Reconstruction, bare quantification, and the fourth reading*

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Abstract In addition to their *de dicto*, *de re* and *third* readings, DPs in intensional contexts sometimes exhibit a *fourth* one in which their determiner seems to outscope an intensional operator in whose domain of quantification their restrictor is evaluated. Szabó (2010, 2011) illustrates this reading relative to the primary intensional contexts—attitudes, modals and tense—deducing from its apparent generality that an unrestricted *bare quantification* mechanism is in charge of deriving it. We focus on his examples involving modals, arguing that bare quantification actually fails to generate them, while also overgenerating unattested fourth readings of related sentences. We then show that Szabó's cases are generated by a more restricted mechanism already independently available in natural language, of reconstruction into intensional relative clauses. Since the distribution of reconstructed relative clauses is subject to stringent constraints, our approach makes testable, correct, predictions regarding the distribution of the fourth reading with modals. While we do not provide an account of Szabó's examples of the reading that do not involve modals, we outline the kind of approach we believe will prove to be most fruitful in accounting for them, given the findings in this paper.

1 Introduction

Fodor (1970) famously claimed that a DP in an intensional environment may vary along two independent dimensions: It can take *wide* or *narrow* quatificational scope relative to the intensional operator in the sentence, and it can have its NP restrictor evaluated *opaquely*, in the worlds quantified over by that operator, or *transparently*, in the matrix world of evaluation. This gives rise to a four-way ambiguity, summarized in Table 1: On its *de dicto* reading, a DP takes narrow quantificational scope relative to an intensional operator, and its restrictor is evaluated opquely. On its *de re* reading, the DP takes wide quantificational scope and its restrictor is evaluated transparently. The *third* reading combines narrow quantificational scope with transparent evaluation, and the fourth reading, henceforth **R4**, combines wide quantificational scope with opaque evaluation.

Sentence (1) is claimed in Fodor 1970 to demonstrate this ambiguity. Its *de dicto* reading in (1a), is true as long as buying *any* inexpensive coat meets Mary's desires. Its *de re* reading in (1b) is verified by there being a *specific* inexpensive coat Mary wants to buy, but she need not know that it is inexpensive, or, in fact, even a

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	Transparent	Opaque
Wide-scope (*specific*)	*de re*	*fourth reading?*
Narrow-scope (*non-specific*)	*third reading*	*de dicto*

Table 1 DPs in intensional contexts

coat. The *third* reading in (1c) is true if buying each of several objects would satisfy Mary's desires, and all happen to be inexpensive coats, again, possibly unbeknownst to Mary. Finally, the R4 is true if there is a particular object that in all worlds that satisfy Mary's desires is an inexpensive coat that she buys.

(1) Mary wants to buy an inexpensive coat.

a. $\lambda w.\ \forall w' \in \text{DESIRE}_{Mary,w}\colon \exists x\colon \textit{cheap-coat}_{w'}(x) \wedge \textit{buy}_{w'}(\textit{Mary},x)$ *(de dicto)*

b. $\lambda w.\ \exists x\colon \textit{cheap-coat}_{w}(x) \wedge \forall w' \in \text{DESIRE}_{Mary,w}\colon \textit{buy}_{w'}(\textit{Mary},x)$ *(de re)*

c. $\lambda w.\ \forall w' \in \text{DESIRE}_{Mary,w}\colon \exists x\colon \textit{cheap-coat}_{w}(x) \wedge \textit{buy}_{w'}(\textit{Mary},x)$ *(third)*

d. $\lambda w.\ \exists x\colon \forall w' \in \text{DESIRE}_{Mary,w}\colon \textit{cheap-coat}_{w'}(x) \wedge \textit{buy}_{w'}(\textit{Mary},x)$ *(R4)*

On this approach, whether (1) asserts the existence of a specific coat depends on the determiner's scope relative to the attitude, whereas whether Mary is allowed to be ignorant about the fact that what she desires meets the description "*inexpensive coat*" depends on the restrictor's domain of evaluation.

The literature since Fodor 1970, cast doubt on the empirical claim that (1) has the four readings above; in particular, the availability of the alleged R4 has been contested (cf. Keshet 2008; von Fintel & Heim 2011; Keshet & Schwarz 2019). If this reading is available, the sentence should be verified by scenarios in which Mary wants to buy a particular object, which is an inexpensive coat in Mary's DESIRE-worlds, though not necessarily in actuality. Assuming that Mary's DESIRE-worlds are constrained by what Mary *believes* (cf. Heim 1992), (1) is verified by the existence of an object that is actually expensive, which Mary wants to buy, thinking that it is inexpensive. As Keshet (2008: 30) points out, this is what (2a) means, but is not a possible interpretation of (1), as indicated by the fact that once pronominal reference is used to force wide scope for the DP over the attitude verb, as in (2b), we can no longer coherently deny that the coat is inexpensive.

(2) a. There's a coat that Mary wants to buy. She thinks it is inexpensive. But really, it is quite expensive.

b. Mary wants to buy an inexpensive coat. #But really, it is quite expensive.

The consensus view that has taken shape since Fodor 1970 is thus that it is a mistake to assume that the two interpretative dimensions in Table 1—namely, wide

vs narrow scope and transparent *vs* opaque evaluation—are truly independent of each other. Rather, semantic orthodoxy dictates that wide scope for a DP relative to an intensional operator should block evaluation of its restrictor in the quantificational domain of the operator. In fact, as will be discussed in detail below, the semantic formalisms standardly used in the intensionality literature often have the non-existence of R4 built into them as a feature, as they reserve the possibility of opaque evaluation only to elements that are in the c-command domain of an intensional operator. On such an approach, as long as scope is determined structurally, wide-scope and opacity involve conflicting requirements, ruling out the possibility of R4.

As is usually the case, of course, not everyone subscribes to the consensus view. In particular, Szabó (2010, 2011) revived Fodor's empirical claim that R4 relative to attitude predicates exists and expanded on it, by arguing that the reading is not restricted to attitude reports, providing examples involving modals and tense operators as well. On this basis, Szabó also defends an expansive version of the main theoretical conclusion that Fodor draws from her empirical claim; namely, that opacity and wide scope should in fact be divorced one from the other and that we must posit a general mechanism dedicated to the generation of LFs in which a determiner outscopes an intensional operator that in turn determines the evaluation domain of its restrictor.

In this paper we scrutinize a particular example, given in (3), offered by Szabó as an illustration of R4 relative to a modal operator.

(3) a. **Context:** In Alex's district, judges are elected, not nominated. Two candidates are running to fill a single vacancy, neither of whom is or has ever been a judge. The winner will preside over a hearing in which Alex is a defendant. To make sure that her lawyer prepares for both possible outcomes, Alex says:

b. There are two judges we could face in this court.

c. There are two individuals in the actual worlds who could each be the judge we face in court.

(adapted from Szabó 2011: ex. 26)

Now, Szabó (2011) does not say much about this case, except that the truth of (3b) given the scenario in (3a) indicates that it has a "split reading" in which the determiner "*two*" and the NP "*judges*" are evaluated in different positions with respect to the modal "*could*". This, indeed, seems to be the case: Since only one person is stipulated to preside over Alex's court case in (3a), (3b) is false if the determiner scopes below the modal, together with its adjacent NP. And given that there are no *actual* judges involved in (3a), only potential ones, it is also false if the NP is evaluated above the modal together with the determiner. The sentence is only true in

its respective context if it can be paraphrased with (3c), where the plural indefinite determiner "*two*" takes scope, and distributes,[1] over the modal "*could*", while the NP "*judges*" is evaluated within the intensional environment. Hence, the DP seems to have R4 relative to the modal.

This case is important, as it constitutes a crucial part of the motivation for Szabó's claim that R4 is a general phenomenon, cutting across the three primary intensional contexts—attitudes, modals, and tense. This claim, in turn, is taken to motivate a theory of intensionality and scope that fully divorces quantificational force from intensional status for almost any DP. In fact, Szabó posits a novel scope splitting operation, which allows a determiner to quantify unrestrictedly over the entire domain, with its apparent NP *restrictor*—obviously a misnomer on this approach—making its semantic contribution beneath some lower intensional operator within the nuclear scope of the unrestricted determiner. The resulting structure is schematized in (4), and is referred to—following Szabó—as *bare quantification*.

(4) [... Determiner ... [... Intensional operator ... [... NP ...]]]

In this present work, we will agree with Szabó that (3b) does, indeed, have a structure in which the determiner and its adjacent NP are evaluated in different positions relative to the modal. What we will contest, however, is that this lends support to a general bare quantification strategy in natural language. The gist of the argument is as follows: First, we argue that Szabó's proposed bare quantification mechanism overgenerates unattested cases of R4, while at the same time actually *undergenerating* the observed R4 of (3b). These observations will serve to undermine the initial motivation for bare quantification.

We will then show that the availability of R4 for (3b) is contingent on its particular syntactic profile: The sentence contains a *relative clause* that embeds a modal operator, with the observed R4 involving wide quantificational force for the determiner embedding the relative clause, and evaluation of the NP adjacent to it in the scope of the clause-internal modal. But, we will argue, if that is the case, no novel scope displacement strategy is required to derive the R4 of (3b) to begin with; relative clauses are known to exhibit *reconstruction effects* whereby the NP adjacent to the clause-embedding determiner is actually interpreted clause-internally.

Thus, when a relative clause contains a modal, reconstruction already mimics the effects of bare quantification, and we can reduce the R4 of (3b)—and R4 relative to modal operators more generally—to reconstruction. Since this approach takes the presence of a relative clause to be a precondition for R4 with modals, it will be shown to avoid the overgeneration issues faced by bare quantification. And, since the availability of reconstruction into a relative clause is subject to stringent constraints, the approach will also be shown to further restrict the distribution of

1 More on the role of distributivity below.

R4 in a way that correctly captures the empirical landscape; it is exactly those environments that rule out reconstruction into a relative clause, that also block R4 relative to modals.

From the perspective of the semantically orthodox, this is a welcome result, as it reduces a challenging observation to familiar means. It is important, however, to note at the outset what this paper is *not* intended to achieve; that is, a full account of *all* of Szabó's examples of R4 that does not appealing to bare quantification. There are apparent cases of R4 relative to attitude predicates and tense operators that lack the relativization structure required to achieve R4 with modals, and thus cannot reduce to reconstruction effects. And while we briefly present some of these cases, and speculate on their nature in the conclusion, we leave a comprehensive treatment for future research. Our goals here are rather restricted to (i) undermining the viability of Szabó's bare quantification mechanism; (ii) motivating an account of a fragment of his data—namely, the one involving modals—by appealing to independently-posited syntactic structures and within the confines of standard Montegovian semantics (Montague 1973);[2] and (iii) briefly outlining the kind of approach we believe will be most fruitful in accounting for the remaining data, given the findings in this paper.

The paper is structured as follows: Section 2 presents Szabó's data, discusses its design, and highlights the challenge it poses to mainstream theories of intensionality. Section 3 spells out Szabó's bare quantification approach and the empirical challenges it faces, illustrating that the data used to exemplify R4 with modals is undergenerated by bare quantification, which also overgenerates unattested readings for related modal sentences. Section 4 then provides a reduction of R4 relative to modals to the reconstruction of NPs into intensional relative clauses. The predictions of this reductive approach are corroborated in Section 5, and a potential challenge is discussed in Section 6. Section 7 presents Szabó's remaining cases of R4, which are not amenable to the treatment we provide for the modal cases, and concludes by speculating on how they should be approached.

2 The fourth reading and the challenge that it poses

2.1 The main data point

As noted above, our focus in this paper will be Szabó's example of R4 relative to a modal operator, henceforth **R4-M**. The example, repeated in (5) for convenience, involves a sentence that seems true in a scenario that validates *only* its R4-M, sug-

2 In this respect, our approach contrasts with Moltmann's (2019, 2020) account of similar data within Fine's (2017) non-standard framework of *truth-maker semantics*. Engaging with this work is not our primary goal, but footnote 14 highlights a strength of our account relative to this alternative.

gesting that it must have a structure from which that reading, paraphrased in (5c), can be derived.[3]

(5) a. **Context:** In Alex's district, judges are elected, not nominated. Two candidates are running to fill a single vacancy, neither of whom is or has ever been a judge. The winner will preside over a hearing in which Alex is a defendant. To make sure that her lawyer prepares for both possible outcomes, Alex says:

b. There are two judges we could face in this court.

c. There are two individuals in the actual worlds who could each be the judge we face in court.

(adapted from Szabó 2011: ex. 26)

Note that, if existential modals are taken to quantify existentially over worlds, Szabó's case of R4-M in (5), contains two existential quantifiers: the modal and a plural *indefinite* DP. However, two existential quantifiers are scopally-commutative; i.e., $[\exists x \exists y \phi(x,y)] \Leftrightarrow [\exists y \exists x \phi(x,y)]$ for any scope ϕ. Thus, if scopal-commutativity is assumed to apply when one of the existential quantifiers involved is an intensional operator, R4 of an existential DP relative to such an operator is predicted to be equivalent to its *de dicto* reading, and it is at least *prima facie* surprising that the two readings are distinguishable above in the first place.

R4 is nevertheless distinguishable from *de dicto* in (5b), with the existential modal, presumably due to the presence of *distributivity*. The determiner in (5b), while existential, is also *plural* and therefore ambiguous between a reading on which it distributes over elements it dominates and one on which it do not. Distributivity introduces universal quantification over atoms of the pluralities witnessing the indefinite, and *that* quantification is not scopally-commutative with the existential intensional operator. Thus, without distributivity, R4 of, e.g., (5b) in (6b) is equivalent to its *de dicto* reading (6a), whereas its distributive reading (6c) is not.[4]

3 Francez (2018) observed a phenomenon that at least superficially resembles Szabó's data, exemplified by an existential statement like "there can be three winners in this race", which can convey that three individuals might win the race. Here, too, the restrictor and determiner of a DP, "*three winners*" seem to scope in different places relative to a modal. However, such readings are subject to idiosyncratic restrictions (in particular, it is only available when relational nouns are involved), suggesting that they do not form a natural class with Szabó's data. We thus set this data aside and refer the reader to Francez 2018 for an account and to Nouwen 2022 for a recent discussion.

4 As noted by a reviewer, whether commutativity applies when a modal is involved is subject to some controversy in the study of modal logic, and depends on whether we accept the *Barcan formula*, $\diamond \exists x : \phi x \rightarrow \exists x : \diamond \phi x$ and its converse, $\exists x : \diamond \phi x \rightarrow \diamond \exists x : \phi x$ (Barcan 1946), which are not universally accepted. Together, the formulas require that the domain of individual remain constant as we move from the evaluation index to those indices that are accessible from it. This is trivially validated in the semantic formalism we, and—it would seem—also Szabó, take for granted, in which sentences are

(6) a. $\lambda w.\ \exists w' \in \text{ACC}(w) : \exists_2 x : \mathit{judges}_{w'}(x) \wedge \mathit{face\text{-}in\text{-}court}_{w'}(x)$ (*de dicto*)

b. $\lambda w.\ \exists_2 x : \exists w' \in \text{ACC}(w) : \mathit{judges}_{w'}(x) \wedge \mathit{face\text{-}in\text{-}court}_{w'}(x)$
(non-distributive R4)

c. $\lambda w.\ \exists_2 x : \forall y \in \text{ATOMS}(x) : \exists w' \in \text{ACC}(w) : \mathit{judges}_{w'}(y) \wedge \mathit{face\text{-}in\text{-}court}_{w'}(y)$
(distributive R4)

(For any w, we take $\text{ACC}(w)$ to be the set of worlds accessible from w, and for any $n \in \mathbf{N}$, we use $\exists_n x$ as shorthand for $\exists x : |\text{ATOMS}(x)| = n$)

This may explain why examples of R4-M in Szabó 2010 involve plural rather than singular indefinites, as distributivity is vacuous for the latter. Thus, whenever an example below contains a plural indefinite, we focus exclusively on its distributive R4, inserting the silent operator DIST (7) at LF when this is required to make a truth-conditional difference. However, we discuss in Section 4 cases in which R4-M arises with determiners that are not indefinite at all.

(7) $[\![\text{DIST}]\!] = \lambda f_{\langle e,t\rangle} \lambda x_e.\ \forall y \in \text{ATOMS}(x) : f(y)$

2.2 The problem

The existence of R4 poses a challenge for a prominent approach to intensionality, exemplified by the *modified scope theory* (Keshet 2008), and the *world-pronouns framework* (Percus 2000). Developed in response to the shortcomings of the classical *scope theory of intensionality* (henceforth, STI; Montague 1973; Ladusaw 1977 a.o.), both retain STI's supposedly innocuous features. However, exactly those features cause the undergeneration of R4. Our discussion below is an abstract review of some basic semantic theory, which may seem superfluous to an experienced reader, but is included here nonetheless to underscore the problem and the range of theoretical possibilities available in addressing it.[5]

STI maintains that every world-dependent element below an intensional operator ω at LF is evaluated in the worlds quantified over by ω. Paired with a syntactic approach to scope, STI predicts a biconditional dependence between quantificational scope and intensional status: as shown in Figure 1, any element under ω will

evaluated relative to a model that contains domains of worlds and individuals, modals are quantifiers over the former, and the latter does not change from world to world. Our choice of formalism can, of course, be questioned. However, we think that validating Barcan's formulas is rather innocuous here, as the controversy surrounding them is primarily focused on whether they apply when metaphysical modality is involved, whereas (5b) seems to involve epistemic or circumstantial modality, with the modal *could* quantifying over worlds compatible with our knowledge regarding judicial candidates, or those in which actual circumstances hold and the judicial elections have been decided. In any case, we circumvent this issue by focusing exclusively on the distributive construal of Szabó's examples.

5 The discussion closely follows K&S 2019.

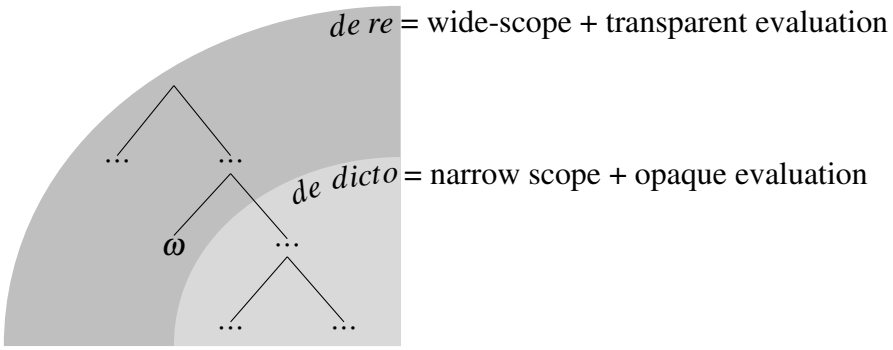
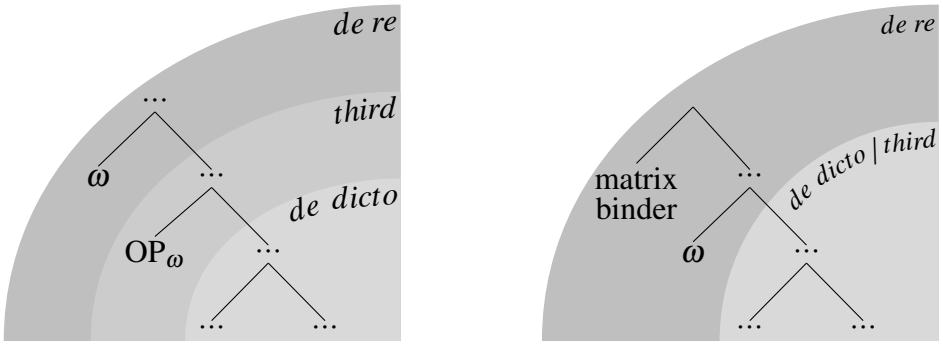


Figure 1 STI: wide-scope entails transparent evaluation; narrow-scope entails opaque evaluation



(a) Split intensionality (b) World variables

Figure 2 Modifications of STI: wide-scope entails transparent evaluation while narrow-scope is compatible with transparent or opaque evaluation

receive narrow-scope and opaque evaluation relative to ω, and any element taking scope above ω will receive transparent evaluation. Biconditional dependence undergenerates not only R4, but also the *third* reading, which requires narrow-scope, but transparent evaluation.

Keshet (2008, 2010b) modifies STI by divorcing the quantificational aspect of ω from the mechanism determining the evaluation domain of material in its scope. While being below ω at LF entails narrow-scope, it is not sufficient for opacity. DPs are opaque only if they reside below *another operator*, OP_ω, itself situated below ω at LF. In the resulting system of *split intensionality*, there is a region under ω where elements receive transparent evaluation; namely, the region between ω and OP_ω. As illustrated in Figure 2-a, syntactic position still fully determines a DP's intensional status, but STI's biconditional dependence becomes a conditional one:

wide-scope entails transparency, but not vice versa.

The same conditional dependence is the result of Percus's (2000) more radical departure from STI. In his system, world-dependent lexical items are functions whose input is a world-argument, saturated by silent object-language *world-variables* at LF. The restrictor of every DP is assumed to contain such a variable as its argument, which can be bound either by an intensional operator above it or by a binder posited at the matrix level, with the identity of the binder determining the intensional status of the DP. When a world-variable is bound by the matrix binder, the restrictor is transparent, and it is opaque when its variable is bound by the intensional operator above it. As shown in Figure 2-b, here, too, residing under ω does not determine a DP's intensional status, but being outside it does: ω cannot bind the world-pronoun of a DP above it, which must thus be evaluated transparently.

Both approaches, then, depart just enough from STI to generate the *third* reading, but not enough to allow opaque evaluation of wide-scope DPs, as is supposedly required for R4, presumably resulting in the undergeneration of any sentence that is judged true in an *exclusively*-R4-verifying scenario. Can we avoid this conclusion without rejecting the structural accounts of scope and binding? Perhaps, but our options seem limited. If Szabó's example truly involves a DP whose determiner takes wide-scope, that DP's restrictor cannot be interpreted opaquely unless, well, it does not serve to restrict the determiner it accompanies. Instead, this *pseudo*-restrictor must make its semantic contribution within the intensional environment that their determiner outscopes. We explore this next.

Before we continue, a technical note: For convenience, we will be using a system that posits object-language world variables. However, to avoid clutter we sometimes omit these variables and their binders from LF representations when all intensional variables are assumed to be bound locally, by the binder immediately dominating them.

3 Szabó's solution and its problems

3.1 *Bare quantification*

Since Barwise & Cooper's (1981) *Generalized Quantifier Theory* (henceforth, GQT) quantificational determiners in natural language are assumed to differ from predicate logic quantifiers ($\forall$, $\exists$) syntactically *and* semantically. Syntactically, they take a predicative complement, while predicate logic quantifiers combine with a formula. Semantically, their complement *restricts* their quantificational domain, whereas nothing restricts the domains of predicate logic quantifiers. Szabó argues that GQT got things wrong. While determiners always appear with predicates, they can quantify unrestrictedly like predicate logic quantifiers, with their complement

predicate interpreted within their scope.

Szabó (2010) mediates the apparent mismatch between syntax, which requires determiners to take NP complements, and semantics, which allows them to quantify unrestrictedly, with a scope displacement operation, termed *quantifier splitting* (henceforth, QS) in (8), which allows the NP in the complement position of a raised DP to reconstruct into its pre-raising position without the DP's determiner. The determiner left in the derived position is restricted by an identity function, $\lambda x.x = x$ in (8), vacuously satisfying the syntactic requirement that determiners combine with predicates. The reconstructed NP is converted into an indexed definite description whose index is bound by the vacuously restricted determiner (cf. Fox 2003).[6]

(8) *Quantifier splitting (**QS**):*
$[_{\text{TP}}\,[_{\text{DP}}[D][_{\text{NP}}\,N]][[\lambda_\iota][_{\text{TP}}\,\ldots[_{\text{DP}}\,t_\iota]\ldots]]]$
$\rightarrow [_{\text{TP}}\,[_{\text{DP}}\,[D][\lambda x.x = x]]\,[[\lambda_\iota]\,[_{\text{TP}}\,\ldots[_{\text{DP}}\,\text{THE}\,[_{\text{NP}}\,N][\lambda y.y = x_\iota]]\,\ldots]]]$

By converting the reconstructed NP into an indexed definite description, QS triggers a presupposition in the scope of the vacuously restricted quantifier in the derived position. We will make the simplifying assumption that this presupposition is locally accommodated.[7] Effectively, then, when a DP consisting of a quantificational determiner and its NP restrictor undergoes QS, elements quantified over by the determiner are asserted to satisfy the function denoted by NP inside the determiner's scope. Thus, if the determiner's scope itself contains an operator that shifts the evaluation domain of its input, this operator will also shift the evaluation domain of the reconstructed NP, resulting in exactly the configuration required to derive R4.

Now, Szabó (2011) is not explicit about how QS is applied to derive the R4 of (5b), so the following contains some guesswork on our part. However, his assumption that the truth of (5b) in the exclusively-R4-M-verifying scenario (5a) can be taken as evidence for a bare quantification strategy along the lines of (8), seems to imply that he views (5b) as containing a DP "*two judges*" that raises across the modal "*could*". In that case, indeed, QS derives for (5b) the structure schematized in (9a), with the modal scoping between the determiner and a "restrictor" NP converted into an indexed definite. With the presupposition of that indexed definite locally accommodated, (9a) has (9b) as its truth-conditions.

(9) a. $[_{\text{TP}}$ there are [[DIST][$[_{\text{DP}}$ [two][$\lambda x.x = x$]][[λ_ι][$_{\text{TP}}$ could
[we face $[_{\text{DP}}$ [the][[$\lambda y.y = x_\iota$][judges]]] in court]]]]]]

b. $\lambda w.\ \exists_{11} x\colon \forall w' \in \text{DOX}_{Alex,w}\colon \mathit{thieves}_{w'}(x) \wedge \mathit{live\text{-}in\text{-}Alex's\text{-}building}_{w'}(x)$

6 Note that QS in (8) is a notational variant of Szabó's actual proposal, due to Benbaji (2021), which uses terms more familiar to linguists.

7 Benbaji (2021) shows that the arguments against QS cited below go through regardless of this.

Since the modal resides between the original and derived positions of the raised DP, it shifts the evaluation domain of the reconstructed restrictor without scoping above the determiner, resulting in wide-scope for the determiner and opaque evaluation of the restrictor.

3.2 Against *quantifier splitting*

There are two related reasons to reject QS as a possible scope displacement operation: First, it overgenerates, predicting R4s where they do not seem to be attested. In particular, Benbaji (2021) shows that R4-M seems restricted to particular relativization environments; namely, those in which the relevant determiner seems to take wide scope relative to a modal embedded in a relative clause (henceforth, RC) in its scope, headed by the NP that seems to be opaque relative to the RC-internal modal. This is illustrated by the modification of Szabó's modal case (5) in (10).

(10) a. **Context:** Alex is awaiting the judicial elections, as in (5a) only this time there are five non-judges as candidates. Alex believes only two stand a chance, and instructs her lawyer to prepare for either winning.

b. There are two judges who could end up presiding over our case. **true** in (10a)

c. Two judges could end up presiding over our case. **false** in (10a)

The context in (10a) makes *only* R4 of (10b-10c) true. However, while (10b), with a RC, seems felicitous given (10a), example (10c), without one, seems false.[8] But QS generates a R4 for (10c), where it is widely assumed that the DP has raised over the existential modal, and can thus undergo the splitting operation, whose sole precondition is that such raising precede it.

Note that Benbaji (2021) uses the minimal pair in (10b-10c) rather than the one in (11a-11b) which contains Szabó's original sentence (11a) as one of its members, despite the fact that it gives rise to the same contrast as the one observed in (10), once the RC is eliminated from the sentence.

(11) a. There are two judges we could face in this court. **true** in (10a)

b. We could face two judges in this court. **false** in (10a)

8 In a footnote, Szabó (2011) notes that according to his own judgment, a sentence like (10c) does have R4, though it his harder to tease apart than in cases with relativization, and an anonymous reviewer agrees. Several informants we consulted with judged the sentence as clearly out in an exclusively-R4-verifying scenario, and similar judgments about the general unavailability of R4 with modals are reported in Francez 2018. It is notable, in any case, that everyone in this debate seems to agree that it is at the very least much more difficult to achieve R4 without relativization than with it.

This is because one can plausibly argue that (11a-11b) do not sufficiently illustrate the central role of relativization in achieving R4-M. On the assumption that the existential DP and modal in these examples are scopally-commutative, discussed in Section 2.1, R4 of (11b) is only distinct from its *de dicto* reading when the plural DP scopes and *distributes* over the modal. Thus, the contrast in (11a-11b) might be due to the fact that the distributive R4 construal of (11b) is blocked by a general ban on or dispreference for inverse-scope object-distributive readings, observed independently by, a.o., van der Does (1992); Steedman (2011); Križ & Maldonado (2018). In other words, perhaps QS is blocked in (11b) because the DP "*two judges*" cannot QR and distribute over the rest of the sentence. However, even if QS does not overgenerate a non-existent R4 for (11b) due to independent constraints on distributivity, it certainly overgenerates one for (10c), and is thus *too expressive*.[9]

This, in turn, leads us to the second problem with QS, which is—surprisingly—that QS is *not expressive enough* to generate a R4 for Szabó's original cases in (11a)

9 Santorio (2013) independently argued that QS overgenerates, focusing on unattested fourth readings of attitude reports with a proportional quantifier—elements like *most, one fourth, less than half*—in its prejacent. Traditionally, these quantifiers are assumed to compare the cardinality of two sets. Allowing one of those sets to correspond to the entire domain, QS derives a true reading of Santorio's (a-ii) in the context of (a-i), contrary to fact: If the determiner "*less than half*" is vacuously restricted, while its NP complement "*stockbrokers*" is interpreted as part of its scope, (a-ii) is wrongly predicted to have the R4 truth-conditions in (a-iv), paraphrased in (a-iii).

(a) i. **Context:** Sam believes all stockbrokers are rich, and that stockbrokers constitute a minority of existing things. Moreover, she thinks non-rich things vastly outnumber rich ones.

ii. Sam believes less than half of the stockbrokers are rich. **false** in (a-i)

iii. Sam believes that less than half of the domain's entities are rich stockbrokers. **true** in (a-i)

iv. $\lambda w.\ \frac{|\{x \mid x{=}x\}|}{2} \geq |\{x \mid \forall w' \in \text{DOX}_{Sam,w} : x \text{ is a rich stockbroker in } w'\}|$

We are not sure whether this argument is conclusive, as there is some controversy regarding the scopal properties of proportional determiners, particularly those involving modified numerals like the one in (a-ii). The controversy pertains to the question of whether these determiners can take wide scope at all (cf. van der Does 1992; Ruys 1992; Beghelli 1993; Schein 1993; Reinhart 1997; Winter 1997), and that argument has not been decided. Of course, if it turns out that wide quantificational scope for the DP in (a-ii) is independently blocked—i.e., that "less than half of the stockbrokers" cannot QR in the first place— QS would not be expected to apply. There is some evidence that, indeed, the run-of-the-mill wide scope transparent reading of (a-ii) is independently hard to achieve. Some speakers reject (a-ii) in a scenario in which Sam thinks of certain actual stockbrokers that they are rich, but is either ignorant of the fact that they constitute less than half of the stockbrokers or thinks they constitute a majority of them. This suggests that wide scope might be blocked regardless of whether its restrictor is evaluated opaquely or transparently. We thank REMOVED for this observation.

The argument in (10), we think, does not suffer from a similar objection, as nothing prevents a wide scope, *de re*, reading of (10c), but that sentence is nevertheless judged to be false in an exclusively-R4-M-verifying scenario.

or (10b). Once we notice the RC in the syntactic structure of these examples, we observe that QS actually *undergenerates* their observed R4 because, on a common assumption regarding the structure of RCs, discussed at more detail below, in (11a) the determiner above the RC and its adjacent NP—namely, "*two*" and "*judges*"—do not on their own constitute a DP that can undergo QS relative to the RC-internal modal "*could*". But the splitting operation in QS must be preceded by movement of a quantificational DP, so if "*two judges*" does not meet this description, the R4 of (11a) is undergenerated by QS.

These two arguments against Szabó's proposal are not of equal status. One is an argument against the very idea that natural language makes available a bare quantification strategy; if it did, we would observe fourth readings where we, in fact, do not. The other is an argument against a particular technical implementation of such a strategy; QS in particular, predicts that we should not observe particular fourth readings which, in fact, we do. Given that Szabó (2011: 270) himself notes that he is not committed to the technicalities of QS, which he provides solely for illustrative purposes, we should wonder whether the latter challenge—from undergeneration—can be diffused.

It seems to us that diffusing it without undermining the case for bare quantification is a difficult task. For instance, one may attempt to widen the applicability of QS somehow so that it applies even for the cases it currently undergenerates. But doing so can only worsen the overgeneration problem QS faces. Alternatively, one may concede that the undergenerated cases of apparent R4-M are not derived via the same mechanism that derives bare quantification elsewhere. In that case, if we do not want to worsen the overgeneration problem, we must also concede that these cases are not instances of bare quantification at all. But then the claim that R4 is a general phenomenon, cutting across intensional environments, is undermined, as we lack an example of the reading relative to modal operators.

We argue next that that the latter approach is correct; i.e., that since R4-M is contingent on relativization, its instances do not involve bare quantification. We will show that RCs already provide us with structures that can derive the attested cases of R4-M, and in all these cases, quantification *is* restricted, just not by the NP linearly succeeding the determiner; rather it is a reconstructed RC that restricts the determiner's domain of quantification.

4 Reducing R4-M to reconstruction into relative clauses

We have seen in (10) that R4 relative to modals, R4-M, is available only when the relevant modal is embedded inside a RC dominated by the DP with the apparent R4. However, Benbaji (2021) shows that the reading is restricted even further: First, the relevant RC must have a *raising* structure, in which the head NP, linearized in a

RC-external position, originates RC-internally. Second, that NP must be able to *reconstruct* into its pre-raising position.

Next, we briefly review some structural properties argued to characterize raising RCs, and illustrate how these very properties by themselves derive the scopal configuration for which Szabó posits QS. As an independent mechanism, then, QS is *superfluous* in the derivation of R4-M. We then provide new evidence that R4-M is indeed restricted to DPs with RCs that exhibit exactly these properties.

4.1 Raising relative clauses

Brame (1968) first suggested that RCs have LFs in which the head NP originate RC-internally (see also Schachter 1973; Vergnaud 1974, and Kayne 1994). These raising LFs are posited to derive the observation that some grammatical RCs comply with independent syntactic conditions *only* if their heads originate in RC-internal positions. For instance, the head-NP in (12a) contains an anaphor which satisfies Binding Condition A only when bound by a binder that resides inside the RC. The anaphor must have therefore originated below its binder, and binding conditions must have been "checked" before it raised to its RC-external position. Relatedly, in (12b) the head forms an idiom with an embedded VP. Assuming that the verbal argument in VP idioms must reside in the verb's complement position at LF, this indicates that the RC-head had raised from VP's complement position. Crucially, then, the examples in (12) are grammatical because they can be parsed as if the RC-head is interpreted in its pre-raising position.

(12) RCs *only* compatible with a raising structure:

a. Condition A: $[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \ldots\ \text{anaphor}_i\ \ldots]_j\ [_{\text{RC}}\ \ldots\ \text{R-expression}_i\ \ldots\ \text{t}_j]]$

i. The rumor about himself$_i$ that John$_i$ denied is unflattering.

ii. The interest in each other$_i$ that John and Mary$_i$ showed was fleeting.

b. Idiom chunks: $[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{idiom part}]_j\ [_{\text{RC}}\ \ldots\ \text{idiomatic environment}\ \text{t}_j\ldots]]$

i. John spilled the beans about his boss.

ii. Mary could not ignore the beans that John spilled about his boss.

The two properties in (13) often attributed to such *raising* relative clauses (henceforth, RRCs) will be taken for granted in our discussion.

(13) a. A determiner under which a RRC is embedded originates RC-externally, unlike the head NP. Thus, RRC-embedding DPs have the following structure: $[_{\text{DP}}\ [D][[\underset{\uparrow}{\text{N}}\text{P}][_{\text{RC}}\ \ldots\ [\underset{\downarrow}{\sout{\text{NP}}}]\ \ldots]]]$.

b. The head NP, which originates RC-internally and raises to its surface position, can *reconstruct* into its pre-raising position at LF.

Both assumptions have been defended on independent grounds: (13a) is required for type reasons (Heim & Kratzer 1998: 96-8), and to account for the behavior of RRCs under presuppositional determiners (Partee 1975: 230-1).[10] More controversially, (13b) is motivated by various syntactic arguments, including the data in (12): Reconstruction of the head into the RCs in (12) is required to explain their apparent compatibility with syntactic well-formedness conditions.[11] Note, also, that the property in (13a) is what prevents QS from deriving R4-M for Szabó's example in (11a): The determiner and adjacent NP in that example originate in different structural positions, and thus cannot constitute the input to QS to begin with.[12]

Building on Heim 2019, Bassi & Rasin (2018) propose the three-step derivation in (14) for RRCs with a reconstructed head NP.

(14) a. *Merge copy of NP ("raising")*:
$[_{RC} \dots [_{DP}[D][_{NP}\ N]]] \rightarrow [[_{NP}\ \underset{\wedge}{N}][[\lambda_i][_{RC} \dots [_{DP}[D][_{NP}\ \underset{|}{N}]]]]]$

b. *Trace conversion:*

i. $[[_{NP}\ N][[\lambda_i][_{RC} \dots [_{DP}[D][_{NP}\ N]]]]$
$\rightarrow [[_{NP}\ N][[\lambda_i][_{RC} \dots [_{DP}[D][_{NP}\ [N][\lambda y.y = x_i]]]]]]$

ii. $\rightarrow [[_{NP}\ N][[\lambda_i][_{RC} \dots [_{DP}[\text{THE}][_{NP}\ [N][\lambda y.y = x_i]]]]]]$

c. *Higher copy LF-deletion ("reconstruction"):*
$[[_{NP}\ N][[\lambda_i][_{RC} \dots [_{DP}[\text{THE}][_{NP}\ [N][\lambda y.y = x_i]]]]]]$
$\rightarrow [[\lambda_i][_{RC} \dots [_{DP}[\text{THE}][_{NP}\ [N][\lambda y.y = x_i]]]]]$

The proposal treats raising as the merging of copies, and reconstruction as the deletion of certain copies at LF. Step (14a) thus involves merging a copy of the NP restrictor of a RC-internal DP in a RC-external position, together with a λ-binder directly below it. Next, the RC-internal DP whose restrictor has moved undergoes *trace conversion* (14b); i.e., it is converted into an indexed definite description whose index is bound by the λ-binder introduced by raising (Fox 2003). Finally, the higher *pronounced* copy of NP is ignored for interpretative purposes (14c). Note

10 See also Heim 1987: 36-37 and Bhatt 2002: 70-71 for further arguments. In particular, Heim shows that RCs under a strong determiner in the sense of Milsark 1974 can have their head originate in the post-copular position of a *there*-construction embedded within the RC. Since strong determiners are barred from this position, the determiner itself could not have originated RC-internally.

11 See Bhatt 2002 for a critical assessment of these arguments, and for additional ones. The controversy regarding syntactic reconstruction is beyond our focus, though we briefly remark in Footnote 29 on how R4 might bear on it.

12 Moreover, while (13a) is a property unique to *raising* RCs, QS would also fail to apply in the desired way if the RC in (11a) were not analyzed as involving raising. On a particular version of the non-raising construal (the "matching" construal, to be discussed further in Section 5.3), the determiner and NP do form a DP on their own, but that DP originates RC-externally as a whole, and QS would therefore never be able to place the NP in a RC-internal position below the modal, as would be required to achieve R4-M.

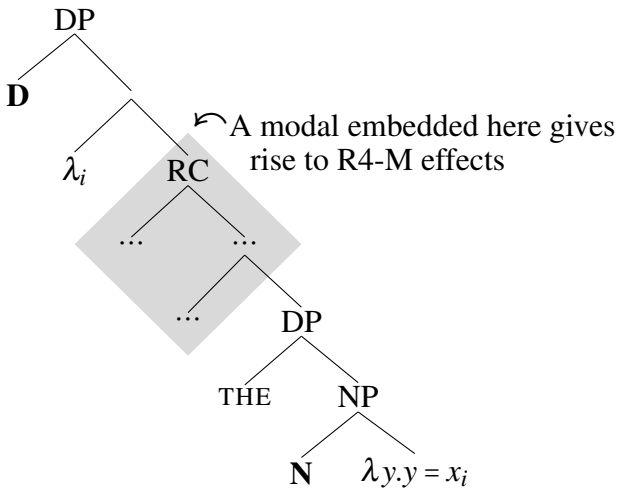


Figure 3 Structure of DPs embedding reconstructed RRCs

that, for brevity, we will sometime use the long-form $[_{\text{DP}}[\text{THE}][_{\text{NP}}[\text{N}][\lambda y.y{=}x_i]]]$ to represent trace-converted DPs, and sometimes its shorter counterpart $[_{\text{DP}}[\text{THE}_i][\text{NP}]]$.

The properties in (13), together with the account in (14), derive the structure in Figure 3 for DPs embedding a reconstructed RRC. Crucially, the structural relationship between the RC-external determiner and the RC-internal NP, both boldfaced in the Figure, is exactly the relationship between the determiner and the nominal complement of a DP that has undergone Szabó's QS (8). When an intensional operator is situated between a DP's original and derived positions, QS generates R4. However, given Benbaji's observation that R4-M in particular seems restricted to the kind of structures schematized in Figure 3, QS is unnecessary: Whenever a modal is part of the shaded region in the figure, R4-M comes for free, simply in virtue reconstruction.

Less abstractly, Szabó's example of R4-M (15) takes the form of a *there*-sentence (Milsark 1974) with a numeral in its post-copular position. For ease of exposition, we treat a numeral n as an existential quantifier over n-sized pluralities that can distribute over its restrictor argument. This is implemented below by having a distributivity operator DIST (7) adjoin the restrictor of n. The *there*-sentence as a whole is then assumed to behave as if its post-copular DP has vacuous scope; i.e., asserts the existence of a n-sized plurality whose atoms *each* make the embedded NP true, as in (16).[13]

13 Distributivity is necessary, though not *this* implementation (cf. Section 2.1). Both our treatment of numerals as determiners, and our assumptions regarding the meaning of Milsark's *there*-construction, are not essential, but are rather useful simplifications. We could have easily assumed, with, e.g., Keshet (2010a) that *there*-sentences involve existential closure over a predicative element,

(15) There are two judges we could face in court.

(16) $[\![$[There are $[_{\text{DP}}$ [n [DIST NP]]]]$]\!] = \lambda w.\ \exists_n x : \forall y \in \text{ATOMS}(x) : [\![\text{NP}]\!](y)(w)$

Following the recipe in (14), we construct the LF structure in (17a) for the underlined NP in (15). This LF derives the set of individuals for whom there is an accessible world in which they are the judge Alex faces in court (17b). The sentence thus asserts that there are two individuals, each of whom could be the judge Alex faces in court. This, of course, is the R4 paraphrase of (15).

(17) a. $[[\lambda_i][_{\text{RC}}\ [_{\text{TP}}$ [could] $[_{v\text{P}}$ we face $[_{\text{DP}}[\text{THE}_i][_{\text{NP}}$ judge]] in court]]]]

b. $[\![$(17a)$]\!] = \lambda x \lambda w.\ \exists w' \in \text{ACC}(w)$:
we face in court in w' the unique y who is a judge in w' s.t. $x = y$

Note that on this analysis, both the choice of determiner in (15) and its *there*-sentence structure, are entirely orthogonal to the availability of R4-M. All that is required for R4-M is that the determiner, *whichever it is*, embed a RRC with a modal outscoping the original position of its head-NP. That this is indeed the case is illustrated by the examples in (18), which do not have the structure of an existential *there*-sentence and whose determiners are not numerals but are nevertheless able to quantify over potential, rather than actual judges.

(18) a. **Context:** Alex's lawyer obtains a list of potential judicial election candidates and presents it to Alex.

b. If the list exhausts all potential candidates, the lawyer can felicitously utter: "*Every judge we could face in court is on this list.*"

c. If Alex thinks the list does not in fact contain any potential candidates, she can felicitously utter: "*No judge we could face in court is on this list.*"

d. If the list contains some but not all potential candidates, the lawyer can felicitously utter: "*A judge we could face in court is on this list.*"

e. If the lawyer is certain that the eventual winner is listed in the document, they can felicitously utter: "*The judge we will face in court is on this list.*"

(adapted from Benbaji 2021: ex. 22)

5 Reconstruction as a precondition for R4-M

If R4-M is merely a side-effect of reconstruction, we predict it to be blocked whenever reconstruction is ruled out independently. The literature provides several diag-

and a numeral n in the post-copular position is a predicative element that restricts this existential quantification which can distribute over material below it. We only crucially assume that a numeral may originate RC-externally even when an NP below it heads a RC.

nostics for the absence of reconstruction, which —we show next—correlate in the expected way with the unavailability of R4-M.[14]

5.1 Resumption

Sichel (2014) shows that Hebrew direct-object resumptive pronouns (hereafter, RPs) in RC-internal positions block reconstruction. This is illustrated by the illicitness of such RPs in environments that *require* reconstruction. In (19), for instance, reconstruction is required for an anaphor to satisfy Condition A. In (20), it is required to preserve the integrity of the idiom "*sew a case*", meaning *to falsely implicate in a crime*. Both environments disallow RPs.

(19) ha-ʃmu'a al acmo$_i$ ʃe-Dani$_i$ hikxiʃ (*ota) hufca al yeday
The-rumor about himself that-Dani denied (*it.RP) was.spread on hands.of
Rani
Rani
'The rumor about himself that Danny denied was spread by Rani.'
(Sichel 2014: ex. 4)

(20) ha-tik ʃe-tafru (#oto) la-sar haya kaʃur le-nadlan
the-case that-they.sewed (#it.RP) for.the-minister was related to-real.estate
'The case that they pinned on the minister was related to real estate.'
(Sichel 2014: ex. 5a)

Benbaji (2021) already illustrates that direct-object RPs block R4-M, as predicted by the reductive approach. The Hebrew translation of Szabó's example with a RP in (21) is infelicitous in Szabó's exclusively-R4-M-verifying scenario (5a), as it seems to commit one to the existence of *actual* judges.

(21) yeʃ ʃney ʃoftim ʃe-ʔanu ʔalulim lifgoʃ (#ʔotam) bevet hamiʃpat
there.are two judges that-we could meet them.RP in.house the.law
'There are two judges we could face in court.' (Benbaji 2021: ex. 24)

14 The ability to capture the correlated distribution between R4-M and reconstruction constitutes, we think, a point in favor of our proposal compared to an alternative truth-maker semantic account, due to Moltmann (2019, 2020), who derives Szabó's data by positing a domain of *variable-objects*, each associated with their own concept-like function from *minimal-situations* to *manifestations-in-a-situation*. While these variable-objects may have different manifestations in different situations, they are nevertheless *objects* in the ontology, rather than functions. If we understand the proposal correctly, Szabó's example of R4-M (15) is satisfied by there being in our domain two variable-objects that each have a manifestation as a judge Alex faces in some possible court situation. It seems to us that such a system can explain the correlation of R4-M and reconstruction only by positing distinct constraints on variable-object-denoting expressions that tie them to the structure of the sentences in which they appear. But to the extent that such constraints can be formulated, one wonders whether the resulting system would not converge with the account provided here.

However, the reductive approach makes another, previously unexplored prediction regarding resumption: While optional direct-object RPs block reconstruction, obligatory *indirect*-object RPs allow it. Thus, Condition A is satisfied in (22), and idiomatic interpretation of the phrase "*climb on/descend from a tall tree*" (which, roughly, mean *to insist/relinquish an entrenched position*) is available in (23), despite their RPs.

(22) ha-ʃmu'a al acmo$_i$ ʃe-Dani$_i$ xaʃaʃ *(mimena) hufca al
The-rumor about himself that-Dani feared from.it.RP was.spread on
yeday Rani
hands.of Rani
'The rumor about himself that Danny feared was spread by Rani.'
(Sichel 2014: ex. 9)

(23) a. ha-ec ha-gavoha ʃe-hu tipes *(alav)
The-tree the-tall that-he climbed on.it.RP
'The position that he was stubbornly entrenched in'

b. ha-ec ha-gavoha ʃe-hu yarad *(mimeno)
The-tree the-tall that-he descended from.it.RP
'The entrenched position that he relinquished'
(adapted from Sichel 2014: ex. 10a-b)

Strikingly, RP-position correlates with the un/availability of R4-M in the way one would expect if R4-M is a byproduct of reconstruction. The variant of (21) in (24), in which the head NP "*judges*" raises from an indirect- rather than direct-object position of the RC-internal verb, is felicitous in the exclusively-R4-M-verifying scenario, despite the RP.

(24) yeʃ ʃney ʃoftim ʃe-ha-goral ʃeli bevet hamiʃpat ʔalul lihyot
there.are two judges that-the-fate mine in.house the.law could be
taluy *(bahem)
dependent on.them.RP
'There are two judges my fate in court could depend on.'

This is expected on the reductive approach as, given that reconstruction is *not* blocked by indirect-object RPs, nothing should block the effect of R4-M.

5.2 Intensional superlatives

Bhatt (2002) observed that a RC whose head contains a superlative modifier is ambiguous between a 'low' reading in which the modifier is interpreted under RC-internal material, and a 'high' one in which it is interpreted RC-externally: If the

books Sam attributes to Tolstoy are *Anna Karenina* (AK) and *War and Peace* (WP), (25) has both a true and a false reading. Since WP is, in fact, longer than AK, the *high* reading in (25a) is false. But if Sam (wrongly) claimed AK is longer, the *low* reading in (25b) is true.

(25) The longest book that Sam said Tolstoy wrote is Anna Karenina.

a. '*high-reading*': Of the books Sam said Tolstoy wrote, Anna Karenina is the longest.

b. '*low-reading*': Sam said the following: 'Anna Karenina is the longest book Tolstoy wrote'.

Bhatt attributes this ambiguity of *intensional superlatives* to reconstruction as well: The low-reading is obtained when the superlative RC-head reconstructs into the scope of the RC-internal attitude, while the high-reading is obtained when it is interpreted RC-externally. However, the derivation of the low-reading by means of reconstruction is the subject of much controversy in the literature. First, there is some doubt whether reconstruction should be appealed to in its derivation in the first place. Second, even within the pro-reconstruction camp, the structure of the low-reading LF is up for debate.[15] Even without committing to a particular position in these debates, our reductive approach to R4-M makes a non-trivial prediction with respect to Bhatt's ambiguity. This is because, as will be demonstrated shortly, while we may argue whether the low-reading *necessitates* reconstruction, it seems quite clear that the high-reading *disallows* it. Thus, we predict that once a high-reading is *forced*, R4-M is ruled out.

The complex RC-head in (25) consists of a noun ('*book*'), an adjective ('*long*'), and the superlative morpheme ('*-est*'). Following Szabolcsi (1986); Heim (1995/1999) we assume that the adjective denotes a monotonous relation between degrees (of type d) and individuals: It holds between an individual x and a degree d just in case x's length is at least d,[16] as spelled out in (26a). The noun is presumed to form a single LF constituent with the adjective, which has its degree argument saturated by a variable over degrees (26b), with the resulting constituent interpreted intersectively (26c). Finally, the degree variable is bound by the superlative operator, which is, effectively, a degree quantifier: It takes a comparison class C of type $\langle e,t\rangle$ and degree relation R of type $\langle d,et\rangle$, and returns the set of individuals that satisfy R to a degree that is higher than the degree to which any other element in C does (26d).

15 Heycock (2005) argues against the reconstruction account, suggesting that the low-reading is restricted in ways it cannot explain. Bhatt & Sharvit (2005); Hulsey & Sauerland (2006) and Sharvit (2007) offer counterarguments, but differ in their proposed reconstruction analyses. Charnavel (2022, 2024) provides a new perspective on the debate, as well as a useful summary of the pros and cons of reconstruction.

16 Thus, if x is d-long, it is also d'-long for any $d' \leq d$.

(26) a. $[\![\text{long}]\!] = \lambda d \lambda x.\ \text{length}(x) \geq d$

b. [-est $\lambda d.\ \ldots$ [[long d] book]]

c. $[\![[[\text{long } d]\ \text{book}]]\!] = [\![\text{long } d]\!] \cap [\![\text{book}]\!] \quad (\equiv \lambda x.\ \text{length}(x) \geq d \wedge \text{book}(x))$

d. $[\![\text{-est}]\!](C) = \lambda R_{\langle d,et\rangle} \lambda x.\ \exists d : R(d)(x) \ \wedge\ \forall y \in C : y \neq x \rightarrow \neg R(d)(y)$

The scenarios that render Bhatt's (2002) high and low readings of (25) true differ in whether the embedded subject is taken to have made any claims about the *lengths* of Tolstoy's books. The high-reading can be true even if Sam has made no such claims whatsoever, whereas its low-reading is only true if Sam made a particular claim; namely, that Anna Karenina is the longest of Tolstoy's books. Thus, despite the controversy regarding the derivation of the *low* reading, there seems to be a consensus that in the LF for the *high* one the superlative operator and the adjective whose degree argument it binds must be interpreted outside the intensional environment created by the propositional attitude. Otherwise, the truth of the sentence would hinge on Sam having ascribed certain lengths to the books she attributes to Tolstoy. In other words, the high-reading is incompatible with reconstruction, at least of the superlative adjective.

A plausible high-reading LF for the RC-embedding DP in (25), then, is (27a), due to Sharvit (2007), which denotes the unique individual that is longest in the actual world among the set of books that, according to Sam's assertions, were written by Tolstoy (27b).

(27) a. $[\lambda w \ldots [[\text{the } [\text{-est}_C\ \lambda d\ [[[\text{long}_w\ d][\text{book}_w]]\ [\lambda x\ [\text{Sam said}_w\ [\lambda w'\ [\text{Tolstoy wrote}_{w'}\ x]]]]]]]]]$

b. $\iota x[\exists d : x$ is a d-long book in $w \wedge$ Sam said in w that Tolstoy wrote $x \wedge$
$\forall y \in C : \neg(y$ is a d-long book in $w \wedge$ Sam said in w that Tolstoy wrote $y)]$
(where w is bound by the matrix evaluation world, and C is the contextually supplied comparison class selected by the superlative morpheme)

Suppose, next, that we construct a sentence ϕ with the specifications in (28).

(28) a. ϕ embeds a RRC whose head noun is modified by a superlative adjective, as in Bhatt's (25).

b. The RRC in ϕ embeds both an attitude predicate as in Bhatt's (25), and a modal operator in its scope, as in Szabó's example of R4-M (15).

Assume, further, that ϕ is uttered in a scenario that verifies it only if the head noun is evaluated opaquely relative to the RC-internal modal *and* the superlative adjective is evaluated transparently relative to the RC-internal attitude. In other words, the background context verifies only a high-reading of the superlative part of the RC-head, but only the R4-M of the noun that it modifies.

We predict ϕ to be judged as false in this kind of scenario.[17] Since R4-M necessitates reconstruction of the head noun into a RC-internal position, ϕ can be rendered true in a scenario of the sort just described, only if that noun can reconstruct *without* the rest of the material in the RC-head, stranding the superlative adjective in its derived position. As it happens, partial reconstruction of this sort is predicted to be blocked given what we know about the interpretation of *intersective predicates*. In particular, Keshet (2010a) shows that any two predicates interpreted intersecively must have the same intensional status,[18] motivating the generalization in (29). On the assumption that (29) holds, the head noun in ϕ cannot be evaluated in the scope of the modal without its modifiers, as if this were possible, we would not expect a generalization (29) to hold in the first place.

(29) **The intersective predicate generalization:** Two predicates interpreted intersectively may not be evaluated at different worlds from one another.

We illustrate that the prediction is borne out in (30):

(30) a. **Context:** To influence the elections that will determine who will preside over her court case, Alex intends to funnel donations to all realistic judicial candidates, neither of whom is or has ever been a judge. To avoid wasting resources on hopeless candidates, she asks Sam, a consultant, which of the ten candidates stand a chance. Sam suggests that only a Libertarian and two Democrats do, and warns Alex that the Libertarian is unlikely to be friendly to her cause. However, Alex forms the opinion that while Sam is right about potential winners, she is wrong about the Libertarian, who can be easily swayed. She says:

b. The friendliest judge Sam said we could face in court is the Libertarian.

i. *high-reading*: Of the *judges* Sam said we could face in court, the Libertarian is the friendliest. **false** in (30a)

ii. *low-reading*: Sam said, 'of the *candidates* Alex could face as *judges* in court, the Libertarian is the friendliest'. **false** in (30a)

iii. *high-R4-M*: Of the *candidates* Sam said we could face as *judges* in court, the Libertarian is the friendliest. **UNAVAILABLE**

Since Sam does not believe the Libertarian candidate is most friendly in scenario (30a), the superlative in (30b) *cannot* be interpreted in the scope of the attitude; i.e., (30b) is infelicitous on its low-reading, paraphrased in (30b-ii). But since none of the candidates are judges, the noun '*judges*' must be interpreted under the modal

17 We thank REMOVED-FOR-ANONYMITY for suggesting that we explore this point.

18 We refer the reader to Keshet 2010a for the data supporting the generalization, and to von Fintel, Fox & Iatridou 2014 for a critical discussion.

below the attitude. So (30b) is infelicitous also on the high-reading, paraphrased in (30b-i). The sentence can be true in its respective context only if it has a reading that we call "high-R4-M" in (30b-iii), which involves a high interpretation of the superlative, but reconstruction of the head noun. But such a reading, paraphrased in (31b) can only be derived from the LF schematized in (31a), which has the noun '*judges*' and the superlative adjective '*friendliest*' interpreted in different evaluation worlds and is thus blocked by the principle behind the generalization in (29).

(31) a. $[\lambda w\,[[\text{the}\,[\text{-est}_C\,\lambda d\,[[[\text{friendly}_w\,d][\sout{\text{judge}}]][\lambda x\,[\text{Sam said}_w\,[\lambda w'\,[\text{could}_{w'}\,[\lambda w''\,[\text{we face}\,[[\text{THE}_x][\text{judge}_{w''}]]\,\text{in court in}\,w'']]]]]]]]\,\text{is the Libertarian}]$

b. λw. The libertarian is the unique individual Sam said we could face as the judge in court that is friendly in w to a degree d, which exceeds the degree of friendliness of any other individuals Sam said we could face as the judge in court.

On the reconstruction account of R4-M, then, (30b) has no true reading given (30a), correctly deriving the falsity judgment.

Notice, as a control, that this judgment vanishes in (32), where the head noun no longer attributes judgeship to individuals of which it holds.

(32) The friendliest candidate Sam said we could face in court is the Libertarian.

a. *high-reading*: Of the *candidates* Sam said we could face in court, the Libertarian is the friendliest. **true** in (30a)

b. *low-reading*: Sam said, 'of the candidates Alex could face in court, the Libertarian is the friendliest'. **false** in (30a)

Here, while the superlative must still outscope the RC-internal attitude—ruling out the low-reading (32b)—the high-reading in (32a) is no longer ruled out because the head noun and superlative adjective can both be interpreted RC-externally, in accordance with (29). Thus, (32) is judged true given (30a).

Bhatt further observes that a *negative polarity item* (NPI) intervening between the RC-internal attitude and the modified NP-head has a disambiguating effect; a NPI like '*ever*' above the attitude *necessitates* a high-reading of the sentence (33a), and *blocks* it when it is below the attitude (33b).

(33) a. The longest book that Sam **ever** said Tolstoy wrote is AK.

b. The longest book that Sam said Tolstoy **ever** wrote is AK.

What exactly these facts are supposed to teach us is, again, subject to some debate; particularly regarding the unavailability of the high-reading in (33b).[19] However, we can once again shy away from the controversy in formulating our predictions

19 See in particular the exchange in Bhatt 2002; Bhatt & Sharvit 2005; Heycock 2005, 2019. Bhatt,

vis-a-vis R4-M and NPI placement: Given that a high '*ever*' forces a high-reading, which in turn, disallows reconstruction of the head noun, we predict a high '*ever*' to block R4-M. This is indeed the case, as the contrast in (34) illustrates.

(34) a. **Context:** Same as in (30a), except that in this case Sam agrees with Alex that the Libertarian is the friendliest among the likely candidates.

b. The friendliest judge that Sam **ever** said we could face in court is the Libertarian. **false** in (34a)

c. The friendliest judge that Sam said we could **ever** face in court is the Libertarian. **true** in (34a)

Both (30) and (34) illustrate the same point: On the assumption that the high-reading blocks reconstruction, when we *force* a high-reading—either by manipulation of the context or by NPI placement—we rule out R4-M, confirming again that it is parasitic on reconstruction.[20]

5.3 Extraposition

Reconstruction is also argued to be blocked for RC adjuncts extraposed over a right-adjoined adverb. Hulsey & Sauerland (2006) illustrate this by attempting to extrapose RCs that comply with independent syntactic constraints *only* if their head reconstructs into a RC-internal position. The resulting ungrammaticality or infelicity in (35) suggests that reconstruction, required for the satisfaction of Condition A in (35a) and to achieve an idiomatic interpretation of (35b), is blocked by extraposition.

(35) a. * Mary saw the portrait of himself$_i$ yesterday that John$_i$ likes.

b. # Mary could not ignore the beans yesterday that John spilled.

as mentioned above, attributes the high/low ambiguity to reconstruction. He thus explains the NPI facts as follows: Assuming NPIs are licensed only in the scope of downward-entailing operators (Ladusaw 1979), and that the superlative is the only downward-entailing operator in (33), the low-reading is blocked for (33a) because it requires reconstruction of the superlative to a position below "*ever*", leaving the NPI unlicensed. In (33b), "*ever*" is in the scope of the superlative even after reconstruction, licensing the low-reading.

20 We have intentionally ignored the derivation of the low-reading, which does not directly bear on the subject of R4-M. Note for completeness, however, that since we take reconstruction to be a necessary ingredient of R4-M, and we observe that a sentence like (33b) is felicitous in exclusively R4-M-verifying scenarios, we cannot remain fully agnostic with respect to this question. If R4-M is parasitic on reconstruction, than we are committed to the low-reading being derivable in principle from an LF with a reconstructed RC-head. This is a different claim from the one made in Bhatt 2002, according to which the low-reading is an argument *for* the availability of reconstruction, and a less controversial one at that (cf. Heycock 2019).

Benbaji (2021) already shows that, as predicted, R4-M is blocked when the modal-embedding RC is extraposed. In the exclusively R4-M-verifying scenario (36a), the example without extraposition seems true (36b), whereas its counterpart with it in (36c) is judged false.

(36) a. **Context:** Alex is again awaiting the results of the judicial elections, whose candidates are again all non-judges, to see who will preside over her court case. She is a well-known politician and is encouraged by her lawyer to use her political platform to praise all judicial candidates, so that whoever wins will judge her favorably. She says:

b. I praised every judge that we could face in court. **true** in (36a)

c. I praised every judge yesterday that we could face in court. **false** in (36a)

(adapted from Benbaji 2021: ex. 27)

This falls out from the reductive account, of course, if extraposition blocks reconstruction, which is a precondition for R4-M.

We can, in principle, end the discussion of extraposition at that, with the correlation between the absence of reconstruction and the unavailability of R4-M once again vindicated. But, once we examine more closely the question of *why* extraposition should block reconstruction in the first place, we can formulate a final prediction for our analysis of R4-M, that will also have non-trivial implications for the theory of extraposition. Addressing that question requires a bit more background on the syntax of relativization, to which we turn next.

5.3.1 Why does extraposition block reconstruction?

Since Lees (1961), it is often assumed that in addition to their raising parse, RCs have a non-raising one, in which the NP-head in its surface position does not form a movement chain with any RC-internal element (cf. Carlson 1977). Abstracting away from the details, the derivation of such RCs, termed matching RCs (henceforth MRCs), differs from the raising derivation in (14) only in that it is not two NPs related by *movement* that occupy the RC-external position of the head and its hypothesized RC-internal one, but rather two independent NPs—an external *and* and internal head—with the latter phonologically deleted under *semantic identity* with the former (Sauerland 1998, 2004). Thus, neither of these NPs can be ignored at LF, which is what reconstruction requires in our raising parse. All other features of the raising construal—namely, trace conversion of the internal head and abstraction over the variable it introduces—remain in the matching structure, schematized in (37).[21]

21 We are greatly simplifying the matching structure in (37), by ignoring movement of the internal head hypothesized to take place RC-internally. This is of no consequence in what follows.

(37) *Matching schema:* $[[_{\text{NP}}\ \text{N}][[\lambda_i][_{\text{RC}}\ \ldots\ [_{\text{DP}}[\text{THE}_i][_{\text{NP}}\ \text{N}]]]]]$
(where the higher and lower NPs are taken to have identical meanings)

The main data in support of a matching *vs* raising ambiguity involves grammatical RCs whose heads contain a R(eferential)-expression that would be bound, in violation of Condition C, had it originated RC-internally (38a). The acceptability of (38a) contrasts with the alleged unacceptability of comparable *wh*-chains, where moving a R-expression from a position in which it is bound to one in which it is not, does not seem to obviate Condition C (38b).

(38) a. The picture of John$_i$ that you thought he$_i$ liked is on the mantle.

b. ?* Which picture of John$_i$ did you think he$_i$ liked?

If movement does not obviate Condition C, the RC in (38a) must have a parse in which the R-expression does not originate below its potential binder. According to Sauerland (2004), the matching parse plays this role. MRCs contain two heads, internal and external, that are *not* related by movement. And while the elements in a movement chain must be "strictly identical", the two heads in a MRC need only be "identical in meaning" (2004: 110). This flexibility allows the internal head in (38a) to contain a pronoun,[22] rather than a R-expression, and is thus not subject to Condition C; e.g., (39).

(39) The λx [picture of John$_i$] that you thought he$_i$ liked [~~the$_x$ picture of him$_i$~~].

Hulsey & Sauerland further adopt Fox & Nissenbaum's (2000) view that extraposition of a RC past a right-adjoined adverb in a structure like (40a) consists of covert-movement (i.e., QR) of a DP past the adverb (40b), followed by trace conversion of the lower copy of the DP (40c), and finally a counter-cyclic operation that lets us "late-merge" that extraposed RC directly into the higher one (40d).

(40) a. *Merger of adverb:* $[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]\ldots\text{adverb}\ldots]$

b. *"Rightward" QR of DP past adverb:*
$[[[[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]\ldots\text{adverb}\ldots]][\lambda_i]][_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]]$

c. *Trace conversion of lower copy:*
$[[[[\ldots[_{\text{DP}}\ [\text{THE}_i][_{\text{NP}}\ \text{N}]]\ldots\text{adverb}\ldots]][\lambda_i]][_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]]$

d. *"Late-merger" of RC into the DP heading the movement chain:*
$[[[[\ldots[_{\text{DP}}\ [\text{THE}_i][_{\text{NP}}\ \text{N}]]\ldots\text{adverb}\ldots]][\lambda_i]][_{\text{DP}}\ \text{D}\ [[_{\text{NP}}\ \text{N}][\mathbf{RC}]]]]$

If extraposition indeed consists of these four steps, it directly follows that the extraposed RC cannot have a raising construal. Raising requires that the head-NP be merged RC-internally and raise to its surface position. But by the time the RC

22 This is known as "vehicle-change" since Fiengo & May 1994.

is merged in (40d), that NP has already been merged and moved past an adverb, preventing it from originating in the RC-internal gap position.

This approach has been challenged from two conflicting directions: On the one hand, it has been argued that the contrast taken to motivate the existence of MRCs in (38) "is not as robust or theoretically significant as it has been taken to be" (Henderson 2007: 204). In particular, the ungrammaticality judgment in (38b) has been questioned, suggesting, perhaps, that movement may obviate Condition C violations,[23] and therefore that matching is superfluous in accounting for the grammaticality of (38a).[24] Henderson thus argues that all RCs involve raising, and that we can maintain the account of extraposition in (40) by adopting a particular architecture of movement that lets us ignore the higher head-NP in a RC movement chain even when the RC had been late-merged with it.[25]

On the other hand, there has been a push in the literature to eliminate the raising parse altogether, and account for connectivity and anti-connectivity effects between the external head and the RC-internal environment in MRCs by positing a deletion operation that allows either the external or the internal head to remain uninterpreted at LF (cf. Munn 1994; Citko 2001; Salzmann 2019, a.o.). On this view, when the head-NP contains an anaphor or an idiom part, we are allowed to ignore its RC-external copy, but when it contains an R-expression bound RC-internally, we are allowed to ignore its RC-internal one.[26]

These views, while stark opposites, nevertheless converge on a similar structure for extraposed RCs, schematized in Figure 4, where copies are boldfaced for readability, and numbered to facilitate reference below. QR of DP_γ past an adverb forms the movement chain $\{DP_\gamma\text{-}1, DP_\gamma\text{-}2\}$, whereas NP_β-1 and NP_β-2 form their own

23 This claim, originating in Safir 1999, received experimental support in Bruening & Al Khalaf 2019.

24 Henderson (2007), following Safir (1999), suggests that "vehicle-change" is a general property of *wh*-chains, allowing the lower and higher copies to differ in whether they contain a pronoun or a R-expression, though no comprehensive theory of vehicle change is provided.

25 Briefly, Nunes's (2004) theory of movement is adopted, on which elements in the syntactic numeration may be copied and merged in separate derivational workspaces, and thus not *all* copies of the same element must be in a c-command relation. Rather, a post-derivational operation of *chain-formation* identifies those copies of the same element that are in a c-command relation and marks them as a chain. A well-formedness requirement then ensures that for every chain at least one copy is interpreted (and only one is pronounced; though see Henderson 2007: fn. 18 for complications). Given the representational nature of chain-formation, QR of a DP past an adverb as in (40b), does not prevent the DP's NP restrictor from forming a chain with its copy inside the late-merged raising RC.

26 Most proponents of matching seem to disagree with Henderson (2007) on the robustness and significance of the Condition C data in (38), but this issue is beyond our immediate interests below. Note, also, that the matching-only approach is not in conflict with our account of R4-M which is presented above as contingent on the raising construal of RCs, given that proponents of matching must posit an operation that mimics the effects of reconstruction for independent reasons.

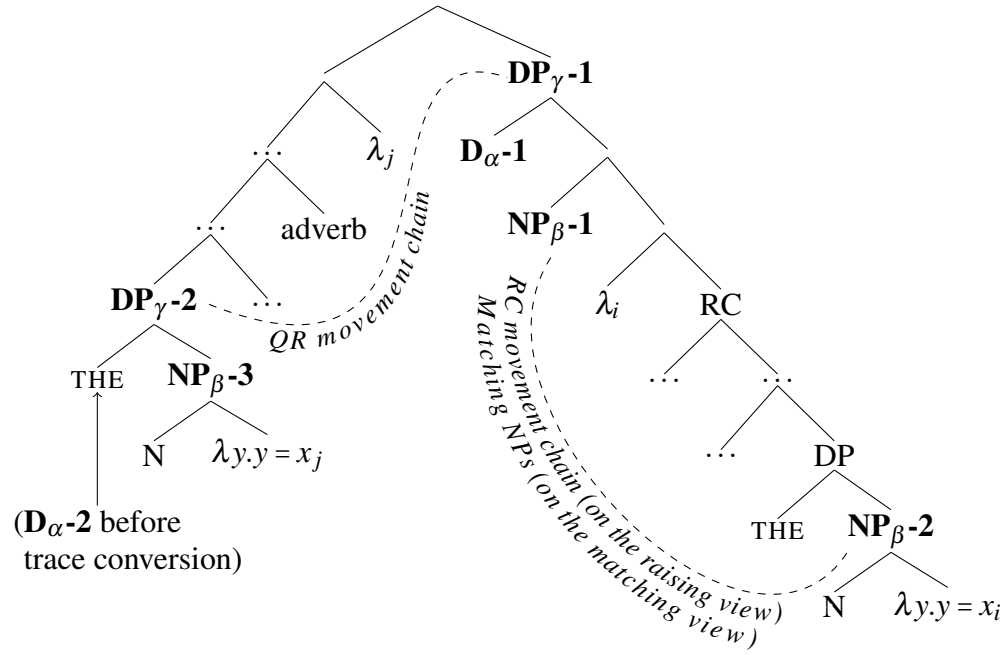


Figure 4 Structure for extraposition with a raising RC

movement chain on the *raising-only* approach, but are not related by movement on the *matching-only* approach. Either way, however, we are allowed to ignore the higher of the two, NP$_\beta$-1, and interpret NP$_\beta$-2 at LF, which is what is required to achieve the effects of reconstruction. If that is the case, of course, we are in need of an alternative explanation for the apparent incompatibility between extraposition and reconstruction, as Hulsey & Sauerland's claim that a late-merged RC cannot in principle show reconstruction effects no longer holds.

This apparent incompatibility, recall, is demonstrated by the ban on extraposing RCs whose head-NP contains an anaphor bound RC-internally (41a), or the absence of an idiomatic interpretation when the head-NP forms an idiom with RC-internal material (41b); i.e., instances of the schema in Figure 4 in which NP$_\beta$ contains an anaphor or idiom part, whose binder or idiomatic environment is RC-internal.

(41) a. * $[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \ldots\ \text{anaphor}_i\ \ldots]_j]\ldots\ \text{adverb}][_{\text{RC}}\ldots\ \text{R-expression}_i\ \ldots\ \text{t}_j]$

b. # $[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{idiom part}]_j]\ldots\ \text{adverb}][_{\text{RC}}\ldots\ \text{idiomatic environment}\ \text{t}_j]$

Condition A and the constraint maintaining idiom integrity can be thought of as "licensing conditions" on such NPs. And if NP$_\beta$ in Figure 4 is subject to one of these conditions, the *only* copy of it that is licensed is NP$_\beta$-2, as both NP$_\beta$-1 and NP$_\beta$-3 do not comply with these constraint: If NP$_\beta$ contains an anaphor, for instance, that anaphor is bound only in the position of NP$_\beta$-2. Similarly, if NP$_\beta$

contains a part of a VP idiom, NP$_\beta$-1 and NP$_\beta$-3 simply will not have an idiomatic meaning as they do not reside in the complement position of an idiomatic verb. Thus, only NP$_\beta$-2 may be interpreted.

But, Henderson (2007) suggests, therein lies the rub: When only NP$_\beta$-2 is interpreted, no NP in the QR chain, and by extension no DP forming that chain, is interpreted. Thus, as long as we posit a constraint demanding that at least one element of every movement chain be interpreted, we derive the ungrammaticality in (41) without conceding that the RCs in that schema cannot show reconstruction effects. The source of ungrammaticality, i.e., the "offending" NP, is not part of these RCs. Rather, it is NP$_\beta$-3, at the tail of the QR chain, which violates the licensing constraint that reconstruction effects within the RC are supposed to circumvent.

A similar story can explain the apparent incompatibility of R4-M and extraposition demonstrated with (42a), which seems *false* in the exclusively-R4-M-verifying scenario (36a). Here, the need to be interpreted RC-internally, while not a *licensing* constraint on the head-NP, is required to render the sentence true in its respective context. So while in (42a), too, the *judge*-NP heading the RC can reconstruct to receive opaque evaluation, its trace-converted copy within the QR chain, boldfaced in (42b), must be interpreted, and given that it is not in the scope of *any* intensional operator, it must be interpreted *transparently*, "undoing" the effects of reconstruction in the RC. The sentence with extraposition, paraphrased in (42c), is thus committed to the existence of *actual* judges, explaining the absence of R4-M.

(42) a. I praised every judge today that we could face in court.

b. [λ_y I praised **the$_y$ judge** today][every ~~judge~~ [λ_x we could face the$_x$ judge]]
QR chain; RC external and internal NPs

c. Every individual x for whom there is a possible world in which we face x as the judge in court, is such that I praised the actual judge x today.

Henderson's (2007) explanation for the infelicity in (41) is not the consensus view.[27] However, it makes a prediction regarding the interaction between extraposition and reconstruction that is applicable to R4-M, and is more nuanced than Hulsey & Sauerland's (2006) absolute ban on reconstruction in extraposed RCs. Reconstruction is not predicted to be blocked for *all* extraposed RCs, but only for those whose head-NP is not independently licensed within the QR chain in the matrix clause. If it is licensed, extraposition should be possible, as corroborated by contrasts like (43-44), where the head-NP is licensed within the QR chain.

(43) a. * Mary saw the portrait of himself$_i$ yesterday that John$_i$ likes.

b. John$_i$ saw the portrait of himself$_i$ yesterday that he$_i$ likes.

27 See Salzmann 2006, 2019 for a discussion.

(44) a. # Mary could not ignore the beans yesterday that John spilled.

b. Mary spilled the beans yesterday that she thought John already spilled.
(based on Henderson 2007: ex. 28)

Next, we spell out what this view of the interaction of extraposition and reconstruction predicts for R4-M, on the assumption that R4-M is a reconstruction effect.

5.3.2 A more nuanced prediction regarding R4-M and extraposition

R4-M involves cases in which a determiner seems to scope above a modal, but a NP adjacent to it is evaluated in the modal's scope. When the modal is RC-internal, the determiner under which the RC is embedded was never merged in the scope of the modal to begin with, and the adjacent NP may reconstruct, deriving the desired "split-scope" effect. In extraposition cases, the determiner and adjacent NP first form a DP that QRs, and only then merge with the intensional RC. If the absence of R4-M in such cases is really due to the copy of the NP within the QR chain being interpreted outside the scope of a modal, we predict that placing a similar modal above it in the matrix clause will render extraposition compatible with R4-M. This is because, trace-conversion within the QR chain will effectively remove the quantificational force of the lower determiner from the scope of the matrix-clause modal (cf. D_α-2 in Figure 4), but its NP complement will nevertheless be evaluated opaquely, as required for R4-M.

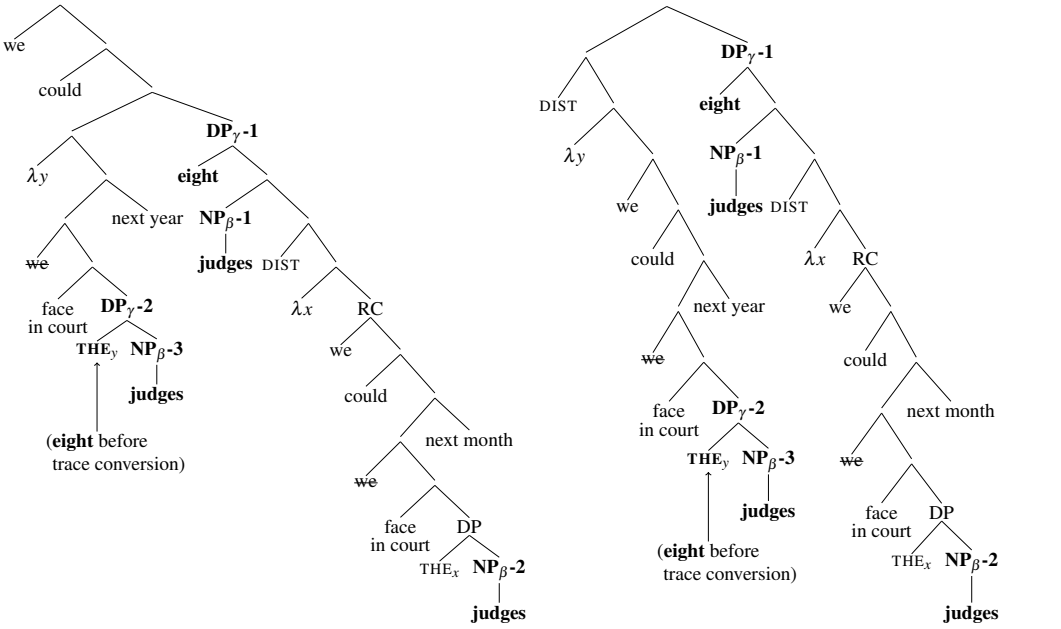
We illustrate that this prediction is borne out with the sentence in (45). Which contains a RC extraposed over an adverb, with an occurrence of an existential modal in both the RC and the matrix clause.

(45) We could face in court eight judges next *year* that we could next *month*.

On Fox & Nissenbaum's (2000) account, extraposition requires QR of a matrix-clause DP prior to the late-merger of the extraposed RC. Thus, (45) can have at least two structures, both schematized in Figure 5 below; one in which the DP "*eight judges*" QRs to a position below the matrix "*could*" (Figure 5-a), and another in which it QRs to a position above it (Figure 5-b).[28]

Regardless of which copy of the head-NP is interpreted in the late-merged RC, Figure 5-a gives rise to a reading on which it is possible for Alex to face eight individuals in court; i.e., a *de dicto* reading of the raised DP relative to the matrix

28 The two copies of the QRed DP are boldfaced in Figure 5, as are the internal and external head-NPs of the RC, which can be thought of as matching NPs or as copies in a movement chain, either works for our purposes as discussed above. As is standard, the subject in both structures "*we*" is assumed to originate below the modal, where it is interpreted, but is pronounced in a higher position. Both positions are represented in the figure, with the unpronounced copy crossed-out. Note, futher, that we freely insert distributivity operators throughout the structure, as motivated in Section 2.1.



(a) LF that derives a *de dicto* reading (b) LF that derives *R4-M* or *de re*

Figure 5 Possible structures for (45)

modal, paraphrased in (46a). Crucially, however, if extraposed RCs can show reconstruction effects, Figure 5-b is predicted to give rise to R4-M, paraphrased in (46b). This is because both NP$_\beta$-2 and NP$_\beta$-3 are in the scope of modals of a similar force and flavor in that figure, and thus even when both are interpreted, the resulting proposition is not necessarily committed to the existence of actual judges. And since trace-conversion of the matrix DP effectively removes the quantificational force of the determiner of DP$_\gamma$-2, the only quantificational determiner in the structure—namely, the one in DP$_\gamma$-1—scopes above both modals. Thus, the interpreted NPs can be evaluated in the domain of modals which the quantificational determiner outscopes.

(46) a. The following is possible: there are eight judges we could face in court next month, such that we face these judges in court next year. (*de dicto*)

b. Eight individuals who could each be the judge we face in court next month, could also each be the judge we face in court next year. (*R4-M*)

c. There are eight actual judges we could face in court next month, each of whom could also be the judge we face in court next year. (*de re*)

Note that if Hulsey & Sauerland (2006) are correct in arguing that extraposed RCs cannot show reconstruction effects, Figure 5-b is predicted to give rise only to a

de re reading, paraphrased in (46c), which is committed to the existence of actual judges.

Now consider (45) in scenario (47). Since—regardless of when exactly her lawsuit will be filed—Alex will eventually face only *one* judge in court, the *de dicto* reading (46a) is false. And since there are no relevant *actual* judges in the scenario, so is the *de re* reading (46c).

(47) **Context:** Ten vacancies in the local court will be filled in the upcoming judicial elections, whose candidates are not and never were judges. Eight of the ten eventual winners will stay on the court for many years, two will fill temporary vacancies and vacate their seats after a few months. Alex intends to file a lawsuit, which will be decided by just one of the ten winners, selected at random. She is certain that the candidates in the current election cycle are likelier to accept her lawsuit than anyone who will occupy their seats in the future. She therefore pressures her lawyer to file the lawsuit as soon as next month, knowing this process takes time, and fearing she will miss her opportunity to face a friendly judge. Her lawyer wants to postpone the process until next year, and would like to calm Alex's fears from this delay. He knows that Alex is not aware of the expected lengths of each winner's tenure, and uses (45) to convey that a yearlong delay is unlikely to impact the identity of the presiding judge.

The scenario verifies, exclusively, the R4-M of (45), and the fact that the sentence does, indeed, seem felicitous and true in this scenario is a striking corroboration, we think, of Henderson's (2007) position *vis-a-vis* the interaction of extraposition and reconstruction, and its implications for R4-M, on the assumption that the latter phenomenon is a reconstruction effect.[29]

29 This concludes our illustration of the correlation between reconstruction and R4-M. We would be remiss, however, if we do not comment on the debate about the nature of reconstruction, and how the current discussion interacts with it. The *syntactic* account of reconstruction that we adopt in (14) contrasts with its treatment as a *semantic* process, consisting of type-shifting and abstraction over higher-type variables (e.g., Sharvit 1999). In fact, Grosu & Krifka (2007) defend a semantic account of reconstruction in exactly the RCs discussed here, whose head is interpreted opaquely relative to a RC-internal intensional operator. Our approach to R4-M does not bear directly on this issue. That is, to the extent that semantic reconstruction accounts for the way RCs pattern *vis-a-vis* binding (12a), idioms (12b), resumption (19-23), superlative-modification (25), and extraposition (36), what we illustrate above is merely a correlation between R4-M and reconstruction, *whatever it is taken to be*. Of course, for those who believe the semantic approach does not aptly capture the empirical landscape, this paper provides further support for syntactic reconstruction. We cannot do justice to this issue here, referring the reader to the exchange in Grosu & Krifka 2007, 2022; Bassi & Rasin 2018 for a recent reincarnation of the old debate, with a focus on intensional RCs.

6 Potential overgeneration: RCs with complex head-NPs

Above, we advance the approach that R4-M is restricted to reconstructed RCs. Next, we address a potential overgeneration challenge due to an anonymous reviewer, suggesting that our account, while less permissive than Szabó's (2010; 2011) bare-quantification approach, is still *too permissive*; there are structures in which reconstruction is presumably permitted, which nevertheless do not give rise to R4-M. These involve RCs whose head-NPs are not bare, but are rather modified by certain PPs or even by multiple RCs. The response we offer will not be definitive. Rather, we will first attempt to sketch the complex empirical picture, as judgments are quite delicate. We will distinguish between RCs with head-NPs that contain a PP modifier, which according to some speakers do sometimes give rise to R4-M, and structures that contain multiple RC modifiers, which seem to uniformly block it. We will then sketch a tentative explanation of these facts that is compatible with the reconstruction approach to R4-M.

We examine first those cases in which judgments are remarkably clear. The context in (48a) is exclusively-R4-M-verifying; there is only one actual judge Alex will face on the other side of the courtroom door, but there are two individuals who each could, given what Alex knows, be the judge she will face there. The sentence in (48b) is clearly false in that scenario, as it seems to commit to there being two judges on the other side of the courtroom door.

(48) a. **Context:** A judicial election has occurred; of two candidates, neither of whom were previously judges, one prevailed and filled a vacancy on the court. Alex will face that winner in an upcoming trial, but was not informed on the outcome ahead of time. As she sits outside the courtroom with her lawyer, she says:

b. There are two judges we will face on the other side of this door that could decide our fate today. **false** in (48a)

c. There are two judges that could decide our fate on the other side of this door today. **true** in (48a)

But this falsity judgment is unexpected on our approach to R4-M; if the complex NP "*judges we will face on the other side of this door*" in (48b) is first merged in the gap position of the intensional RC "*that could decide our fate today*", then it should be able to reconstruct into that position, below the modal, and the sentence should have a true reading, meaning roughly what (48c) does.

The problem generalizes as follows: In a sentence with multiple RCs of the form "*There are* D NP RC_1 RC_2", if RC_2 is a raising RC, whose head NP is allowed to merge with RC_1 *before* raising to its surface position, then as long as RC_2 contains a modal above the gap position of NP as schematized in (49), we predict

the possibility of opaque evaluation for the entire modified NP head in virtue of reconstruction.

(49) [There are D [[$_{\text{NP}}$ N [$\mathbf{RC}_1$]][$_{\mathbf{RC}_2}$ … modal … [$_{\text{NP}}$ N [$\mathbf{RC}_1$]]]]]

As (48) illustrates, this prediction does not seem to be corroborated; once we tack an additional relative clause on the head-NP that must reconstruct to derive R4-M, the reading is no longer attested.

A reviewer suggests that the blocking of R4-M persists even when the additional modifier on the head-NP is not another RC, but a prepositional phrase (PP), citing the falsity of (50) in the context in (48a) as evidence for this claim.

(50) There are two judges on the other side of this door that could decide our fate today. **false** in (48a)

Here, too, if the PP modifier can marge with the head-NP RC-internally, it should be able to reconstruct, and the sentence should have a R4-M, equivalent to the true reading of (48c) in the scenario in (48a), contrary to fact.

We think that with PPs, the picture is less clear than (50) might suggest. While we agree that the sentence is clearly false in (48a), there is an alternative explanation for this unambiguous judgment. In much of the literature on existential *there*-sentences, PPs like the one in (50) are not treated as modifiers of the head-NP, but rather, as modifiers of the main predicate of the *there*-sentence. What exactly that main predicate is subject to much controversy,[30] but as long as that predicate is *not* the NP heading the RC in (50), then the PP does not merge directly with that NP and is thus not expected to reconstruct. That this PP can in principle modify a predicate is illustrated by its felicity in a RC-internal position in (48c). What this alternative explanation of (50) further assumes is that it *cannot* modify the head NP.

Once we restrict ourselves to PPs that can, plausibly, be construed as dependent on the head-NP, a different picture emerges. First, PPs that are *complements* of the head NP easily reconstruct when this is required to give rise to R4-M. Example (51b), for instance, seems true in the scenario in (51a), which exclusively verifies its R4-M, given that there are no long-listed professors, only individuals who could be professors if they are offered the job. This suggests that the complex NP "*professor of phonology*" can reconstruct, despite the presence of a PP. This is, of course, to be expected on the received wisdom that the selectional requirements of the head-NP must be satisfied in its original merging position. The more interesting cases involve adjunct PPs that can nevertheless be understood as modifying the head-NP; e.g., (51c). This time, judgments are not as clear; almost all speakers we have consulted with found it somewhat harder to accept (51c) as true in its exclusively-R4-M-verifying scenario (51a), but quite a few did.

30 See McNally 1992; Francez 2007 (and references therein) for a discussion.

(51) a. **Context:** A linguistics department is hiring a new faculty member, and researchers of any subfield may apply. Two current faculty-members, Alex and Sam who are not part of the search committee, have particular preferences. Alex would like to hire a phonology professor, and Sam would like to hire a graduate of the University of California. After forming a long-list consisting of ten candidates, all of whom are currently finishing up their graduate studies, the head of the committee reaches out to Alex and Sam, saying: You'll be happy to hear that...

b. ...there are four professors of phonology we could be welcoming to our department in the fall. **true** in (51a)

c. ...there are four professors with UC dissertations we could be welcoming to our department in the fall. **%** in (51a)

Let us take stock: It seems that while multiple RCs block R4-M across the board, complement PPs of the head-NP do not do, whereas adjunct PPs do for some speakers, but not for others; though it is still more difficult to achieve R4-M with an adjunct PP than it is with a complement, even for speakers who can in principle do so. The gradient nature of the judgments in examples with PPs, in contrast with the absolute judgments in multiple relativization structures, suggests that in the latter cases reconstruction—and thus R4-M—should be blocked by a categoric principle, whereas in the former some tendency should explain the varying judgments.

Next, we draw on the discussion of extraposition in Section 5.3 to propose a way of categorically ruling out multiple relativization structures like (49), in which one RC reconstructs into the gap position of another. Suppose we adopt Henderson's (2007) view that extraposition does not block reconstruction into the extraposed RC. To that, we add a stipulation regarding the syntax of "stacked" RCs, according to which a syntactic restriction blocks more than one RC from adjoining to a single instance of NP. This means that when two RCs appear to be "stacked" on the same NP, the underlying structure involves extraposition in Fox & Nissenbaum's (2000) sense; i.e., it contains two different copies of NP, presumably related by movement, that is each late-merged to a different adjunct.[31]

A version of this idea, schematized in (52), has a DP move covertly, and two RCs late-merged, post-movement, in the head and tail of the movement chain. If this conjecture regarding adjunct-stacking, or one similar enough, is correct, R4-M is predicted to be blocked for (48b) for the same reason that it is blocked in basic

31 The inspiration to this idea comes from Jacobson 1983, where stacking involves extraposition of one RC from the gap position in another. However, given that Jacobson's proposal predates the copy theory of movement and, as we understand it, takes extraposition to involve movement of the extraposed RC, reconstructing it within the theoretical framework taken for granted here will take us too far from our present goals.

extraposition cases; i.e., (42a). There are two copies of NP, only one of which may reconstruct into an intensional RC. But if that copy reconstructs, the other must be interpreted transparently, "undoing" the effect of reconstruction. This explanation of the infelicity of (48b) in an exclusively-R4-M-verifying scenario makes the following prediction: If the stacked RCs both embed modals (of the same force and flavor), R4-M should once again be available, because now each of the NPs in the movement chain can reconstruct under a modal. This is corroborated in (53).

(52) Toy derivation of stacked-adjunct structures:

a. *Covert movement of DP:* $[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]\ldots][\lambda_i][_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}]]$

b. *Late-merger of adjuncts:*
$[\ldots[_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}][\mathbf{RC_1}]]\ldots][\lambda_i][_{\text{DP}}\ \text{D}\ [_{\text{NP}}\ \text{N}][\mathbf{RC_2}]]$

(53) There are two judges who could/might be on the other side of this door that could decide our fate today. **true** in (48a)

As for the behavior of PPs in complex head-NPs, suppose that these elements can originate RC-internally, as schematized in (54), or RC-externally via late-merger, as in (55). Obviously, when PP is a complement of the head-NP, selectional restrictions force the parse in (54). But otherwise, for head-NPs with adjunct PPs, the observations above are indicative of some tendency to prefer late-merger structures, which can perhaps be overcome (at least for some speakers) but that renders reconstruction—and hence R4-M—more difficult to achieve.

(54) [There are D $[[_{\text{NP}}\ \text{N}\ [\mathbf{PP}]][_{\mathbf{RC}}\ \ldots\ \text{modal}\ \ldots\ [_{\text{NP}}\ \text{N}\ [\mathbf{PP}]]]]]$

(55) a. [There are D $[[_{\text{NP}}\ \text{N}][_{\mathbf{RC}}\ \ldots\ \text{modal}\ \ldots\ [_{\text{NP}}\ \text{N}]]]]$ (raising of head-NP)

b. [There are D $[[_{\text{NP}}\ \text{N}\ [\mathbf{PP}]][_{\mathbf{RC}}\ \ldots\ \text{modal}\ \ldots\ [_{\text{NP}}\ \text{N}]]]]$ (late-merge)

Why things should be this way, we do not know;[32] but as long as they are, the pattern we observe is rendered compatible with our account of R4-M.

7 Conclusion

Semantic orthodoxy has it that the quantificational scope of a determiner is not fully divorced from the intensional status of its restrictor. Szabó (2010, 2011) resurrects Fodor's (1970) old claim that it is, introducing a particular kind of sentence judged true in a scenarios that verifies it only if some determiner it contains is taken to quantify unrestrictedly, with the NP "restrictor" (a misnomer on this approach) evaluated

32 Perhaps this tendency to merge and interpret things where we hear them is intended to ease the job of the linearization algorithm, which faces less choice points when linearizing a structure like (55) then it does given a structure like (54).

in the domain of an intensional operator in the determiner's scope. Szabó uses this data, exemplifying a reading that we call here R4, to motivate an unorthodox "bare quantification" strategy for natural language, which splits determiners from their restrictors at LF, allowing them to quantify unrestrictedly over the entire domain of quantification. Surprisingly, Szabó's data has not received much attention in the linguistic literature, despite its potential far-reaching implications for mainstream theories of intensionality and scope, which rule out R4.

We attempt to fill the gap by initiating a defense of orthodoxy, so to speak. First, we challenge the leap from the data to the conclusion by showing that bare quantification not only overgenerates unattested R4s, but also undergenerates a particular subclass of cases involving modal operators that Szabó offers as an argument in its favor. We then show that the undergenerated cases can be derived from a construction already independently argued to be available in natural language, of reconstructed intensional RCs, in which quantification is not bare, but restricted. The reconstruction account makes testable predictions that are indeed corroborated.

The scope of the challenge posed by Szabó is thus diminished, but the challenge itself is not fully diffused. This is because—as mentioned at the outset—not *all* examples offered in favor of bare quantification are amenable to the reduction we defend for the modal cases. To see this, consider (56-57).

(56) a. **Context:** Under questioning by the police, Alex is presented with photos of her neighbors, and identifies those she thinks are thieves. She does not count her allegations, but an officer does, and reports to a colleague:

b. Alex believes that eleven thieves live in her building.

c. There are eleven individuals in the actual world such that Alex believes each of them to be thieves living in her building.

(adapted from Szabó 2010: ex. 7)

(57) a. **Context:** We are on a guided tour of what was once a prestigious camp for teenagers that had shut down years ago. The camp catered to teenagers educated in affluent private elementary schools. Every once in a while it also accepted students from the public school system, though never more than a handful at any given point in its existence. The tour guide says: this camp served some of the richest families in the state, but...

b. There were (also) fifteen high-schoolers/teenagers here who attended a public elementary school.

c. There are fifteen individuals, such that for each there is a past time interval during which they were high-schoolers/teenagers and another past time interval during which they attended a public elementary school.

(our example, modeled after Szabó 2011: ex. 28)

In (56), since Alex did not count her allegations, she does not believe *de dicto* that eleven thieves live in her building, and since the officer need not believe Alex's allegations, (56b) is not a statement regarding Alex's beliefs about eleven *actual* thieves, ruling out its *de re* and *third* readings. The sentence is thus true only if it expresses what the R4 paraphrase in (56c) does. In (57), it is matrix past tense that creates the intensional environment relative to which R4 is observed: In the context of (57a), the tour-guide does not intend to convey the *de dicto* interpretation of (57b), on which there is a past interval t such that fifteen high-schoolers *at* t previously attended public elementary schools. Nor is she saying anything about fifteen *utterance-time* high-schoolers, given that the camp shut down and its attendees are no longer in their teens, thus ruling out the *de re* and *third* readings. Rather, she means to convey what (57c) does; i.e., the R4 of (57b).

But (56b) contains no RC at all, and so the reconstruction account we propose for the modal cases is simply irrelevant. And while (57b) does contain relativization, its ability to convey what the R4 paraphrase in (57c) is not derived from reconstruction: Since one cannot be a teenager and attend an elementary school at the same time, reconstruction of the head-NP in (57b) results in interpreting it contemporaneously with a predicate that is temporally-incompatible with it, in the scope of embedded past tense. Alternative mechanisms are thus required to derive R4 in these examples.

We must leave any exploration of these alternative mechanisms to future research. Our argument from overgeneration against the bare quantification strategy, however, clearly suggest that whatever they are, these mechanisms must be non-trivially restricted by—one would hope—the particular features of the intensional environments involved. In fact, recent proposals in the literature already point in exactly that direction. In particular, it has been suggested that the R4 of belief reports like (56b) be derived as particular instances of another phenomenon, first observed by Fauconnier (1984), and termed *revisionist belief* by Blumberg & Lederman (2021), in which an agent is truthfully ascribed belief in a proposition p despite their belief state failing to entail p, as long as p is entailed by a revision of their beliefs in light of the reporter's presuppositions.[33] More must be said, of course, about these cases and those involving tense; however, we hoped to have convinced the reader with the argument above that one is better off attempting to derive different instances of R4 from distinct construction-specific mechanisms, than to unify them under a single unrestricted one.

33 Cf. Benbaji-Elhadad 2023; Mayr & Schmitt 2023, 2024. In REMOVED, we defend this approach by illustrating that R4 relative to attitudes seems subject to the same constraints governing the distribution of revisionist belief.

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