

Speaking of Qualities

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1. Introduction

Indefinites in intensional contexts, such as attitude reports or intensional argument positions, give rise to a well-known ambiguity. Consider (1): On the so-called **specific** reading, it says that there is a particular object which happens to be a jacket like Malte's jacket such that Adrian wants to buy that particular object. Adrian need not know that that object is a jacket like Malte's. On the so-called **unspecific** reading, Adrian wants to buy some jacket or other which meets his requirement of being like Malte's jacket.

- (1) *Adrian wants to buy a jacket like Malte's.*
- a. There is a particular jacket which is like Malte's and Adrian wants to buy that particular thing. (specific)
 - b. Adrian thinks, 'I want to buy a jacket like Malte's.' (unspecific)

The traditional analysis assumes that the indefinite is an existential quantifier which can take wide or narrow scope with respect to the opaque context introduced by *want*. An English sentence like (1) is thus ambiguous and corresponds the two first-order formalizations in (2).¹

- (2) a. $\exists x[\textit{jacket}_@ (x) \ \& \ \textit{like-malte's-jacket}_@ (x) \ \& \ \textit{want}_@ (\textit{adrian}, \lambda w. \textit{finds}_w (\textit{adrian}, x))]$
- b. $\textit{want}_@ (\textit{adrian}, \lambda w. \exists x[\textit{jacket}_w (x) \ \& \ \textit{like-malte's-jacket}_w (x) \ \& \ \textit{find}_w (\textit{adrian}, x)])$

Any solution along these lines faces a problem with an additional reading observed by Fodor (1970), called **Reading 3** (henceforth R3). Consider the following scenario: Malte and Adrian do not know each other. Adrian has seen a green Bench jacket in a catalogue and wants to buy one. Malte happens to own precisely such a green Bench jacket. Intuitively, (1) is true in this scenario.

For discussion and helpful comments, I would like to thank Ede Zimmermann, as well as the audience of the semantics tea in Göttingen and of SALT 2009. The usual disclaimer applies.

¹Throughout this paper I assume that surface sentences (in *italics*) are disambiguated by corresponding LFs which are then translated into a version of Gallin (1975)'s Ty2. The latter is interpreted in a standard model consisting of a set of possible worlds W , a set of individuals D_e , the designated world $@$, and its interpretation function. Apart from the structuring needed in 3.2, both translation and interpretation are straightforward, so I will often give only either LF (in *italics*) or translation (with ***bold italic*** constants). Towards the end, the metalanguage is enriched with a Ty2-language, too (normal font).

This is problematic: There is no particular object Adrian wants to buy, hence the reading is unspecific and the existential quantifier should receive narrow scope; yet, the property of being a jacket like Malte's is not part of Adrian's intention and should thus not be interpreted as part of the belief content. As that property corresponds to the restrictor (the NP-part) of the existential quantifier,² interpreting it outside of the belief context would require wide scope for the existential. So, no ordering of the (restricted) first order quantifier introduced by the indefinite and the intensional operator *want* leads to the desired truth conditions. Whether the description is part of the belief content or not does not co-vary with (un)specificity of the indefinite. Therefore, Fodor argues that (un)specificity is really independent of another phenomenon observed as characteristic for intensional contexts, namely the distinction of **opaque** vs. **transparent** interpretation. A DP in a belief context is interpreted transparently with respect to an intensional context, if its descriptive content (the NP-part) is interpreted outside of the intensional context, and opaquely if within.

Examples like (1) (adapted from Fodor 1970) involve an additional complication as to how *like* should be interpreted. Intuitively, it is resolved contextually to 'of the same brand as'/'of the same color as'/'suited for the same purposes as', etc. Landman (2006) argues that the comparison has to work via a hidden kind-referring term. This issue is orthogonal to the treatment of R3, as exactly the same question arises in purely extensional contexts (cf. (3a) and we also find R3 without *like* (cf. (3b), also from Fodor 1970).

- (3) a. *Adrian bought a jacket like Malte's.*
 b. *Adrian wants to buy an unexpensive coat.*

In 2.5, I will come back to the question of whether kind reference plays a role for examples like (3a) and (3b).

The standard assumption for R3 is that somehow the quantificational force has to be interpreted *in situ* (i.e., within the intensional context), whereas the restrictor of the quantifier has to be interpreted at the actual world @.³ In the following, I call this approach **transparent evaluation**. The literature abounds with technically interesting suggestions of how to achieve it. We find at least the following: (i) free indexation of world variables (Percus 2000); this may be called the standard solution. Heim and von Stechow (2007) discuss in addition (ii) scoping out of the DP⁴, and (iii) semantic reconstruction of a quantifier that has been evaluated at @; (iv) Geurts (1998), Maier (2006), Romoli and Sudo (2008) draw on the restrictor being presuppositional; (v) Sternefeld (2008) uses branching quantifiers; and most recently, (vi) Keshet (2008) proposes a solution in terms of split intensionality. In this paper, I

²For the sake of concreteness, I assume that, syntactically, nominal constituents headed by determiners like *a*, *the*, *every*, are DPs and have the following structure [_{DP} [_D *a/the/every*...] [_{NP} *jacket like Malte's*]]. Nothing hinges on this.

³As we are not dealing with embeddings of more than one level, we need not worry about intermediate readings: Transparency w.r.t. the intensional context coincides with interpretation at the world of evaluation, for simplicity, the actual world @.

⁴They label quantifiers and nominal arguments of the predicate NP.

will not provide a comparison of these accounts. This is because I disagree with the one thing all of them have in common, namely the assumption that sentences like (1) are about actual jackets. In order to show why I consider it a non-starter, I choose the analysis in terms of free world variable indexation as a representative. Unless indicated explicitly, I believe that nothing in my argumentation hinges on that particular choice.

In 2.1, I introduce the analysis in terms of free world variable indexation. I then use it to show that the evaluation of the restrictor at the actual world makes wrong predictions both in general and for concrete examples (“Burj dubai” and “buyers’ intentions”). In view of these problems, I discuss an alternative analysis that is developed in Cresswell and von Stechow (1982). I call it **classical *de qualitate*** (also: **higher order *de re***). I show that it can account for some of the problematic examples (“Burj dubai”), but not for other types of R3 (“buyers’ intentions”, “Foyle’s investigation”). Therefore, at least three different subcases of R3 have to be distinguished. Despite the fact that R3 as a phenomenon is thus less homogeneous than what was assumed so far, I think that a uniform treatment can be given. In section 4 I develop such a proposal, which I call **uniform *de qualitate***.

2. Evaluation at the actual world

2.1. *The standard solution in terms of free world variable indexation*

Cresswell (1990) argues that natural language possesses the full power of explicit quantification over world and time variables, illustrated by examples like (4).

- (4) *The antique dealer convinced the farmer that only very few of the highly valuable pieces were worth anything.* example from Zimmermann (t.a.)

The example is reminiscent of our R3 sentences in that, on its salient reading, the quantifier takes narrow scope w.r.t. the attitude verb, yet its NP-part has to be evaluated at a world that is not bound by the attitude verb in order to prevent the complement from denoting a contradiction.

Percus (2000) claims further that the indexation of world variables is subject to structural constraints. For example, in (5), while the noun phrase *my brother* can be interpreted transparently, the predicate *is Canadian* can’t. The sentence can be used to report a situation in which Mary thinks of the guy standing besides her (actually my brother, but Mary doesn’t know this) that he is Canadian. But it can’t report a situation where Mary mistakenly thinks that Walter (actually a Canadian) is my brother and thus Austrian like myself.

- (5) *Mary thinks that my brother is Canadian.*

To capture such constraints, world variables are rendered part of the syntactic representation and can thus be made subject to binding principles as adopted standardly

for other types of variables.⁵ Each predicate expression is assumed to come with an additional syntactic argument for its world of evaluation which is filled by a covert world pronominal (a world variable). The world variables of predicates have to be bound by the nearest c-commanding intensional operator, the world variables of nouns can be coindexed freely. In 4.3, I discuss examples from Fodor (1970) that challenge the syntactic constraints. In any case, my arguments against transparent evaluation do not depend on the syntactic implementation of the analysis.

The range of free coindexation is what gives rise to phenomena like R3. In particular, our problematic (1) can have the LF in (6).

- (6) $[Adrian]_{VP} [wants\ w@] [\lambda w' [PRO\ [to\ [buy\ w']\ [DP\ a\ [NP\ jacket\ like\ Malte's\ w@]]]]]$

A straight-forward interpretation of this LF derives that the NP-part is evaluated at the actual world @ (represented by the designated variable $w@$), which amounts to the desired transparent interpretation; at the same time, the quantifier receives narrow scope, which gives us the desired unspecificity. None of the constraints proposed in Percus (2000), Keshet (2008), and Romoli and Sudo (2008) prohibits this particular way of indexing, we thus have a compositional account for R3.

2.2. Two worries about attitudes and the actual world

Before I proceed to evaluate the predictions for particular examples, I would like to point out some theory-driven concerns. It is well known that belief ascription of singular propositions (that is, propositions that depend on one particular individual) gives rise to double vision problems (cf. Quine 1956). Now, the solution in terms of transparent interpretation relies on belief ascription of a proposition that is singular w.r.t. the actual world. This should at least arouse suspicion: How can an individual have access to the actual world? Apart from this foundational scepticism, if we rely on assumptions from Hintikka (1969) as it is standard for the analysis of attitude reports in possible worlds semantics (and, in particular, as it is adopted by the transparent evaluation approaches), we derive two highly questionable predictions. For concreteness, assume that *want* is interpreted as in (7).⁶

- (7) $x\ wants\ p$ is true in w iff all w_1 that are bouletic alternatives for x (verify as many as possible of x 's desires in w), are such that p is true in w_1 .

Now, consider the predictions for (1) (repeated as (35)) evaluated again in the R3-scenario repeated in (8):

- (8) Malte's jacket is a green Bench jacket. Adrian does not know what jackets Malte has; Adrian wants to buy a green Bench jacket.

⁵Romoli and Sudo (2008) observe additional constraints to the ones discussed in Percus (2000) and Keshet (2008). The lack of syntactic systematicity prompts them to argue for the presuppositional variant of transparent evaluation.

⁶Lewis (1979) argues that the embedded proposition should be centered w.r.t. the attitude subject; I ignore this as orthogonal to our concerns. For the standard implementation of 'as many as possible', cf. Kratzer (1991).

(9) *Adrian wants to buy a jacket like Malte's.*

On the one hand, the analysis is unnaturally fine-grained.⁷ Assume, there are w_1 and w_2 which are as similar as possible, apart from the fact that Adrian buys a particular green Bench jacket a_1 in world w_1 , and a particular green Bench jacket a_2 in w_2 . Now, in the actual world @, a_1 is a green Bench jacket (hence, like Malte's jacket), but a_2 is a red Bench jacket (hence, unlike Malte's jacket). It seems quite innocent to assume that the color of a particular jacket is not one of its intrinsic properties, hence a_2 can well have different colors in w_2 and @ respectively. The analysis predicts that w_1 , but not w_2 is a bouletic alternative. Yet, Adrian has no means to distinguish w_1 and w_2 ; to him, they look exactly alike. Therefore, under the standard understanding, either both or neither of them should count as bouletic alternatives.

Even more worrisome is the fact that the analysis is unintuitively unselective. Consider again w_1 , now in comparison to w_3 . Again, in w_1 , a_1 is a green Bench jacket, but in w_3 , a_1 is a red Bench jacket. In w_1 , in w_3 and in the actual world @, Adrian buys a_1 . In @, a_1 is a green Bench jacket (like Malte's jacket). But then, the truth conditions are compatible with w_3 being a bouletic alternative for Adrian. But this is at odds with the observation that the scenario described in (8) verifies (10) on the *de dicto*-reading under the corresponding Hintikka-style analysis for the latter.

(10) *Adrian wants to buy a green Bench jacket.*

As it stands, the solution in terms of transparent interpretation strikes me as incompatible with the standard Hintikka/Lewis-approach to attitude ascriptions.

2.3. The Burj Dubai

2.3.1. The problem: empty extensions

In 2.2 we have seen that it is problematic to combine transparent evaluation with standard assumptions about attitude reports in possible worlds semantics. But transparent evaluation in itself is besieged by a problem. This consists in the fact that the transparent analysis of R3 crucially depends on the set of actual objects of the intended type. But what if there are none?⁸ Consider the following scenario:

(11) Mary is looking at the Burj Dubai, which has 191 floors and is currently the highest building in the world. Also, no other building has more floors. Mary doesn't know this. She also doesn't know how many floors Burj Dubai has. She thinks, 'Wow, I want to buy a building that's even one floor higher!'

In this scenario, (12) constitutes a faithful report of Mary's attitude.

⁷In the following, I phrase things as if one individual could exist in more than one possible world. But nothing hinges on this. It could equally well be replaced by talk about individuals' counterparts.

⁸Relevant examples are also discussed in Sharvit (1998). She focuses on *de re*-readings for empty definite descriptions and assumes that they can always be treated along the lines of what I sketch in 3.2.

(12) *Mary wants to buy a building with (at least) 192 floors.*

Clearly, this is an instance of R3: Mary's wish is not directed at any specific object (so: unspecific); yet, as she is unaware of the exact height of the building, the description is not part of her attitude (so: transparent). The free world variable analysis ensures evaluation at the actual world by generating an LF as in (13a). The corresponding truth conditions are given in (13b).

- (13) a. [*Mary* [*wants* $w@$] [λw *PRO to buy* w [*DP a* [*NP building with 192 floors* $w@$]]]]]
 b. (13a) is true iff at all worlds w_1 that are bouletic alternatives for Mary in @, there is an x which Mary buys in w_1 and which in the actual world @ is a building with 192 floors.

This amounts to saying that Mary desires a contradiction. In the actual world, there are no buildings with 192 floors, so there is no world at which the existential quantification is true. The sentence is predicted to be true only in case the set of Mary's bouletic alternatives is empty. But intuitively the scenario in (11) is compatible with Mary having consistent desires, and (12) is a faithful way of reporting it.

2.3.2. *Saving transparent evaluation and the Burj Dubai*

A straightforward idea to save transparent evaluation in view of examples like the Burj Dubai might be to interpret only part of the NP transparently.

What if we confined transparency to the PP *with (at least) 192 floors*? Although there are no buildings that have more than 191 floors, maybe we can find other things that have more than 191 floors. This would amount to an LF as in (14a) and an interpretation as in (14b).

- (14) a. [*Mary* [*wants* $w@$] [λw *PRO to* [*buy* w] [*Dpa* [*NP [building* w] [*PPwith 192 floors* $w@$]]]]]]]
 b. (14a) is true iff at all worlds w_1 that are bouletic alternatives for Mary in @, there is an x which Mary buys in w_1 and which in w is a building and which in the actual world @ has 192 floors.

It may already be problematic that something has floors without being a building (maybe fata morganas or beehives do). It is also not fully clear what it means for something to be a building in one world, but not in another world. Also, the strategy violates a constraint on free variable indexation established by Keshet (2008). He observes that sentences like (15) lack a sensible reading which should be obtained if the noun *bachelor* and the PP *with a wife* could be evaluated at different indices.

(15) *#Mary thinks Peter is a bachelor with a wife*

Keshet concludes that the following constraint has to be added to the ones Percus (2000) proclaims.

- (16) **Intersective Predicate Generalization** (Keshet 2008: p.13) Two predicates composed via Predicate Modification may not be evaluated at different times or worlds from one another.

This seems to call for an even smaller transparent component. We could assume that the report in (12) is transparent not w.r.t. the entire noun phrase *building with 192 floors*, or the PP *with 192 floors*, but only w.r.t. the numeral *192*. If so, (12) does not constitute an example of R3, but is an ordinary *de re*-report of an attitude about the number 192. This *res* is given to Mary as ‘the number of floors in the building I am currently looking at’, which makes the case amenable to any standard *de re*-analysis (e.g. along the lines of Kaplan (1969), discussed in 3.2). Nevertheless, I don’t think this is the right way to go. Crucially, this solution for instances of R3 with an empty extension of the NP-part relies on the presence of some other individual referring expression that is (i) part of the extensionally empty NP-expression, and (ii) does not have an empty extension itself. It is indeed hard to come up with convincing variants of the Burj Dubai-example that do not involve non-empty individual referring expressions. Why would speakers for the sake of reporting an individual’s attitude replace the empty property that the attitude is about by another equally empty property? Intuitively, in the case of the Burj Dubai-scenario this happens because a speaker who knows what Mary’s attitude (i.e., buy a building at least one floor higher than the building she is looking at) amounts to (i.e., buy a building that has at least 192 floors) can conveniently use the non-context dependent property to report it. Yet I think that we can come up with examples involving empty extensions where the relationship between the two expressions is not obtained via a *de re*-reading of an individual referring expression. Consider (17) (an adaptation from Fodor (1970)), and assume that the curfew started at 6 p.m., and that nobody broke it. If (17a) is the *de dicto*-report, in order to deal with (17b) as a *de re*-report we can play the *de re*-trick via reference to the time 6 p.m. (on day/month/year) which is given to the reporter as ‘the start of the curfew’. Yet, no such trick can be played if the *de dicto*-report is (17b) and (17a) is true *de re*. It may be harder to imagine a suitable context (i.e., a reason for the reporter to have the corresponding interest), but it is perfectly possible to interpret it as R3.

Moreover, even for the initial Burj Dubai-example, if we look at German, the reference to the particular individual (the number 192) can be hidden in a morphologically complex expression like the adjective *hundertzweiundneunzigstöckig* ‘having 192 floors’. On a standard understanding of the syntax-semantics interface, it is then not accessible to a *de re*-interpretation.⁹

⁹Orin Percus (p.c.) points out that this problem does not arise if the difference between *de dicto* and *de re* reports is dealt with by structuring at a post-syntactic level: individual *x* believes a proposition *p* which is singular w.r.t. an individual *y* (i.e., there is a property *F* s.t. $p = \lambda w.F(w)(y)$), if *x* *de re* believes *F* of *y*. An approach along these lines is sketched in Percus (2009). Clearly, the proposal as such and (the accuracy of) its predictions for syntactically hidden reference to individuals merit further discussion.

I conclude that the Burj-Dubai-scenario constitutes a serious problem for a treatment of R3 in terms of transparent evaluation.

2.4. Buyers' intentions

2.4.1. The problem: how actual does your Bench jacket have to be?

In contrast to the Burj Dubai, the standard examples (Fodor 1970, Heim and von Fintel 2007) for R3 involve properties that are actually instantiated, as for example (1) (repeated here as (19)).

(19) *Adrian wants to buy a jacket like Malte's.*

Our scenario for R3 is that Malte owns a green Bench jacket and Adrian thinks, 'I want to buy a green Bench jacket.' Now, if (19) is analyzed by transparent evaluation, this amounts to (20) (this apparent similarity is the starting point for the presuppositional implementation of the transparent evaluation approach).

(20) *Adrian wants to buy one of the actually existing green Bench jackets.*

The predicted equivalence strikes me as inadequate. (19) can well be true if Adrian does not care if he eventually buys a green Bench jacket that already exists at the moment of my report. This becomes more salient with orders that may only trigger the production of the requested good:

(21) a. *Adrian is planning to order a piano like your grandmother's.*
b. ...reporting Adrian's thought, 'I will order a Fazioli grand.' and given that your grandmother actually owns or owned a Fazioli grand.

(22) *Adrian is planning to order one of the actually existing Fazioli grands.*

This cannot be reduced to temporal intensionality only. Even if it is explicitly stated that the production has just been stopped, R3-(21a) is not equivalent to the *de dicto*-interpretation of (22), nor does it attribute a contradictory thought to Adrian (which it would if a temporal shift to future Fazioli grands was part of the interpretation).

(23) *Adrian is planning to order a piano like your grandmother's, but unfortunately, they are not produced anymore.*

The pronoun *they* in (23) reveals an additional problem for transparent interpretation. DPs that are interpreted as R3 can occur in intensional contexts within the belief report. It is immediately obvious that a predicate like *raise the production of* cannot combine with the extension of the DP but needs to evaluate its cardinality across times and worlds.

(24) *Adrian hopes for the company to raise the production of pianos like your grandmother's, so that they become cheaper and he can afford one.*

Like the Burj Dubai-example, R3 as arising in sentences about intentions of acquisition cannot be treated in terms of transparent evaluation. Crucially, the interest of

the attitude subject is not limited to the actually existing objects. Other objects of the relevant kind would equally well satisfy his needs. Examples like (23) and (24) show that mere temporal intensionality is not sufficient.

2.5. *Buyers' intentions as de specie?*

In the case of buyers' intentions, too, we should ask ourselves whether R3 cannot be reduced to simple *de re* w.r.t. an individual. Consider (25a) in a scenario where Adrian has made up his mind to go look for a Burberry jacket without having given a thought of what it's going to cost him and without yet having picked out a particular jacket. Even if it does not contain a (possibly) kind-referring expression (as *Bench jacket* or *like*), in this scenario, (25b) constitutes an appropriate paraphrase of (25a).

- (25) a. *Adrian wants to buy an expensive jacket.*
 b. There is a kind *k* which is actually an expensive kind of jacket and Adrian wants to buy an instantiation of *k*.

If we take this observation seriously, it is tempting to analyze examples like (25a) as *de re* about a particular kind (i.e. *de specie*), here the kind 'Burberry jackets'. However, if such examples of R3 were to be explained in terms of beliefs about a kind, we would expect them to pattern with other phenomena that involve reference to kinds. This is not warranted. For example, the availability of R3 differs from the availability of kind anaphora as expressed by *such* (cf. Carlson 1977). Consider (25a) in the scenario described in (26).

- (26) Adrian wants to buy a Burberry jacket or a Boss jacket, he has not yet made up his mind. He has no idea of whether they are expensive or not.

(25a) is felt to be true as R3 in this scenario. If this were to be analyzed as *de specie*, there would have to be a particular kind *b* such that Adrian has a *de re*-attitude of wanting to buy an instantiation of *b*. But if there were such a kind, it should also be able to serve as an antecedent for a kind anaphora like *such*. Nevertheless, under the narrow scope for the disjunction, (27) constitutes an infelicitous piece of discourse. I assume that this is the case because the disjunction fails to introduce a complex kind built up from Burberry jackets and Boss jackets.¹⁰

- (27) *Adrian is still not absolutely decided. He wants to buy a Burberry jacket or a Boss jacket. #Malte wants to buy such a jacket, too.*

The fact that the possibilities for R3 differ from the possibilities for kind anaphora speaks against analyzing buyers' intentions as *de specie*, that is, as *de re* about kind individuals.

¹⁰Note that (27) becomes acceptable if there is a salient property that holds of both Burberry jacket and Boss jackets and *such* can be interpreted as picking up that (e.g., being expensive).

3. An alternative analysis as *de qualitate*

In sections 2.3 and 2.4, I argued that not all examples of R3 can be treated in terms of transparent interpretation of the descriptive part of the DP. In this section, I discuss a different analysis that was proposed originally to capture intuitions with respect to belief reports of tautologies, in particular mathematical truths. It was worked out in Cresswell and von Stechow (1982). The idea is to reconsider the standard Kaplanian analysis of *de re*-reports and adapt it for higher order objects.

3.1. *de re à la Kaplan*

Most modern analyses of *de re*-reports rely on Kaplan (1969). According to him, the interpretation of (28a) as a *de re*-report gives rise to an interpretation as in (28b).

- (28) a. *Sarah believes that Michael Job is a burglar.*
 b. (28a) is true iff Sarah has a representation α that picks out Michael Job in the actual world @, and at all of Sarah's doxastic alternatives in @ (i.e., the worlds compatible with what Sarah believes in @), who is picked out by α is a burglar.

The essence of a *de re*-report is thus that we observe a **reporting expression** (here, *Michael Job*) which replaces the identifier the subject has in mind, call it the **reported identifier** (here, e.g. 'the person I see moving in the kitchen of the institute'). For the *de re*-report to be true, the denotation of the reporting expression at @ has to be what is picked out at @ by the reported identifier (who Sarah sees in the kitchen is indeed the individual the name *Michael Job* refers to), and at all of Sarah's doxastic alternatives w_1 , whoever she sees moving in the kitchen of the institute in w_1 , that individual is a burglar in w_1 . Generally, the schematic paraphrase of a *de re*-report given in (30a) is assigned truth conditions as in (29b).

- (29) a. x believes P of individual a.
 b. There is a function from worlds to individuals α s.t. $\alpha(@) = a$ and for all w s.t. w is one of x's doxastic alternatives to @, property P is true of the individual $\alpha(w)$ in w.

Kaplan (1969) emphasizes that not just any representation α is good enough to satisfy the existential quantification. The chosen identifier has to be 'vivid' (the argument is known as the **shortest spy-problem**). Aloni (2000, 2005) provides a bi-directional OT account for what identifiers are eligible depending on the tasks of the ongoing conversation. As this is largely orthogonal to our concerns here, I will just assume that her results are basically correct.

The question I want to address is how an analysis along the lines of (29) can be extended from cases where the *res* that the belief is about is an ordinary individual to cases where it is a higher order entity like a property.¹¹ I will first

¹¹ A similar goal is pursued by Sharvit (1998) who focuses on cases where the higher order *res* is an individual concept.

discuss the implementation in Cresswell and von Stechow (1982), who call the result **generalized de re**. Then I will evaluate if it captures all instances of R3.

3.2. Generalized de re (*Cresswell and von Stechow 1982*)

Although many people agree that (29) are more or less accurate truth-conditions for *de re*-reports, there is a lot less consensus as to how they are to be derived at the syntax-semantics interface. Cresswell and von Stechow (1982) rely on structured propositions: The LF of an attitude report that is interpreted as *de re* (i.e., paraphrasable as in (30a)) is translated to a formula along the lines of (30b).

- (30) a. Individual *a* holds attitude ATT w.r.t. ‘property *P* holds of *b*’
 b. $Att_@ (a, \langle P, b \rangle)$

The structured object appearing as the second argument of the attitude relation need not be a pair. It can be any (n+1)-tuple of an n-ary relation and n suitable arguments. These n arguments occur in transparent position (intuitively, they have been “dragged out” of the attitude report). Cresswell and von Stechow (1982) argue that it is a matter of information structure how exactly the attitude complement gets structured, that is, what appears in transparent position and what becomes the n-place property applied to it. In the following, we will confine ourselves to $n = 1$.

Now, Cresswell and von Stechow (1982) do not impose any restrictions on what appears in transparent position, *b* may be of any logical type. In particular, *b* may be a property (a *qualitas*, type $\langle s, et \rangle$) as expressed by the restrictor of an indefinite. In that particular case, as the object of the belief is a property (i.e., a quality), we may call it *de qualitate*. As for the cases where the *res* is an individual, there has to be a suitable relation (call it ξ in the general case) that individual *a* bears uniquely to *res* *b* (so, ξ is the identifier). This relation ξ has to reflect “cognitive contact” between *a* and *b*.

3.3. Application of classical *de qualitate* to instances of R3

In the following, I evaluate whether Cresswell and von Stechow (1982)’s analysis can cope with the two different examples of R3 that we have already seen (Burj Dubai, buyer’s intentions), as well as a third case (Foyle’s investigation). The third case has not been discussed so far as it is unproblematic for transparent evaluation.

3.3.1. The Burj Dubai

Consider the report in (12), repeated as (31).

- (31) *Mary wants to buy a building with (at least) 192 floors.*

What we have to account for is the following: Mary wants to buy an unspecific building with (at least) 192 floors. Unbeknownst to her, no such building exists at

the moment in the actual world. Granted the translation gives us the right structured proposition, the classical *de qualitate* analysis relies on (32).

$$(32) \quad \text{want}_{@}(\text{Mary}, \langle \lambda w \lambda Q. \exists x [\text{buy}_w(\text{Mary}, x) \ \& \ Q_w(x)], \lambda w \lambda x. \text{has-at-least-192-floors}_w(x) \rangle).$$

In the scenario described in (11), we can easily find an identifier Mary has in mind that picks out the property that constitutes the intensional semantic value of the expression in the belief report. Note that Cresswell and von Stechow do say so explicitly, but it is crucial that for ordinary *de re* we move an individual-referring expression (type *e*) to the transparent position (i.e., the Fregean extension/‘Sachbezug’ of *the man in the brown hat*), whereas in the case of *de qualitate* we need the intension of the property-denoting expression to appear in the transparent position, hence sth. of type $\langle s, et \rangle$, not $\langle e, t \rangle$.¹² The existential quantification over identifiers is verified. Mary has cognitive access to the property of having at least 192 floors by ξ s.t.:

$$(33) \quad \xi = \text{‘}\lambda w. \text{I}Q[Q = \lambda w' \lambda x. x \text{ has one more floor in } w' \text{ than that building (=pointing to the Burj Dubai) has in } w.]\text{’}$$

At the actual world @, we find $\xi(@) = \lambda w \lambda x. \text{has-at-least-192-floors}_w(x)$. Moreover, Mary wants that whatever the height of this building is, she buy a building that has at least one more floor. That is, her bouletic alternatives are indeed a subset of the following:

$$(34) \quad \{w \in W \mid \text{There is an } x \text{ s.t. Mary buys } x \text{ in } w \text{ and } \xi(w)_w(x).\}$$

Hence, Mary indeed has an identifier that picks out the property of having at least 192 floor s.t. w.r.t. the value of that identifier she wants to buy an object that has that property. The Burj Dubai constitutes an example that yields to a straight-forward treatment in terms of classical *de qualitate*.

3.3.2. Buyers’ intentions

‘Buyer’s intentions’ labels a class of examples discussed in the literature on R3. It is exemplified by (1), repeated as (35).

$$(35) \quad \text{Adrian wants to buy a jacket like Malte’s.}$$

In section 2.4, I argued that such sentences do not express an attitude with respect to the actual extension of *jacket like Malte’s*. But they are equally problematic for classical *de qualitate*. For (35), we would derive something like (36).

$$(36) \quad \text{want}_{@}(\text{Adrian}, \langle \lambda w \lambda Q. \exists x [Q_w(x) \ \& \ \text{buy}_w(\text{Adrian}, x)], \lambda w \lambda x. \text{jacket-like-Malte’s}_w(x) \rangle).$$

For this to be true, there would have to be an identifier ξ that, in the actual world, picks out the property of being a jacket like Malte’s ($\lambda w \lambda x. x$ is a jacket like Malte’s in *w*), and at all doxastic alternatives, it picks out a property and Adrian wants to

¹²Note that some of the cases discussed in Sharvit (1998) would necessitate exporting of a *se*-expression.

buy one of the things that have this property. Now, let's assume the only thing Adrian wants to buy is a green bench jacket. Then ξ would have to be a function that at the actual world picks out the property of being a jacket like Malte's, and at all of Adrian's bouletic alternatives, picks out the property of being a green Bench jacket. The value at all other possible worlds does not matter for the truth of the sentence, therefore we are left with an infinite set of such functions. Now, while such functions are easily defined theoretically, they clearly do not meet the restriction of being a cognitively relevant identifier for properties. Moreover, the approach would falsely predict that for *de re*-reports, the actual world cannot be a bouletic (or, depending on the attitude report, doxastic, ...) alternative. Last but not least, if such functions were to be taken into account for *de qualitate*-reports, any property in a *de dicto*-report could be replaced by any other property in order to give us an intuitively valid *de qualitate*-report. E.g., for the given scenario which validates (37a) *de dicto*, we should be able to give the *de re*-report in (37b).

(37) a. *Adrian wants to buy a green bench jacket.*

b. *Adrian wants to buy a horse.*

(38) a. **want**@(**Adrian**, $\langle \lambda w \lambda Q. \exists x [Q_w(x) \ \& \ \textit{buy}_w(\textit{Adrian}, x)], \lambda w \lambda x. \textit{horse}_w(x) \rangle$)

b. true for ξ_1 , s.t. $[\xi_1(@) = \textit{horse}, \forall w [w \neq @ \rightarrow \xi_1(w) = \textit{green bench jacket}]$

This is clearly counterintuitive. Therefore we have to constrain ourselves to a set of relevant identifiers. A first guess is that they have to be expressible in natural language for the attitude subject and/or in the context of the conversation. As for an analysis in terms of classical *de qualitate*, we have to conclude that Adrian does not stand in any appropriate contact to the property 'is a jacket like Malte's', and the attitude can thus not be about that particular property given to Adrian in any guise ξ . We can only say that the reporting property is a way of relating us to the property the individual has in mind (i.e., the reported property). In the context of the conversation being a jacket like Malte's amounts to being a green Bench jacket.

3.3.3. Foyle's investigation

Interestingly enough, classical *de qualitate* also fails for yet another type of R3 examples. This type is exemplified by (39b) as a report about the scenario (39a):

(39) a. A murder has occurred on campus, people with offices in the left wing of the building might have seen it. Detective CS Foyle decides, 'I want to talk to someone who has his office in the left wing of the building.' Unbeknownst to him, all offices in the left wing belong to the English department, and only professors have offices.

b. *Foyle wants to interrogate an English professor.*

Classical *de qualitate* relies on a structured proposition as in (40).

(40) **want**@(**Foyle**, $\langle \lambda w \lambda Q. \exists x [Q_w(x) \ \& \ \textit{interrogate}_w(\textit{Foyle}, x)], \lambda w \lambda x. \textit{English-professor}_w(x) \rangle$)

As in the case of buyers' intentions, we fail to find a suitable identifier ξ that would verify the corresponding truth conditions. Two candidates may come to mind, but neither yields the right result. Both fail to identify the property of being an English professor in the actual world @:

- (41) $\xi_1 = \lambda w. \iota Q[Q = \lambda w' \lambda x. x \text{ has an office in the left wing of that b. in } w]$
 $\xi_1(@) = \lambda w \lambda x. x \text{ has an office in the left wing of that building in } @.$
 $(\neq \lambda w \lambda x. \text{English-prof}_w(x))$
- (42) $\xi_2 = \lambda w. \iota Q[Q = \lambda w' \lambda x. x \text{ has an office in the left wing of that b. in } w'.]$
 $\xi_2(@) = \lambda w \lambda x. x \text{ has an office in the left wing of that building in } w.$
 $(\neq \lambda w \lambda x. \text{English-prof}_w(x))$

Intuitively, in the given scenario, (39b) is really about the extension at the moment of utterance. Foyle is not interested in the property of being an English professor (imagine they appointed a new candidate between my report and his actual interviewing – although that person would be an actual English professor at the time of his interviewing, that world is not a bouletic alternative to Foyle). In that sense, the interpretation of *English professor* at the actual world and the utterance time makes very good predictions. Nevertheless, there are a lot of English professors Foyle may not actually be interested in. On all types of transparent evaluation approaches, the restriction to contextually relevant English professors either follows the usual contextual restrictions on quantifiers (von Stechow 1994), or in terms of monotonicity inferences arising from the attitude predicate/opaque verb (cf. Zimmermann 2006). It falls out automatically from a presuppositional version of transparent interpretation (Geurts 1998, Romoli and Sudo 2008).

I conclude that Foyle's investigation can be captured by an analysis in terms of transparent evaluation, but not by classical *de qualitate*.

4. Uniform *de qualitate*

4.1. Types of R3 and coverage of the approaches evaluated

In the previous section we saw that R3 is not a uniform phenomenon. I established at least three different types of attitude reports involving DPs that are interpreted with narrow scope (in the case of an indefinite, unspecific), but are transparent in the sense that the descriptive NP-part of the DP is not part of the attitude. Instead, it is chosen by the speaker to report the actual attitude of the attitude subject.

The (standard) analysis in terms of transparent evaluation can capture examples like Foyle's investigation, but fails for Burj Dubai and for buyer's intentions. The alternative analysis in terms of classical *de qualitate* works for the Burj Dubai, but fails for Foyle's investigation and for buyers' intentions. One possible conclusion would be to find a third analysis that could capture buyers' intentions and keep the analyses discussed above for the other two sorts of examples. In this paper, I won't pursue this direction. Instead, I will propose a third kind of analysis that can capture all three types of examples.

4.2. Getting it to work

To approach a uniform analysis of the three different types of R3, we need to reconsider the relation between the reported and the reporting property. Given the problems with Burj Dubai and buyers' intentions we have to conclude the following: It can neither be established via reference to the reporting property's extension at @ only, nor by comparing the extension at @ with the extension in other possible worlds relevant for the evaluation of the attitude. But given the problems with buyers' intentions and Foyle's investigation, we have to conclude that the relation cannot be mediated by a particular cognitive access of the attitude subject that would equate the two properties w.r.t. the content of the attitude. What I would like to propose instead is the following:¹³

- (43) **Replacement Principle:** For the sake of reporting an attitude, a property that is involved in the content of the attitude that is to be reported (the **reported property**) can be replaced by a different property (the **reporting property**) as long as the reported property is a subset of the reporting property at all relevant worlds.

We will now establish what counts as relevant worlds. Intuitively, the actual world is relevant, but we also need to include worlds at which the reported property is non-empty. Else we would derive counterintuitive results, e.g. we should be able to report Mary's desire in the Burj Dubai scenario (11) by (44):

- (44) *Mary wants to buy a unicorn.*

I propose that what we need to take into account are the @-closest possible worlds at which the reporting property is not empty. If we rely on Cresswell and von Stechow (1982)'s way of representing transparency in terms of structured propositions and assume furthermore that each world is closest to itself, the semantics of an R3-attitude report can be given as in (45).

- (45) $Attitude_w(x, \langle \mathcal{P}, Q \rangle)$ iff there is a property Q' s.t. at the w-closest worlds w' where $Q(w') \neq \emptyset$:
- a. $Q'(w') \neq \emptyset$
 - b. $Q'(w') \subseteq Q(w')$
 - c. $Attitude_w(x, \lambda w'. \mathcal{P}_{w'}(Q'))$ is true.¹⁴

Typically, talk about closest possible worlds is expressed by counterfactual conditionals. Their interpretation is notoriously difficult, owing precisely to the ill-understood notion of closest possible worlds. It makes sense to ask whether R3 behaves similarly to the corresponding counterfactuals. Although I cannot offer a detailed investigation, the first impression is encouraging. In the absence of any

¹³I allow for the subset relation rather than requiring identity of extensions. This is a simplification: At least for some attitudes (e.g., *seek*) the ultimate choice requires attention to how exactly they are interpreted (cf. Zimmermann 2006).

¹⁴Assuming that Q' is interpreted as Q' .

further assumptions, in the scenario (11) in which (12) was considered true under R3, we tend to judge the corresponding counterfactual in (46) true as well.

- (46) *If there was a building with 192 floors, that building would be one floor higher than the Burj Dubai currently is.*

Yet, compare this to the counterfactual in (47) and assume that (for whatever reasons) buildings cannot get higher than 191 floors. While (46) is still true (as it takes us to really far-fetched 192-floor worlds), (47) is false. The closest possible worlds could now be ones at which the Burj Dubai is lower than what it actually is. Yet, even in the scenario where buildings don't grow higher than 191 floors, Mary would still wish for a building with 192 floors.

- (47) *If there was a building that was one floor higher than the Burj Dubai currently is, that building would have 192 floors.*

Note that the resulting analysis is similar in spirit to Fodor (1970), who claims that the absence of transparent interpretations for predicative expressions (cf. discussion in section 2.1 above) follows from a lack of suitable identity statements. I hope to have shown that a strict requirement of intensional identity would be nonsensical, whereas mere extensional identity is inappropriate due to the cases discussed here, namely empty extensions and interest in objects of a particular type.

4.3. *What happened to syntax?*

As it stands, the analysis does not make any predictions as to which expressions can be interpreted transparently. Apart from a hint that it may be determined by information structure, Cresswell and von Stechow (1982) do not present us with a concise theory of what appears in the transparent position(s) of the structured object. This absence of constraints seems at odds with Percus (2000)'s observations (discussed in 2.1 above), namely that predicates can never be interpreted transparently. The way to derive such a constraint would be to encode it in whatever mechanism is responsible for deriving the structured meanings. Nevertheless, although Percus' contrast looked very convincing, Fodor (1970) cites examples with transparent interpretations of the predicate, consider e.g. (48).

- (48) a. *John is afraid that his wife broke the curfew.*
b. *John is afraid that his wife was out after 6.p.m.*

Fodor herself points out that failing reports of this sort (like Percus (2000)'s (5), repeated in (49)) suffer from a lack of a corresponding identity statement between the properties in question.

- (49) *Mary thinks that my brother is Canadian.*

As I said above, identity of the properties is not required and one might wonder if co-extensionality at the actual world is always good enough to introduce a different reporting property. I believe that even for (49) we can obtain a transparent interpretation: Assume I have an older step-brother who grew up in a different part of

the world, so I don't know much about him. He is one of our students. We are just interested in who among our students is Canadian and who is not. Now, assume Mary knows that this person was born in Canada, but is not sure whether this is enough for citizenship. We are not interested in Mary's state of mind, we merely use it as further help to settle the issue we are actually after. In such a case, (49) appears to be true. Nevertheless, there appear to be clear differences between particular attitude predicates as to how easily they allow for *de re*-readings in general, and for higher order cases in particular. I believe that this has to do with what one can and aims to infer from the attitude report. So, in addition to the semantic conditions on when a *de qualitate*-report is possible, we need a proper pragmatic theory to explain when and why speakers choose to rely on the replacement rule.

5. Conclusions and further research

In this paper I hope to have shown that the so-called Reading 3 does not constitute a uniform phenomenon. Neither the standard approach in terms of transparent interpretation of the NP-part nor an alternative solution in terms of identification of properties (classical *de qualitate*) can capture all relevant examples. I proposed a uniform analysis that relies on replacing properties under conditions of co-extensionality at the relevant possible worlds, and I pointed out that it needs to be accompanied by a pragmatic theory that explains when replacing is chosen in the first place.

In this paper I remained silent about related phenomena such as transparent evaluation with respect to the antecedent of conditionals, as in (50):

- (50) *If every semanticist owned a villa in Tuscany, there would be no field at all.*
from Percus (2000)

Cresswell and von Stechow (1982) tentatively suggest a treatment in terms of classical *de qualitate*, which introduces a metalinguistic flavor. These cases need to be investigated in detail, and it may well be that transparent evaluation is just right here. A closer comparison to R3 should shed light on the issue.

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