   c. Condition C: An R-expression must be free.

(4) a. Which picture of herself₁ did Jenna₁ like?  (✓ Condition A)
   b. *Which picture of Jenna₁ did she₁ like?  (* Condition C)

If the c-command requirement on binding holds, why doesn’t (4a) violate Condition A, and why is disjointness of reference enforced in (4b)? Assuming that binding relations are evaluated at LF (Chomsky 1993:211), some portion of the displaced wh-phrase is “reconstructed” back in its pre-movement position where the necessary c-command relation holds. Reconstruction in (4) creates an LF configuration in which the anaphor is properly bound by its antecedent (✓ Condition A, 4a), and the R-expression is c-commanded by the co-indexed pronoun (* Condition C, 4b). Under the copy theory of movement, reconstruction is viewed as selective deletion of copies (Chomsky 1993:202-204). The full copy representations of (4) are given below.

(5) a. [which picture of herself₁] did Jenna₁ like [which picture of herself₁]
   b. PF: [which picture of herself₁] did Jenna₁ like [which picture of herself₁]
   c. LF: [which picture of herself₁] did Jenna₁ like [which picture of herself₁]

(6) a. [which picture of Jenna₁] did she₁ like [which picture of Jenna₁]
   b. PF: [which picture of Jenna₁] did she₁ like [which picture of Jenna₁]
   c. LF: [which picture of Jenna₁] did she₁ like [which picture of Jenna₁]

At PF, the lower copy is deleted, and the higher copy is pronounced. At LF, the higher copy deleted, and the lower copy is interpreted. In order for the derivation to converge at LF, (5) and (6) must be interpreted as the operator-variable structures in (7) and (8) respectively.

(7) a. [which x] did Jenna₁ like [x picture of herself₁]
   b. [which x, x picture of herself₁] did Jenna₁ like [x]
(8) a. [which $x$] did she$_1$ like [$x$ picture of Jenna$_1$]
   b. [which $x$, $x$ picture of Jenna$_1$] did she$_1$ like [$x$]

Although the higher copies in (5) and (6) are available for interpretation (an issue we set aside here, see endnote 1), we still must capture the contrast in (4). To do this, Chomsky (1993:209) introduces the Preference Principle in (9), which will select (7a) and (8a) for interpretation.

(9) Preference Principle
   Try to minimize the restriction in the operator position.

   To summarize, the final syntactic representation is subject to two economy-based constraints: (i) Copy Economy: delete redundant copies under recoverability, and (ii) Preference Principle. Applied to (5-8), these two economy principles conspire to force reconstruction in cases of wh-movement involving pied-piped material.

3. Unpredicted Anti-reconstruction Effects

Given the theory outlined above, consider (10) and (11) (modified from Barss 2003 ex. (80-81)).

(10) a. Which theory that Tracy$_1$ was guilty did he$_1$ successfully refute?
    b. Which story that Jack$_1$ found a mistake in the report did he$_1$ enjoy best?
    c. Which report that Liz$_1$ was incompetent did she$_1$ shred yesterday?
   a. Which picture of Jenna$_1$ did she think was most flattering?

(11) a. *How proud of Jack$_1$ did Cerie believe he$_1$ would be?
    b. *How proud that Kenneth$_1$ owns a book did Liz say he$_1$ was?
    c. *How upset that Avery$_1$ left the party did Jack think she$_1$ was?

   All of the expressions in (10) and (11) are predicted to undergo reconstruction in the manner illustrated below. Condition C should prohibit coreference between the R-expression and the c-commanding, co-indexed pronoun.

(10') [which $x$] did he$_1$ successfully refute [x theory that Tracy$_1$ was guilty]

(11') [how $x$] did Liz say he$_1$ was [x proud that Kenneth$_1$ owns a book]

   However, most speakers find coreference in (10) to be “mildly deviant to perfect”, i.e., there is a lack of enforced disjointness of reference between the R-expression and co-indexed pronoun (judgments from Barss 2003; see also
Chierchia 1995, Heycock 1995, and Lasnik 1998, for supporting judgments). This suggests that the examples in (10) do not undergo reconstruction, rather they exhibit anti-reconstruction effects (Riemsdijk & Williams 1981). What’s even more puzzling is that those speakers who find coreference in (10) to be perfect, also find that the expressions in (11) yield the predicted “total Condition C level ungrammaticality”.

4. Previous Accounts

Several proposals have been put forth to account for the unpredicted anti-reconstruction effects in sentences like those in (10). We will briefly review analyses developed by Huang (1993) and Heycock (1995).

4.1 Huang (1993): Predicate/Argument Asymmetry

One difference between (10) and (11) is that the wh-elements are wh-arguments in (10), but wh-predicates in (11). Huang (1993) notes that fronted predicates, unlike fronted arguments, contain a trace of the subject in the displaced phrase, and it is this trace that triggers the Condition C effects in (11).

(12)  a. \([AP t_1 [X \text{How proud of himself}_12] \text{did Cerie believe Jack}_1 \text{would be} t_2?\]
    b. \(*[AP t_1 [N \text{How proud of Jack}_12] \text{did Cerie believe he}_1 \text{would be} t_2?\]

    In (12a), the trace of the subject properly binds the anaphor himself, satisfying Condition A. In (12b), a repetition of (11a), the R-expression is no longer free, violating Condition C.

    While this analysis accounts for the unacceptability of examples like (11), the lack of a subject trace in the wh-argument examples in (10) does not account for their acceptability. Reconstruction should still be enforced by the Preference Principle, predicting uniform Condition C effects in (10).

4.1 Heycock (1993): Referential/Non-referential Asymmetry

Heycock (1995) attributes the difference between (10) and (11) to a referential/non-referential asymmetry. She observes that in examples like (10), the wh-phrases are referential, whereas in (11), they are non-referential. Under this account, non-referential phrases obligatorily reconstruct, but referential phrases are permitted to remain in their fronted position. Obligatory reconstruction for the non-referential wh-phrases in (11) gives rise to the observed Condition C effects, and the optionality of reconstruction for the referential wh-phrases in (10) allows for a configuration in which the R-expression remains free in accordance with Condition C.
This account captures the asymmetry, but it raises a few questions. In particular, the “optionality” of reconstruction for referential \(wh\)-phrases does not follow from any independently motivated principles, and it remains unclear under what conditions reconstruction is enforced for referential \(wh\)-phrases.

5. Restricted Reconstruction

I take Heycock’s (1995) proposal to be on the right track. Below, I will show that the optionality issue raised above disappears once we adopt the necessary syntactic mechanisms. However, there are several issues regarding the nature of reconstruction that require further examination before moving forward.

First, it is not clear why the Preference Principle in (9) is not consistently enforced in the cases involving a referential \(wh\)-phrase. How is it that the less preferred derivation (i.e. the one in which the lexical restriction is interpreted in the scope position) can be sometimes selected given (9)? One possibility is that for some reason in the referential cases, the derivation in which the lower copy is selected for interpretation does not converge. If this is the case, then the two derivations are not in competition with each other rendering the Preference Principle inapplicable. We will explore this possibility in more detail later. Furthermore, if the only derivation that converges is the one in which the higher copy is selected for interpretation, why doesn’t the expression in (13) trigger a Condition A violation? This is where optionality is useful, but again, it would make for a more precise theory if we could explicitly describe the conditions under which reconstruction is enforced for referential \(wh\)-phrases.

(13) Which picture of herself did Jenna think was most flattering?

In short, we need to be more explicit about what properties of a referential phrase actually give rise to the anti-reconstruction effects in (10). I will now outline an analysis that may help us develop a better understanding about the relationship between referentiality and (anti-)reconstruction.

5.1 Reconstructing D-linked \(wh\)-phrases

Following Cinque (1989), we can recast Heycock’s referential/non-referential asymmetry in terms of D-linking: referential, \(wh\)-arguments are D-linked, and non-referential \(wh\)-predicates are non-D-linked. For our purposes, we will adopt Kroch’s (1998:23) articulation of D-linking.
(14) **D-linking**

“D-linked *wh*-phrases refer to members of a set that has been evoked in the discourse, while non-D-linked *wh*-phrases, being operators, make no such reference.”

The idea we will pursue here is that the restriction of argumental D-linked *wh*-phrases is not subject to reconstruction. Below, we will see that the D-linked *wh*-restriction has an independently licensed interpretation in the left periphery as a topic. As such, an R-expression contained inside the restriction has is permitted to remain free in accordance with Condition C.

Rizzi (1990, 2003) reveals some properties of D-linked *wh*-phrases that we can exploit for the present purpose. For example, while *wh*-extraction from a *wh*-clause (i.e. a *wh*-island) is barred, as in (15a), “a systematic exception involves D-linked argumental *wh*-phrases” as in (15b) (2003:98).\(^v\) Rizzi proposes that displaced D-linked *wh*-phrases are linked to their traces in a way different from standard chain formation, and are not subject to locality constraints on movement.

(15) a. *What the hell do you wonder how to say?*
b. ?Which problem do you wonder how to say?

To handle long-distance chain formation in D-linked *wh*-movement (and long-distance binding of pronouns from quantified expressions), Rizzi introduces the mechanisms in (16).

(16) \(\alpha\) binds \(\beta\) iff:

(i) \(\alpha\) and \(\beta\) are non-distinct [co-indexed] DPs, and

(ii) \(\alpha\) c-commands \(\beta\).

In short, the DP status of the D-linked *wh*-restriction in examples such as (10) allows access to (16) to form a long-distance DP dependency at LF. I rely on this mechanism to account for the unpredicted availability of coreference in (10).

5.2 The syntax of D-linked *wh*-phrases

In this section, we examine how the D-linked *wh*-phrases in (10) might be represented under (16). Adopting Rizzi’s (1997) Split-CP hypothesis, consider (17).
(17) Which theory that Tracy₁ was guilty did he₁ refute?

In (17), the *wh*-operator is interpreted in [Spec, FocP]. The D-linked *wh*-restriction is independently licensed in the left periphery as a topic in [Spec, TopP]. Notice that in this representation, the R-expression remains free, allowing for the coreference attested in (10). I suggest that the unrestricted variable in the trace position be interpreted as a PRO-like element. Through (16), the D-linked *wh*-restriction and this PRO enter into a long distance DP dependency, forming an extended chain with the *wh*-operator at LF. It should be noted that further investigation is needed to decide between a slightly different approach under which the *wh*-restriction in (17) is base-generated in [Spec, TopP] (see Villa-García 2010 for discussion).

For explicitness, consider the non-D-linked representation in (18).
(18) *How proud that Kenneth\textsubscript{1} owns a book did Liz say he\textsubscript{1} was?

Notice that the non-D-linked \textit{wh}-restriction is interpreted in its trace position. As Heycock (1995) and Huang (1993) have noted, reconstruction here is obligatory. Why is this? Non-D-linked \textit{wh}-phrases such as \textit{wh}-predicates are APs, thus restricting access to (16), which relates two DPs. As such, the Preference Principle enforces reconstruction, triggering the Condition C violation upon interpretation.

At this point, I would like to return to cases involving anaphors contained inside displaced D-linked \textit{wh}-phrases. Earlier, I asked why the Preference Principle does not always enforce reconstruction for D-linked \textit{wh}-movement. I suggested that in cases involving D-linked \textit{wh}-phrases, the lexical restriction must be interpreted in the scope position for the derivation to converge, rendering the Preference Principle inapplicable. I take this to be the case here, as there is presumably an incompatibility interpreting a phrase marked [+topic]
outside of the topic domain of the left-periphery. This problem disappears however if the wh-restriction is base-generated in [Spec, TopP] (Villa-García (2010)): if there is no movement, there will be no copies, thus no reconstruction.

However, we are still left with the problem regarding sentences like (13), repeated below in (19).

(19) Which picture of herself, did Jenna think was most flattering?

I do not have a satisfying solution to this problem. It is a problem for both the movement/PRO analysis and the base-generation analysis. One possibility is that the binding conditions somehow take precedence over topic-raising. Under the movement/PRO analysis, binding considerations outrank topic interpretation. This suggests an optimality theoretic approach to the evaluation of syntactic constraints, an issue beyond the scope of this paper.

6. Consequences and Extensions

In this section, I show that the D-linking analysis of the anti-reconstruction effects in (10) provides a straightforward explanation for the lack of a predicted locality/island violation in certain cases of wh-extraction from ellipsis. Notice that wh-extraction from a sluicing site (=IP) is well-formed (20), but wh-extraction from a VP-ellipsis site is ungrammatical (21).

(20) Sluicing
Frank criticized someone, but I don’t remember who₁ [IP Frank criticized t₁].

(21) VP-ellipsis
*Frank criticized someone, but I don’t remember who he did [VP criticize t₁].

To capture this contrast, Merchant (2008) proposes a novel constraint on the ellipsis operation, MaxElide. Informally, MaxElide states that when possible, elide more rather than less.

(22) MaxElide
Let XP be an elided constituent containing an A’-trace. Let YP be a possible target for deletion. YP must not properly contain XP (XP ∉ YP).

Given that the conditions for (IP and VP) ellipsis are met in (20) and (21), and both involve an elided constituent that contains an A’-trace, MaxElide selects the sluice in (20) since it elides more material than VP-ellipsis.

Fox & Lasnik (2003; henceforth F&L) provide an alternative account of the contrast in (20)-(21). For F&L, the parallelism constraint on ellipsis is
inviolable. If there is no successive-cyclic movement in the antecedent, then there can be none in the target. Representationally, if there are no intermediate traces in the antecedent, then there can be none in the target. To satisfy parallelism, F&L argue that the wh-phrase moves in one-fell-swoop to its landing site. This type of movement, which does not leave any intermediate traces, violates locality. To track locality violations, F&L adopt Chomsky’s (1972) * notation, whereby a * is assigned to an island barrier when it is crossed. The offending *-marked island can be “repaired” so long as it is removed via (PF-)deletion. Notice that in the sluicing example, repeated below in (23), all of the crossed island barriers are elided, whereas at least one remains in the VP-ellipsis example repeated in (24).

(23) *Sluicing
   Frank hit someone, but I don’t remember who1 [w*. Frank hit t1].

(24) *VP-ellipsis
   *Frank hit someone, but I don’t remember who [w* he did [VP hit t1]].

6.1 Empirical Problems for the Sluicing/VP-ellipsis asymmetry

Parker & Seely (2010; henceforth P&S) reveal several cases where the conditions for MaxElide are met, but where sluicing and VP-ellipsis are not in the predicted complementary distribution. Instead both sluicing and VP-ellipsis are allowed. Consider (25) and (26).

(25) *Sluicing
   a. Frank hit some of the workers, and I know exactly which ONES.
   b. I know WHAT Pete will read, and I also know WHEN.

(26) *VP-ellipsis
   a. Frank hit some of the workers, and I know exactly which ONES he did.
   b. I know WHAT Pete will read, and I also know WHEN he will.

P&S attribute the acceptability of wh-extraction from VP-ellipsis in (26) to the fact that the wh-phase is D-linked and stressed. In short, they propose that the trace of a displaced D-linked wh-phrase is not constrained by MaxElide (i.e. it does “not count” as a true A’-trace as far as MaxElide is concerned).

6.2 Linking the analyses together

One question that the P&S proposal raises is why the trace of a displaced D-linked wh-phrase doesn’t count as a true wh-trace? I argue that the D-linking analysis for anti-reconstruction provides a straightforward answer to this
question. Recall that under the D-linking analysis for the anti-reconstruction, the trace of a D-linked *wh*-phrase is a PRO. According to (22), MaxElide applies only over instances for which the elided constituent contains an A'-trace. PRO and A'-trace are not equivalent, and as such MaxElide will not apply over instances of D-linked *wh*-extraction (from sluicing or VP-ellipsis). The idea holds also for the Villa-Garcia (2010) base-generation hypothesis: if the D-linked *wh*-restriction is base-generated in [Spec, TopP], then there is no movement, hence no A'-trace relevant for MaxElide.

One potential problem for the P&S analysis is that at least one * will remain in (26). However, recall that D-linked *wh*-movement is not subject to locality. As such, D-linked *wh*-extraction from VP-ellipsis in (26) (or from sluicing for that matter) will not introduce any *-markings (i.e. D-linked *wh*-movement flies under the radar of the *-marking mechanism because it is exempt from locality). Furthermore, D-linked *wh*-movement will not introduce any intermediate traces, thereby satisfying parallelism. Again, this holds for the base-generation hypothesis: since there is no movement, no barriers will be crossed.

From this, we predict *wh*-extraction involving non-D-linked *wh*-predicates (such as those in (11)) to be acceptable when followed by sluicing, but unacceptable when followed by predicate/AP-ellipsis. This prediction is borne out in (27).

(27) Jack is somewhat likely to leave, but …
   a. I don’t know exactly how likely. (sluicing)
   b. *I don’t know exactly how likely he is. (Predicate-ellipsis)

The unacceptability of (27b) follows from the fact that APs such as *how likely* do not have access to the long-distance binding mechanism in (16). As such, movement in (27) takes place in one fell swoop. Just as in (23), sluicing in (27a) eliminates all of the *-markings, but at least one crossed barrier with a *-marking remains in (27).

7. Conclusion

The main goal of this paper was to account for the unpredicted anti-reconstruction effects in sentences like (10). In these sentences, anti-reconstruction effects manifest as the lack of a predicted Condition C violation. Following Rizzi (1997, 2003), we pursued a D-linking analysis that allowed us capture the misalignment. We then extended this analysis to account for the acceptability of D-linked *wh*-extraction from VP-ellipsis.

From an empirical standpoint, it remains to be seen whether our analysis holds for languages that exhibit more complex *wh*-behavior. For example, it is important to examine whether our analysis appropriately accounts for languages
that exhibit multiple wh-fronting and multiple wh-sluicing (e.g. Polish). Also, because there is such wide-spread variation in acceptability judgments reported in the literature, controlled experimental studies may be beneficial to establish an empirical foundation for formal research.

Many questions also arise at the formal level. For example, why should something like the Preference Principle in (9) hold? It is also important to develop a more precise characterization of what it means to be D-linked. Why should D-linked wh-movement be exempt from locality? How is it that linking to the discourse level triggers exceptional syntactic behavior? These are the important questions that must be addressed in future research on the interaction between D-linking and wh-movement.

Notes

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More neutrally, this phenomenon is known as connectivity (Heycock 1995).

Further highlighting the nature of selective deletion is the example below, where either copy may contribute to the meaning of the sentence (Chomsky 1993 ex. (35)). In this example himself may be interpreted as being coreferential with either John or Bill, depending on which copy is selected for interpretation.

(i)  a. John wondered which picture of himself Bill saw
    b. John wondered [which picture of himself] Bill saw [which picture of himself].

This effect is not to be confused with the Freidin (1986) and Lebeaux (1988) argument/adjunct asymmetry noted below.

(i) a. Which award that Liz moved did she display in her dressing room?
    b. *Which report that Liz was incompetent did she shred yesterday?

The wh-phrase in (ia) contains an R-expression inside a relative clause adjunct, whereas (ib) contains an R-expression inside an argument. According to their judgments, disjointness of reference is enforced in (ib), but coreference is acceptable in (ia). The idea behind their account is that adjuncts can undergo late insertion. Speakers polled by Barss (2003) found no difference between these argument/adjunct examples.

Heycock (1995) outlines several other problems for predicate-internal traces.

For discussion of what it means to be non-referential see Kroch (1998). Following Heycock (1995), the non-referential how-phrases that we are interested in here quantify over amounts, rather than other entities. See her footnote 16.

This follows from the idea that economy-based principles such as the Preference Principle in (9) only compare convergent derivations.

According to Rizzi’s judgments, extraction of D-linked wh-phrases from a wh-island is marginal. I find these examples to be just fine, with little to no deviance in acceptability.
References


Dan Parker
University of Maryland
Department of Linguistics
1401 Marie Mount Hall
College Park, MD 20742
dparker3@umd.edu