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De Re Attitude Reports about Disjunctive Attitudes

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Abstract

In this paper, we discuss so-called 'de re' attitude reports (i.e. reports that contain at least one referential term inside the clausal complement of an attitude verb). Common treatments of such reports follow the lines of Kaplan (1968) and assume that there is a unique guise under which the 'res' (the object) denoted by the referential term is given to the attitude holder in the described situation. Technically speaking, attitude verbs are believed to introduce existential quantification over acquaintance relations or concepts above the universal quantification over possible worlds. We argue that there are cases that cannot be captured by Kaplanian accounts. We construct a case of a 'de re' report about a disjunctive desire. Its truth conditions can be correctly predicted only by a system in which guises are allowed to vary from one desire-alternative to another. We build on a particular version of a 'de re' account, namely, the theory of concept generators (Percus and Sauerland 2003). We propose a modified version of this theory where, instead of variables over concept generators, variables over generators of concept sets are used. Such generators are functions that take an individual and generate all possible concepts of this individual for the attitude holder. In different desire-alternatives, different concepts can be picked from this set. The job of picking is done by choice functions, variables over which are merged in the syntax. Those variables can be existentially closed at any sentential level. We demonstrate that the revised theory also has a technical advantage over the more standard approaches. It allows us to dispense with type-flexibility of attitude predicates that has been assumed for cases like "John thinks that Clark Kent is not Superman", where one 'res' is referred to with different terms.

De Re Attitude Reports about Disjunctive Attitudes

Petr Kusliy and Ekaterina Vostrikova[*]

1 Introduction

In this paper, we discuss attitude reports that contain referential terms – the so-called *de re* attitude reports. We provide a case of a *de re* attitude report that cannot be captured by Kaplanian style accounts, according to which attitude verbs introduce existential quantification over acquaintance relations or concepts above the universal quantification over possible worlds. We are going to develop an argument that shows that concepts should be allowed to vary from one world to another.

We adopt a particular version of a *de re* account, namely, the theory of concept generators. We propose a revision of the theory of concept generators that allows individual concepts—that are, roughly speaking, the ways the *res* (the object) is given to the attitude holder—to differ across the doxastic or other relevant alternatives of the attitude holder. We demonstrate that the revised theory not only gives the correct predictions about the particular case we consider, but also has a technical advantage over the more standard version. Specifically, it offers a straightforward treatment of cases with multiple co-referent elements in attitude reports without assuming type-flexibility for attitude predicates.

Our discussion proceeds as follows. In Section 2, we introduce our background assumptions and the theory of concept generators we are building on. In Section 3, we present our counterexample to the standard treatment of *de re* attitude reports and, in Section 4, we explain why this is a counterexample. In Section 5, we present a modification of the theory of concept generators that we propose in order to account for our example. In Section 6, we show that the change we suggest has a technical advantage over the standard treatment. Section 7 concludes.

2 Background

2.1 Kaplanian Approach to *De Re* Attitude Reports

Since the seminal work by Quine (1956), it has been known that an attitude report containing a referential term (say, a proper name), like the one in (1), cannot be captured by a simpleminded semantic analysis. Specifically, Quine argued that the intensional verb *believe* in (1) cannot be represented as a relation between Ralph and the proposition [λw. Ortcutt is a spy in w].

The problem with this example is brought to light by the following scenario. Ralph knows Ortcutt under two different guises. Ralph saw Ortcutt several times 'under some questionable circumstances' and decided that the guy was a spy. However, one day Ralph met Ortcutt at the beach, did not recognize him, and decided that he was an important and respectable man and not a spy. Thus, it has to be the case that both sentences (1) and (2) are true at the same time. However, intuitively it does not seem that Ralph is irrational and that he holds contradictory views. Scenarios like the one described above are called *double-vision scenarios* and reports like (1) and (2) are known as *de re* reports.

(1) Ralph believes that Ortcutt is a spy.
(2) Ralph believes that Ortcutt is not a spy.

Since Kaplan 1968, *de re* attitude reports have often been analyzed in terms of quantification over individual concepts. Individual concepts can be understood as descriptions or guises under which the attitude holder is acquainted with the object of their belief.

Under this approach, a sentence like (1) is considered to be true iff there is an individual concept (a description that Ortcutt satisfies in the actual world) such that the attitude holder ascribes the

property of being a spy to the bearer of this concept (whoever it happens to be in the belief-alternatives of the attitude holder).

Crucially, under this approach, the individual concept of Ortcutt for the attitude holder remains the same throughout all of his attitude alternatives.

2.2 *De re* Reports in Terms of Concept Generators

There are several different proposals for implementing a *de re* analysis (Lewis 1979, Abusch 1994, Cresswell and von Stechow 1982). The argument we are going to suggest (opposing the classic approach) does not depend on the choice of a specific compositional analysis. However, we develop our proposal within the framework that is known as the theory of concept generators (Percus and Sauerland 2003, Charlow and Sharvit 2014) because this framework offers the most straightforward compositional treatment of *de re* attitude reports with the least controversial syntactic assumptions. In this section, we review the basic elements of the theory of concept generators and illustrate how it derives in a compositional manner the truth conditions for (1) and (2) that correctly capture the fact that both sentences can be true in the double-vision scenario described above.

The LF for sentence (1) assumed by this theory is shown in (3). The variable G of type $<e,<s,e>>$ is merged in syntax as a sister of the referential term in the complement of CP. The denotation of G is a concept generator (CG). The definition of a concept generator is given in (4), but the general idea here is that G maps Ortcutt into a concept; that is, a function from a world to a definite description that captures a way in which this individual is given or presented to the attitude holder. This variable is bound by the lambda abstractor in the syntax at the edge of the embedded clause.

(3)
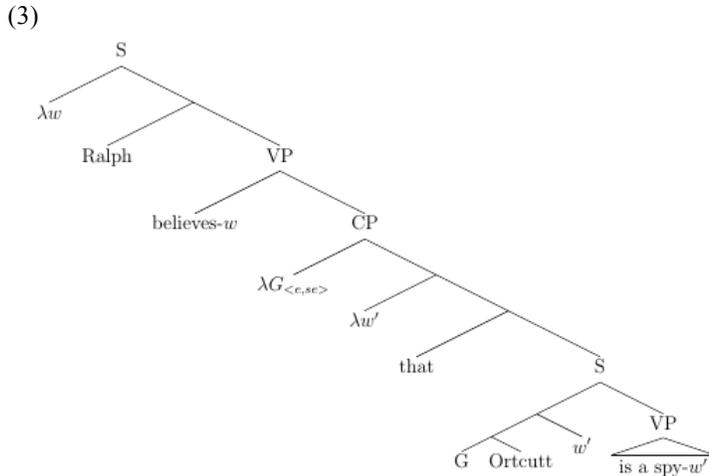
(4) G is a concept generator for an individual x in w iff
 i. G is a function from individuals to individual concepts ($<e,<s,e>>$)
 ii. Dom(G) = {z: x is acquainted with z in w}
 (Percus and Sauerland 2003:237)

One possible concept generator for Ralph will map Ortcutt to the concept in (5).

(5) [$\lambda w.\, \iota y.\, y$ is the guy Ralph met under questionable circumstances in w]

The denotation of the embedded clause of the LF in (3) is given in (6), and the denotation for the attitude verb *believe* is given in (7). *Believe* takes a world variable, the embedded clause, and an individual (the attitude holder) as arguments. The attitude verb introduces existential quantification over concept generator variables and relates them to the attitude holder—it ensures that we are only talking about concept generators for Ralph, the attitude holder.

(6) ||that Ortcutt is a spy||^g = [$\lambda G_{<e,<s,e>>}.\lambda w.\, G$(Ortcutt)($w$) is a spy in w]

(7) $\|\text{believe}\|^g = [\lambda w.\lambda M_{<e,<s,e>>, <s,t>>}.\lambda x_e.\exists G$: *G* is an acquaintance-based CG for *x* in *w* &
       $\forall w'\in\text{Dox}(x)(w)$: $M(G)(w')=1]$

The usual assumption is that concept generators are acquaintance-based. The formal explanation of what this means is given in (8). The general idea here is that the concept generated by a concept generator has to contain information about how the attitude holder is acquainted with the object of their belief (the *res*). It is also important to point out that the requirement that the object of a belief should meet the description generated by a concept generator in the actual world follows from the definition of what it means to be a concept generator for an individual (a belief-holder) in a world given in (8).

(8) *G* is an acquaintance-based concept generator for an individual *x* in *w* iff
       i. *G* is a concept-generator for *x* in *w*
       ii. the concepts *G* yields are "acquaintance-based" in the sense that
       for all *z* in Dom(*G*),
           there is an acquaintance relation *R* such that *x* bears R uniquely to *z* in *w*, and
           for all <*y,w'*> in DOX$_{x,w}$, *y* bears relation *R* uniquely to *G*(*z*)(*w'*) in *w'*.
    (Percus and Sauerland 2003:237)

The truth conditions of (1), as predicted by the theory of CGs, are given in (9) and the truth conditions predicted for (2) are in (10). Both claims can be true simultaneously without implying any irrationality. The existence of a concept generator that maps Ortcutt to the concept in (5) makes (9) true: In every one of Ralph's belief alternatives, the guy he met under questionable circumstances is a spy. On the other hand, (10) is true too, because there is another concept generator that maps Ortcutt to the concept in (11) and, in all of Ralph's belief alternatives, the person who satisfies this description is not a spy.

(9) $\|(1)\|^g(w) = 1$ iff $\exists G$: *G* is an acquaintance-based CG for Ralph in *w* &
       $\forall w'\in\text{Dox}(\text{Ralph})(w)$: $[G(\text{Ortcutt})](w')$ is a spy in *w'*
(10) $\|(2)\|^g(w) = 1$ iff $\exists G$: *G* is an acquaintance-based CG for Ralph in *w* &
       $\forall w' \in\text{Dox}(\text{Ralph})(w)$: $[G(\text{Ortcutt})](w')$ is not a spy in *w'*
(11) $[\lambda w. \iota y. y$ is the guy Ralph met at the beach in *w*]

It is important to point out that, in (9) and (10), the existential quantifier over concept generators is above the universal quantifier over possible worlds. Thus, this account requires that there be one concept generator that generates a concept that remains constant across the worlds of Ralph's belief-worlds.

2.3 *De re* Reports Without Acquaintance Relation

We are not going to adopt the assumption that concept generators have to be acquaintance based. Examples of *de re* attitude reports that do not require acquaintance relations have been discussed in the literature. One such example was suggested by Sosa (1970). It is given in (12b). Sosa reports that this sentence is true in the scenario described in (12a).

(12) a. *Scenario*: The higher military authority desires that the shortest man go first and expresses its desire in saying, "The shortest man is to go first." A sergeant, after consulting with higher authority, returns to his platoon and says to the shortest man…
     b. They want you to go first.

The higher military authority the sergeant spoke to has not met the shortest man in person. Thus, the authority has no acquaintance relation to him. The desire report in (12b) is, however, a *de re* report—it contains a referential term *you*.
     In order to account for this example in terms of the theory of concept generators, we need to have a concept generator that takes the referent of *you* in (12b) and maps it into a concept like the one given in (13). Therefore, in order to account for this case, we need to weaken the restriction on

the possible concept generators. We need to say that concept generators should simply output concepts that pick the object of the belief in the actual world and are the ways the object is given to the attitude holder.

(13) $[\lambda w. \iota y. y$ is the shortest man in $w]$

The argument that we are going to propose is also based on an example of a *de re* desire attitude report that does not involve an acquaintance relation.

3 Novel Data

Let's consider the example in (14b) that is used as an utterance addressed to John in a scenario like the one in (14a).

(14) a. Mary, the chair of the Linguistics Department of Santa Claus University, wants to hire a star. She wants to hire the best semanticist or the best syntactician. She is not specific and will be happy with either. Unbeknownst to her, John has recently received the best syntactician award as well as the best semanticist award.
    b. Mary wants to hire you!

Native speakers of English tell us that (14b) can be a truthful report in this scenario. Just like the previous example from Sosa, this is a *de re* report. This report contains a referential term. The individual John is not part of the content of Mary's desire. Mary wants to hire John only from the speaker's point of view because, in the actual world, John happens to be the best semanticist and the best syntactician at the same time—the only person that meets Mary's criteria for hiring. Mary does not know this and she can believe that the best semanticist and the best syntactician are two different people.

     Thus, Mary's desire alternatives can contain worlds in which one person is the best syntactician and another one is the best semanticist. In such worlds, only one of them is hired.

4 Why is This Example Problematic for the Standard Approach?

The theory of concept generators (as well as any theory within the Kaplanian tradition) predicts that the report in (14b) can be true only if there is one particular concept generator that maps John to a specific concept, such that in every desire alternative of Mary, the person who satisfies that concept is hired. Formally, the truth conditions for (14b) that are predicted by the theory of concept generators are given in (15).

(15) $\|(14b)\|^g(w) = 1$ iff $\exists G_1$: G_1 is a concept generator for Mary in w &
       $\forall w' \in$ Desire-Alt(Mary)(w): Mary hires in w' $[G_1(\text{you}_{John})](w')$

     In (15), we assume quantification over desire alternatives for simplicity only. A more precise semantics would analyze desire-reports as quantifying over belief-alternatives and choosing the best of them (Heim 1992).

     However, given the scenario in (14a), every attempt at finding a concept such that Mary hires the person who satisfies this concept in every possible world compatible with her desires in the actual world faces a difficulty. Some possible options are given in (16)–(19), but none of them will do the job.

(16) $[\lambda w. \iota x (x$ is the best semanticist in $w)]$
(17) $[\lambda w. \iota x (x$ is the best syntactician in $w)]$
(18) $[\lambda w. \iota x (x$ is the best semanticist in w and x is the best syntactician in $w)]$
(19) $[\lambda w. \iota x (x$ is the best semanticist in w or x is the best syntactician in $w)]$

The concept generator that maps John into the concept in (16) will not make (15) true under the proposed scenario because it is not the case that in each of Mary's alternatives, the best semanticist is hired. The concept in (17) will not work for a similar reason: It is not the case that in each of Mary's alternatives the best syntactician is hired.

   The concept generators that map John into the concepts in (18) and (19) might seem promising at a first glance, but they are failing to do the job as well. Let's consider a world that is compatible with what Mary desires and believes in, where the best syntactician and the best semanticist are two different people. In this world, the concept in (18) will not yield any value; it will be undefined because, in those worlds, we will not find one individual such that this individual is the best semanticist and the best syntactician at the same time. The concept in (19) has a similar problem: It will not be defined in those worlds where the best semanticist and the best syntactician are two different people because in those worlds it is not true that there is only one individual that satisfies the predicate 'be the best semanticist or the best syntactician in *w*'.

   It seems to us that we have exhausted all of the possible options and we conclude that this example cannot be accounted for within a theory that requires the existence of one concept that remains the same across all possible worlds. Thus, some modification of the theory of concept generators is required.

5 Proposal

Our proposal is based on the observation that we will get the correct truth conditions for (14b) if we make sure that John is mapped to the individual concept [λ*w*. ι*x*(*x* is the best semanticist in *w*)] in those alternatives where the best semanticist is hired and that he is mapped to a different individual concept, namely, [λ*w*. ι*x*(*x* is the best syntactician in *w*)] in those alternatives where the best syntactician is hired.

   Thus, we would like to develop a system that can generate a different John-concept in each of Mary's desire alternatives. We propose to separate the following two components that are collapsed into one notion of a concept generator in Percus and Sauerland 2003: the component that generates the full set of John-concepts for Mary in the actual world and a mechanism that chooses a concept from the generated set. Crucially, the choice of a concept from the set of concepts can be different for each desire-alternative.

   We propose that instead of variables over concept generators, variables over generators of concept sets are merged as sisters of referential terms in clauses embedded under attitude verbs. Generators of concept sets are functions that take an individual and return the full set of concepts of this individual for the attitude holder.

(20) Q is the generator of a concept set (GCS) for *x* in *w* iff Q is of type *<e,<se,t>>* and, for all entities *y*, Q(*y*) is the set of *y*-concepts for *x* in *w*.

When a generator of a concept set is applied to an individual, say, John, all the possible John-concepts (descriptions) are generated and not just one. In our example, John will be mapped to a set like the one in (21).

(21) {λ*w*. ι*y*. *y* is the best syntactician in *w*, λ*w*. ι*y*. *y* is the best semanticist in *w*,
        λ*w*. ι*y*. *y* is the guy Mary saw in the supermarket on Sunday in *w*, etc.}

In each of the desire-alternatives, we need to pick one of the concepts from the set in (21). This job is done by choice functions of type *<<<se>,t>,<se>>*: A choice function takes the set like the one in (21) as its first argument and outputs one concept from this set. Variables over choice functions are also introduced in the syntax.

   The LF we propose for our example (14b), repeated below as (22), is provided in (23).

(22) Mary wants to hire you!

In (23), *G* is a variable over generators of the concept set and *f* is a variable over choice functions. The verb *hire*, after taking a world argument, is looking for an argument of type *e* and, as the reader

can verify, this is exactly the type that the sister of the verb has after G is applied to *you* and f is applied to $G(you)$, and a world argument is applied to the result of this.

Variable G (which is a variable over generators of concept sets) is bound at the edge of the embedded clause by a lambda abstractor. Because of this, the attitude verb has access to this variable, which ensures that the corresponding generator of concept sets only generates the set of concepts that are relevant for Mary. The variable f is existentially closed at the lower level. We propose that existential closure over choice functions can freely apply at any clausal level.

(23)
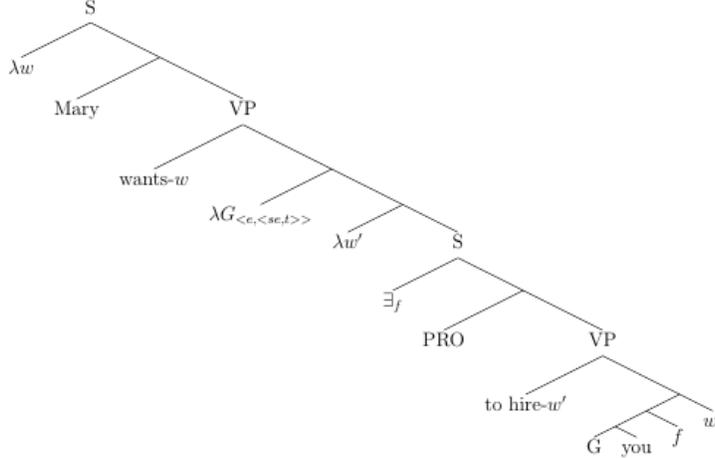
Given these assumptions, the embedded clause has the semantic type $<<e, <<se>,t>>, <st>>>$. Its denotation is given in (24).

(24) $[\lambda G_{<e, <<se>,t>>}.\lambda w. \exists f[\text{Mary hires in } w\, f(G(you))(w)]]$

In (23), the existential closure over the choice function applies in the embedded clause. This means that in the resulting truth condition in each of the desire-worlds, a different choice function might pick out a different concept of one and the same individual John.

We propose that the attitude verb *wants* has the semantics given in (25). It combines with a world variable, an embedded clause, and an individual (the attitude holder). In our system, the attitude verb does not introduce existential quantification over generators of concept sets. This is because, for each possible attitude holder, there is only one generator of a concept set; that is, a function that takes any individual and maps it to a set of all the possible descriptions/guises under which the attitude holder knows that individual. This is why we say *the* generator of the concept set and introduce it with an *iota*-operator.

(25) $\|\text{want}\|^g = [\lambda w. \lambda P_{<<e, <<se>,t>>,<st>>} . \lambda x . \forall w'\in\text{Desire-Alt}(x)(w):$
$P([\iota Q: Q \text{ is the generator of the concept set for } x \text{ in } w])(w')=1]$

The interpretation of the LF in (23) yields the truth conditions in (26):

(26) $\|(23)\|^g(w) = 1$ iff $\forall w'\in\text{Desire-Alt}(\text{Mary})(w): \exists f: \text{Mary hires in } w'$
$[f([\iota Q: Q \text{ is the generator of the concept set for Mary in } w](you_{John}))](w').$

The resulting truth conditions are weaker than the ones provided by the theory of concept generators. This is because the existential closure over the choice functions is applied below the universal quantifier over the desire alternatives. The truth conditions in (26) can be paraphrased as follows: In every world compatible with Mary's desires in the actual world, there is a way of picking a description of John from all the possible ways Mary represents him to herself such that the person satisfying that description in a desire alternative of Mary's is hired in it.

This correctly captures the fact that the sentence in (22) is perceived as true under the scenario we proposed in (14a), where Mary has no familiarity with John and simply wants to hire the best semanticist or the best syntactician. In some of Mary's desire alternatives, she hires the best semanticist. In others she hires the best syntactician. This is possible in the proposed system because, in each alternative, there can be a different choice of the concept that Mary has for John.

6 A Technical Advantage: No Type Flexibility of Attitude Verbs

In this section, we make the observation that the proposed system not only makes the correct prediction about the case considered above, but also has a technical advantage over a more standard treatment: Namely, it allows us to dispense with *type flexibility* of attitude verbs. The standard system has to make an assumption that attitude verbs like *believe* can potentially be of different semantic types in order to handle cases like the one in (27). In (27), two different proper names *Clark Kent* and *Superman* refer to the same individual, but John does not know this. He holds the belief that those are two distinct people.

(27) John thinks that Clark Kent is not Superman.

Given that names are rigid designators and denote the same object in every possible world (Kripke 1972) and Clark Kent is identical to himself in every possible world, any concept generator will necessarily output the same value when it is applied to Clark Kent and when it is applied to Superman. A function can only map an individual to one value. Thus, within the theory of concept generators, we should introduce two different concept generators in the embedded clause in order to avoid attributing a contradictory beliefs to John, as shown schematically in the LF in (28).

(28)
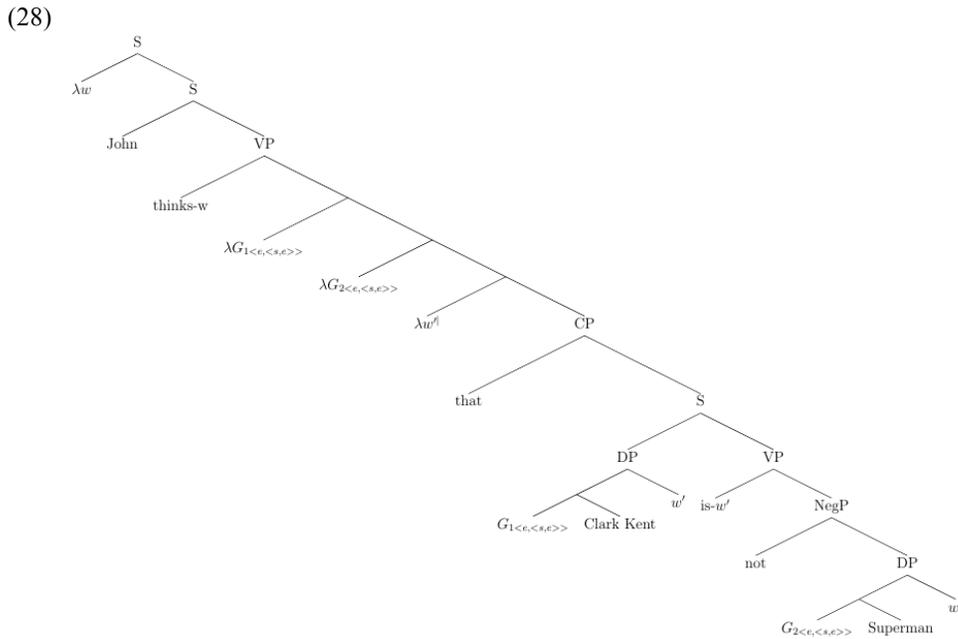
Accordingly, we need to introduce a binder for each of those concept generators at the edge of the embedded clause. This means that the attitude verb should be able to combine with an embedded clause that has a more complicated semantic type, specifically the type $<<e,se>, <<e,se>,<st>>>$ in this case. Thus, attitude verbs have to be flexible in their semantic type.

(29) Type-flexibility (Charlow and Sharvit 2014):
      Attitude verbs must be able to potentially introduce infinitely many concept generators and take complements of unlimited complexity.

In the system developed here, type flexibility is not required. One generator of concept sets will take one individual and generate all of the possible concepts. Then, we introduce a different choice function variable that can pick different concepts from the same set. Unselective existential closure takes care of infinitely many choice function variables with no extra burden on the attitude verb.

The LF we propose for the example in (27) is given in (32). The denotation for the attitude verb *believe* is given in (31). This denotation will be applicable in a complex case like this one, which involves two co-referential expressions in the embedded clause, as well as in more simple cases with one referential expression.

(30) $\lambda G_{<e,<<se>,t>>}.\lambda w.\ \exists f,g[\ f(G(\text{Clark Kent}))(w)$ is $g(G(\text{Superman}))(w)]$

(31) $\|\text{believe}\|^g = [\lambda w.\ \lambda P_{<<e,\ <<se>,t>>,<st>>}.\ \lambda x.\ \forall w'\in\text{Dox-Alt}(x)(w):$
        $P([\iota Q: Q$ is the generator of the concept set for x in $w])(w')=1]$

(32)
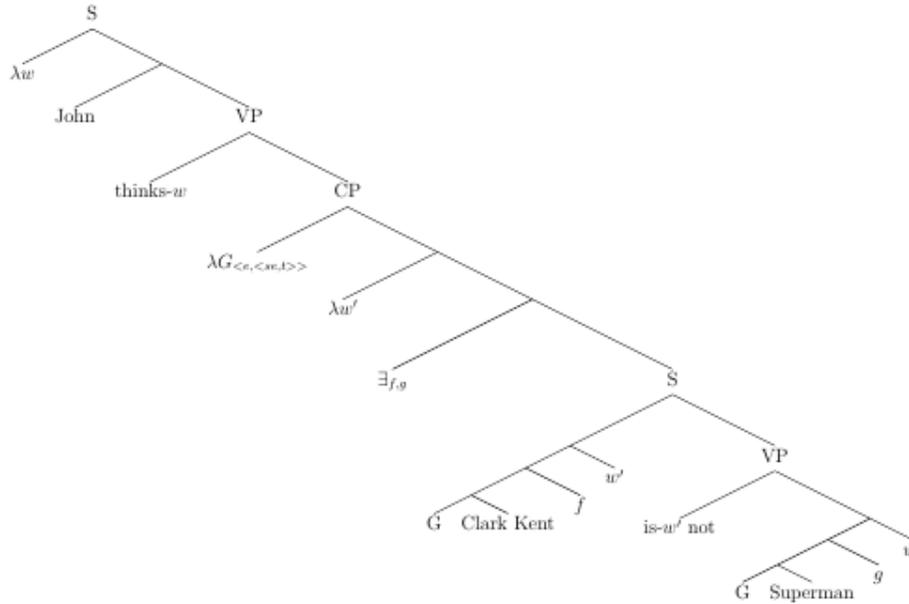
The truth conditions predicted in our system for this example are shown in (33).

(33) $\|(32)\|^h(w) = 1$ iff $\forall w'\in\text{Dox-Alt}(\text{John})(w):$
        $\exists f,g[f([\iota Q: Q$ is the GCS for x in $w]$ (Clark Kent))(w') is $g([\iota Q: Q$ is the GCS for x in $w]$(Superman))$(w')]$

This sentence is predicted to be true, if, in each of John's doxastic alternatives, there is a way of picking from the set of possible Clark Kent-concepts for John and a different way of picking from the set of possible Clark Kent-concepts (or Superman-concepts) for John such that the individuals satisfying those concepts in the given belief alternative of John's are distinct. This correctly captures the intuitive meaning this sentence has.

7 Conclusion

In this paper, we proposed an argument against a standard Kaplanian style approach to *de re* attitude reports. We have shown that there are cases of disjunctive attitude reports where what seems to be required is that the existential quantifier over possible concepts scopes below the universal quantification over possible worlds and there potentially can be a different concept in each of the worlds. We proposed a modified version of the theory of concept generators that achieves this result. We have also shown that the modified version has an additional technical advantage, namely, that it does not require type flexibility of attitude verbs.

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