Between De Dicto and De Re: De Objecto Attitudes

Manuel Rebuschi, Tero Tulenheimo

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Between *De Dicto* and *De Re*: *De Objecto* Attitudes

Manuel Rebuschi and Tero Tulenheimo

Abstract. Hintikkaôs *second generation epistemic logic* introduces a syntactic device allowing to express independence relations between certain logical constants. *De re* knowledge attributions can be reformulated in terms of quantifier independence. However, the reformulation does not extend to non-factive attitudes like belief. There, formulas with independent quantifiers serve to express a new type of attitude, intermediate between *de dicto* and *de re*, to be dubbed as attitudes *de objecto*: in each possible world compatible with the agentôs belief, there is an individual with the specified property ï the same individual in each world (contrast with *de dicto*), while the individual need not exist actually (unlike with *de re*). We discuss the philosophical benefits of our analysis of propositional attitudes. We propose a refined account of the behaviour of proper names as well as of indefinite and definite descriptions in attitude reports. Some remarks about perception and the hallucination argument are also presented.

Keywords. *de dicto and de re, intentional objects, thought with no object, hallucination argument, quantified epistemic logic, independence-friendly logic.*

1. A new formalism for attitudes

The *de dicto* / *de re* distinction is a well-known tool to account for fine-grained analyses of propositional attitude ascriptions. Using Quine-style examples, if Ralph knows (*de dicto*) that someone is a spy, he is not thereby committed to know (*de re*) of someone that he or she is a spy.[1] Thus, the ambiguity of the statement ôRalph knows that someone is a spyô results in two possible formalizations within standard epistemic logic:[2]

(1) $K_R \exists x$ (*x* is a spy) *de dicto*

(2) $\exists x\, K_R$ (*x* is a spy), *de re*

[1] W.V.O. Quine, óQuantifiers and Propositional Attitudesô, *Journal of Philosophy*, 53 (1956), pp. 177ï 187.

[2] J. Hintikka, *Knowledge and Belief: An Introduction to the Logic of the Two Notions* (Ithaca, NY: Cornell University Press, 1962).

where the epistemic operator K_R stands for ôRalph knows thatô. So the distinction appears to be basically a matter of relative scopes between the epistemic operator and the existential quantifier, and Quine would insist that *quantifying-in* like in (2) is dubious. In the *de dicto* interpretation, the whole dictum is in the scope of the epistemic operator, whereas the existential quantifier gets the wide scope in the *de re* reading.

Hintikka and Sandu proposed a new formulation of this distinction in terms of informational independence between quantifiers.[3] Their approach leads to an extension of first-order epistemic logic which can be called independence-friendly (IF) epistemic logic. Independent (existential) quantifiers have an obvious meaning: they encode the idea of a choice made uniformly with respect to one or more antecedent choices of values. The independence of $\exists y$ vis-à-vis $\forall x$, say, is syntactically indicated by using the informational independence marker (the slash notation): $(\exists y/\forall x)$. For a simple example which uses only quantifiers and no epistemic operators, in

(3) $\forall x \exists y$ (y is greater than x),

the choice of a value for y may depend on that for x, whereas in

(4) $\forall x (\exists y/\forall x)$ (y is greater than x),

the value of y must be chosen independently of the choice for x, i.e., the same value of y must be chosen no matter which value is assigned to x. The semantics of (4) may be explicated by noting that its truth amouts to the existence of a function f which is *uniform* in its sole argument and satisfies

(5) for every *a* in the domain, *f*(*a*) is greater than *a*.

The uniformity of *f* means that for any two objects *a* and *b* in the domain, we have *f*(*a*) = *f*(*b*). That is, the value of *f* is constant.

As a matter of fact, some formulas involving the independence marker can be expressed without it; e.g., the truth of (4) is equivalent to that of

(6) $\exists y \, \forall x$ (*y* is greater than *x*).

Indeed, since the value of *y* in (4) must be constant, this value may be chosen before that of $\forall x$, which is what (6) states. In connection with other formulas, again, the independence marker cannot be dispensed with; cases in point are certain attitude reports that will be discussed below.[4]

Going back to knowledge ascriptions, the *de re* reading can be formulated in terms of informational independence:

(7) $K_R (\exists y / K_R)$ (*y* is a spy). *de re*

In this formula, the value of the quantifier $\exists y$ may not vary with the interpretation of K_R, but must be independent of the world chosen for K_R in the evaluation. In order to better understand the meaning of (7), recall first that semantically epistemic operators are *relativized quantifiers*. In particular, K_R is a universal quantifier ranging over *those* possible worlds that are compatible with all that Ralph actually knows (accessible worlds, epistemic alternatives). Just like formula

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[3] J. Hintikka and G. Sandu, "Informational Independence as a Semantical Phenomenon", in J.E. Fenstad, I.T. Frolov, and R. Hilpinen (eds.), *Logic, Methodology and Philosophy of Science*, Vol. 8 (Amsterdam: Elsevier, 1989), pp. 571–589.

[4] Examples using only quantifiers, not epistemic operators, can be found, e.g., in J. Hintikka, *The Principles of Mathematics Revisited* (Cambridge: Cambridge University Press, 1996), ch. 9.

(4) requires the value of *y* to be chosen uniformly with respect to the value of *x*, also formula (7) imposes a corresponding uniformity requirement: that the value of *y* be chosen uniformly with respect to the world *w* chosen for K_R. What the formula (7) states, then, can be expressed as follows: for every accessible possible world, one can pick out an individual (the value of *y*) such that this individual is a spy *and* the same value of *y* can be chosen regardless of which epistemic alternative is considered. To put it in other words, one and the same individual can be used as a witness of the existential quantifier for every accessible possible world. We note that the truth-condition of (7) can be phrased in terms of functions explicating how existential quantifiers are witnessed ï recall how the truth-condition of (4) was explicated above. The truth of (7) amounts to the existence of a function *g* which is uniform in its sole argument ï i.e., satisfies $g(w) = g(v)$ for any two epistemic alternatives *w* and *v* ï and meets the following condition:

(8) for every accessible world *w*, $g(w)$ is a spy at *w*.

Note that the uniformity requirement means that the value of *g* is the same for every world. Hintikka has labeled epistemic logic with independent quantifiers *second-generation*.[5] While there are no markers for informational independence in natural languages, ambiguous epistemic attitude ascriptions can be disambiguated in a straightforward way by using formalizations such as (7).

2. A new kind of attitude

An important issue, already mentioned earlier, is that many formulas of IF epistemic logic are equivalent to standard formulas ï even though some of them

[5] J. Hintikka, óA Second-Generation Epistemic Logic and Its General Significanceô, in V.F. Hendricks, K.F. Jørgensen, and S.A. Pedersen (eds.), *Knowledge Contributors* (Dordrecht: Kluwer, 2003), pp. 33ï 55.

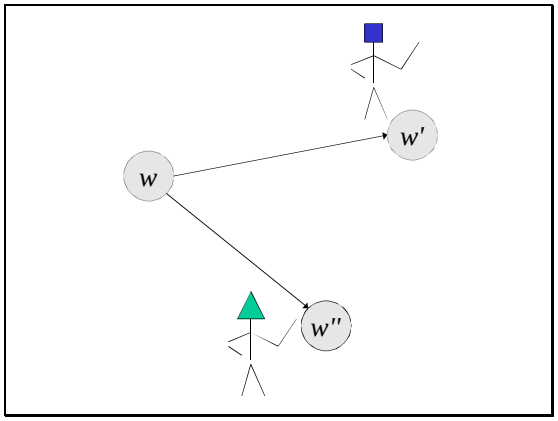
are not. For instance, the formulas of the *de re* ascription of knowledge to Ralph, (2) and (7), are equivalent. Now, the point of interest for us is that this is a mere coincidence, due to the *factivity* of the epistemic operator K_R. Factivity of an operator $\Box$ is defined via the axiom schema $\Box\varphi \rightarrow \varphi$ (known as the schema T), or equivalently by the semantic requirement that the correlated accessibility relation be reflexive. Assuming that (7) is true in the actual world, there is an individual such that this one and the same individual can be picked out in every accessible possible world. By factivity, one of those accessible worlds is the actual one. Hence the truth of (7) entails that of (2). Obviously (2) entails (7) as well. But what if one considers non-factive attitudes, like belief? Here there is no longer equivalence between the formulas corresponding respectively to (2) and (7). As a consequence, IF epistemic logic leads us to discern a third variety of attitudes, irreducible to and intermediate between the two already familiar ones. We will call them *de objecto* attitudes. The idea is clear from an example:

(9) $B_R \exists x$ (*x* is a spy) *de dicto*

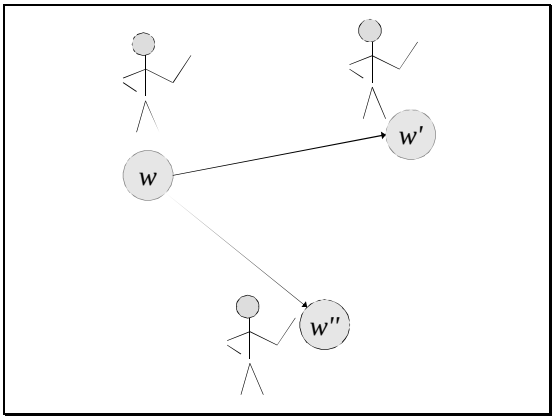
(10) $B_R (\exists x/B_R)$ (*x* is a spy) *de objecto*

(11) $\exists x\, B_R$ (*x* is a spy), *de re*

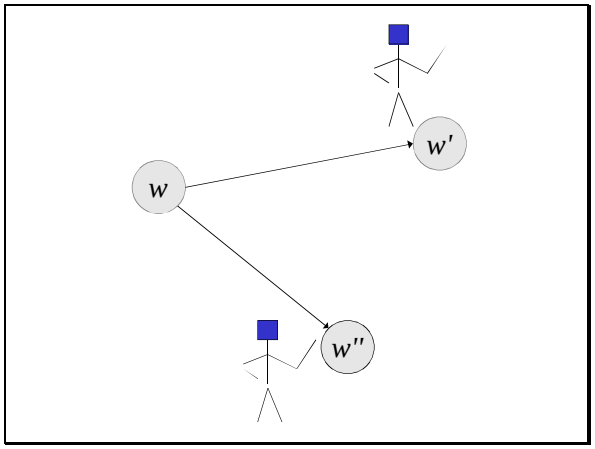
where the doxastic operator B_R stands for ôRalph believes thatô. The pictures below illustrate the differences in the truth-conditions of the three formulas, evaluated at the world *w* which has two doxastic alternatives *w'* and *w''*. Each character is a spy in the world it inhabits. The characters that look the same represent the same individual, those that look different, represent distinct individuals.



De dicto



De re



De objecto

As far as we know, this irreducibility of (10) to (11) has not been previously noticed. Kraut intends to formalize ôattitudes toward nonexistent entitiesô without ontological commitment to those objects. He introduces an *ad hoc* semantics to capture simple cases of attitudes analogous to the *de objecto* ones, with quantifiers semantically independent of the doxastic operator in whose syntactic scope they stand. Krautôs ideas can be expressed in a more systematic way by using the framework discussed in the present paper.[6] Indeed, having available formulas like (10) appears to offer a very promising formal tool and helps to refine our analysis of propositional attitudes:

(i) Having a *de objecto* belief does not imply having a *de re* one: this means that the independent quantifier ($\exists x/B_R$) induces in general no ontological commitments regarding the actual world. *De objecto* beliefs involve Brentanian ‘intentional’ or ‘in-existent’ objects, not real things. Crucially, they are nonetheless beliefs pertaining to *an object*. If Ralph believes *de dicto* that someone is a spy, it may well be compatible with all he believes that *N* is a spy in the doxastic world w_1, that *M* is a spy in the doxastic world w_2, etc. *De objecto* beliefs, on the other hand, pertain to *the same object* in each of the worlds compatible with all that Ralph believes.

Reasoning as follows, one might raise the question of how common *de objecto* beliefs can be: if it is compatible with the beliefs of an agent *C* that a certain individual *N* is a spy (this fact corresponding to the inclusion of a certain world *w* among the agent’s doxastic alternatives), should not we say that it will be equally compatible with *C*’s beliefs that *N* itself does not exist while a sufficiently similar but numerically distinct individual *M* exists and is a spy? It is not our goal to pronounce on relative frequencies of different types of propositional attitudes as these occur among real-life agents; we are simply making conceptual distinctions. But it should be noted that if the agents’ doxastic alternatives were systematically closed under adding worlds with distinct but similar individuals, then not only attitudes *de objecto*, but also attitudes *de re*, would never occur. Those philosophers who do not have any outright reason to dismiss beliefs *de re*, will presumably not find in the reasoning just described any compelling ground for dismissing beliefs *de objecto*.

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[6] R. Kraut, ‘Attitudes and Their Objects’, *Journal of Philosophical Logic*, 8 (1979), pp. 197–217.

(ii) Not only beliefs, but all non-factive attitudes like desire, fear,é admit of a *de objecto* variant. Actually, the latter can be considered as a basic kind of attitude and be extended to factive ones (like knowing, seeing,é): in the presence of factivity, it coincides with the corresponding *de re* attitude. Semantically, *de re* attitudes are a special case of *de objecto* attitudes.

(iii) Being unable to distinguish an intermediate case between *de dicto* and *de re* beliefs is a tricky situation: one cannot ascribe an attitude directed towards a nonexistent object and is forced to reduce it to an attitude towards a dictum ï which is obviously misleading.[7] Our proposal enables one to deal with singular thoughts, even when there is no actual object towards which such thoughts are directed.

It appears possible to represent *de objecto* beliefs in terms of such free modal logics that allow as inhabitants of every possible world objects of two kinds: existent and nonexistent.[8] We take it to be a considerable advantage of our approach that it avoids postulating nonexistent individuals, and thus departs from Meinongianism.

In Sections 3 and 4, we will use our new three-case classification to account for attitudes involving indefinite or definite descriptions, as well as proper names. In Section 5 we present a few remarks about perception.

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[7] O. Asheim, óCreatures of Imagination and Beliefô, *Nordic Journal of Philosophical Logic*, 1 (1996), pp. 61ï78.

[8] Cf., e.g., G. Priest, *Towards Non-Being. The Logic and Metaphysics of Intentionality* (Oxford: Oxford University Press, 2005).

3. Application to descriptions

It is well known since Russellôs 1905 óOn Denotingô that descriptions can have narrow or wide scope relative to attitude verbs.[9] These directly correspond to the *de dicto* / *de re* contrast in readings of ambiguous sentences like: ôI want to eat a cakeô (either indefinite, or definite), or ôI want to kiss the winnerô (either the winner whoever she is, or the winner already fixed). With proper names like óGeorgeô in ôI want to beat Georgeô, no such ambiguity is usually considered, the narrow scope option being ruled out at the outset: either one is a descriptivist and the corresponding quantifier has the wide (*de re*) interpretation, or one is a direct referentialist and the proper name is assumed to be a rigid designator, being thought of as exhibiting a wide scope. An exception is provided by certain specific uses of proper names in sentences like ôI believe that a certain Mr. Plop will comeô. In such contexts they behave like narrowly interpreted descriptions.

Of course, classical problems arise with empty proper names. If Leon believes that Santa Claus received his letter, the empty proper name óSanta Clausô cannot be given a wide (*de re*) interpretation, and the whole attitude should consequently (or so it seems) be interpreted like a *de dicto* one. However, it appears that there is a huge difference between this attitude, and an attitude towards a half-definite individual, say Leon believing that *the guy who will bring presents at Christmas, whoever he is*, received his letter.

The issue can be rephrased with definite descriptions, by using Donnellanôs distinction between their attributive and referential uses.[10] Let us consider a

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[9] B. Russell, óOn Denotingô, *Mind*, 14 (1905), pp. 479ï 493.

[10] Cf. K.S. Donnellan, óReference and Definite Descriptionsô, *The Philosophical Review*, 77 (1966), pp. 281ï 304.

complex predicate S for ó*being a red-dressed and kind guy with a long white beard*ô, assuming that Santa Claus would be the only possible individual fitting the description ó*the S*ô. (For us, possible individuals are individuals that exist in some other possible world, instead of being nonexistent denizens of the actual world.) One can now consider the following two attitudes:

(12) $B_L \exists x (\forall y (Sy \leftrightarrow y = x) \,\&\, x$ received Leonôs letter) *de dicto*

(13) $\exists x\, B_L (\forall y (Sy \leftrightarrow y = x) \,\&\, x$ received Leonôs letter). *de re*

These attitudes could be expressed by Leon himself by using the description ó*the S*ô, (12) corresponding to an attributive use and (13) to a referential use.[11] Like for empty proper names, a referential use of a description without any available referent seems impossible. However, one can actually imagine many cases where people make referential use of empty descriptions.

For instance, one can consider two drunkards: Nob, pointing to an empty point in the street, and saying: ôHey Bob, did you see *that strange cat*?ô, and Bob, pointing to the same empty point, answering: ôHey Nob, you must be drunk, itôs a cow!ô. A less poetic example can be provided by an academic shouting: ôEureka, I have *the proof*!ô, while two years later, the same person would confess: ôI made a mistake, it was not a proofô. Other cases worth considering are those of future individuals, like a house a couple intends to build, or a submitted scientific project: thoughts are then focused onto very specific objects (ó*our house*ô, or ó*our project*ô), even though not actual ones.

[11] See B. Abbott, óAttributive, Referential, De Dicto and De Reô, unpublished manuscript, 2000, retrieved February 9, 2011, from http://semanticsarchive.net/Archive/DU3YTgyN/.

The question of empty descriptions pertains to a more general issue about *singular thoughts*. If there is no further choice beyond *de dicto* and *de re* attitudes, then one cannot account for attitudes *focusing* on a nonexistent (intentional) object. Hence a thought directed to a nonexistent object could not be a singular thought, but would be automatically construed as a general thought. And if only general thoughts could be used to construe attitudes seemingly directed to nonexistent objects, this would suggest (i) that one cannot use empty proper names, unless they are reduced to narrow-scoped definite descriptions, and (ii) that one cannot make referential use of a definite description to refer to a nonexistent object.

As pointed out above, *de objecto* attitudes can be viewed as involving singular thoughts directed to (possibly nonexistent) intentional objects. Expressing such attitudes, e.g. beliefs, in natural language is thus expected to enable one to make referential use of descriptions, and to use proper names, even though there is nothing to be referred to in the actual world.

Making referential use of a definite description is easily represented by the formula:

(14) $B_L\ (\exists x/B_L)\ (\forall y\ (Sy \leftrightarrow y = x)\ \&$

x received Leonôs letter). *de objecto*

More precisely, if Leon believes *de objecto* of *the S* that he received his letter, then Leon can use the very description á*the S*ô in a referential way to designate his intentional object. If this explanation is correct, then making referential use of a description does not require that the object being referred to actually exist.

4. Application to proper names

The case of empty proper names needs perhaps more argumentation. We wish to keep our framework general and do *not* assume that all proper names are rigid designators (have the same individual as their extension in all worlds). In a possible world *w* the extension of a given proper name is an individual from the domain of *w*. Its extension in another possible world may or may not be that same individual. Now, if the reader is a supporter of descriptivism, then the puzzle about empty proper names is easily solved along the lines of Section 3, for then proper names are supposed to hide definite descriptions; indeed, a given belief entertained by Leon about Santa Claus is then construed as the corresponding *de objecto* belief about *the S*.

For opponents to descriptivism, an account of empty proper names is expected to be independent of the solution for empty descriptions. In our logical representation, we will not resort to quantifiers but, at a first stage, to an individual constant ï let us say ósô for óSanta Clausô. To begin with, it should be noted that in connection with a sentence like óLeon believes that Santa Claus received his letterô, which is formalized by

(15) B_L (*s* received Leonôs letter),

one cannot maintain that ósô has the widest scope; so ósô cannot be a Kripkean rigid designator. Yet, if one agrees that ósô should be a flexible designator when put in the scope of B_L, it is not settled which kind of belief (*de dicto* or *de objecto*) is expressed by formula (15).

In order to decide exactly which attitude is represented by (15), we must check which kind of existential generalization would be allowed. As it seems, no

additional condition is needed to allow the narrowest case of generalization, corresponding to a *de dicto* belief:

(16) $B_L \exists x$ (*x* received Leonôs letter). *de dicto*

Now, even according to authors like Loar or Recanati, who claim that proper names can be used opaquely in doxastic contexts (i.e., that the substitution principle can fail in such contexts), proper names must always be subject to existential generalization in the usual sense.[12] It means that (15) should entail

(17) $\exists x\, B_L$ (*x* received Leonôs letter), *de re*

which is false as long as Santa Claus does not exist. Rather than allowing existential generalization in such form, we shall follow Hintikka who discerns a specific precondition which must be explicitly available in order for an existential generalization to be permitted, namely that there be an individual (in the actual world) such that Leon believes of that individual that he is Santa Claus:[13]

(18) $\exists x\, B_L$ (*x* = Santa Claus).

Of course, since there is no such individual, one cannot infer (17) from (15).

However, we can formulate a new principle of (intermediate) existential generalization which suits our new kind of attitudes. From a belief that an individual *c* is a *P* (symbolically B *Pc*), one cannot only infer the *de dicto* belief that someone is a *P* (in symbols B $\exists x\, Px$); if the believer considers *c* as a definite

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[12] See B. Loar, ôReference and Propositional Attitudesô, *The Philosophical Review*, 81 (1972), pp. 43ï 62; F. Recanati, *Oratio Obliqua, Oratio Recta* (Cambridge, Mass.: The MIT Press, 2000).

[13] Cf., e.g., J. Hintikka, *Models for Modalities* (Dordrecht: Reidel, 1969), pp. 121ï 127.

intentional object, then the generalization can be more specific, i.e., it can be a *de objecto* one. This can be summed up by using Hintikka-style formulas:

(19) $\mathrm{B}\,Pc,\ \mathrm{B}\,(\exists x/\mathrm{B})\,(x = c) \Rightarrow \mathrm{B}\,(\exists x/\mathrm{B})\,Px.$

Seeking a uniform treatment of proper names in doxastic contexts suggests that the *de objecto* interpretation extends from the case of empty proper names (like ósanta clausô) to genuine proper names (like ójaakko hintikkaô). It means that whenever we employ a proper name to designate an individual, existing or not, we basically express a singular thought to be classified as a *de objecto* attitude. If the individual happens to exist, then the thought so expressed amounts to a *de re* attitude. *De objecto* beliefs are thus primitive beliefs, whereas *de re* beliefs only constitute a derived kind, accidentally prevailing when the corresponding *de objecto* beliefs are about actually existing objects.

5. Application to hallucination and perception

The new kind of attitude can provide interesting insights into the philosophical debates about perception. According to the hallucination argument, intermediate entities ï namely *sense data* ï should play some role in perception. Indeed, if one perceives an object, oneôs internal experience cannot be distinguished from a hallucination where there is no object in the world corresponding to the experience. Therefore, still according to this argument, we would need to assume that perception is not directly about external objects, but that *there are* intermediate intentional objects like sense data.

However, in our opinion there is no need here for a new species of objects. We agree with Craneôs minimalist account of intentional objects: ó[B]eing an intentional object is not being a thing of any kind. For ñintentional objectò in this

respect (unsurprisingly) is like ñobject of attentionò rather than ñphysical objectò. é Rather, an intentional object is just the object (for some subject) of an intentional state or act.ô[14] Intentional objects are merely objects of *de objecto* attitudes. Our account implies that in connection with any propositional attitude verb A, one should distinguish between three cases, namely *de re*, *de objecto* and *de dicto* (going from the strongest to the weakest one):

(20) $\exists x$ A Px *de re*

(21) A ($\exists x$/A) Px *de objecto*

(22) A $\exists$x Px. *de dicto*

But as soon as one considers a factive attitude verb (like: perceive, see, hear,é), *de objecto* and *de re* cases are immediately equivalent:

(23) If A is factive, then: $\exists x$ A $Px \Leftrightarrow$ A ($\exists x$/A) Px.

Indeed, if A is factive, then the actual world is among the worlds that are, actually, compatible with this attitude. So if an individual exists in every A-alternative (i.e., in each of those compatible worlds), it also exists in the actual world.

Whereas the hallucination argument postulates internal entities to account for intentional objects, our proposal shows that no categorical distinction between internal and real-world entities is needed. One and the same object can very well appear as the object of a non-factive *de objecto* attitude on the one hand and as the object of a factive *de objecto* attitude on the other. The difference lies in the set of epistemic alternatives, not in the entities concerned. A hallucination is a case of a *de objecto* attitude about a nonexistent intentional object, whereas a veridical

[14] T. Crane, ôIntentional Objectsô, *Ratio*, 14:4 (2001), pp. 298ï 317.

perception is a *de objecto* attitude about an actually existing object, that is, a *de re* attitude, and it involves no–intermediate entity such as a sense datum. While hallucinations can track their own objects, they do not contaminate perception with supplementary intentional entities.

6. Conclusion

Semantically, *de re* attitudes are a special case of *de objecto* attitudes. The former are just like the latter when these are factive. An object of belief is the target of a *de objecto* attitude; if the object of the belief happens to actually exist, then the very same object is the target of a *de re* attitude.

Intentional objects are just values of variables bound by existential quantifiers which stand in the syntactic scope of an attitude verb/operator while being semantically independent of it. Intentional objects are thus nothing more than that, in any thick ontological sense. Any object which exists in some possible world may in suitable circumstances be an intentional object. (Circumstances are suitable when the object exists in *all* possible worlds compatible with the relevant agentôs propositional attitude.) Our proposal does not force us to admit of nonexistent objects among the objects inhabiting a world. The objects of *de objecto* attitudes need not exist in the actual world; what makes them specific is that they appear in connection with an attitude that pertains to a fixed object, existing in all the relevant possible worlds.

With an intermediate case between *de re* and *de dicto* we can propose solutions to issues about empty proper names and about referring to nonexistent objects, and we are in a position to formulate an objection to the hallucination argument. Other

cases like anaphoric linking with no real antecedent, or Hob-Nob sentences,[15] will require future investigation. Let us close the paper by a brief note on cases of the latter kind. First recall the semantics of the actuality operator *ACT*. We take it that a world w_0 (the óactual worldô) has been fixed once and for all. Then, if w is any world, the semantic clause for *ACT* lays it down that *ACT* φ holds at w iff φ holds at the designated world w_0.[16] Extending the expressive resources of our symbolism by the actuality operator, the truth-conditions of at least some cases of Hob-Nob sentences become expressible. For example, the logical form of the sentence óNob believes that a witch Hob believes to exist, is angryô is as follows:

(24) $B_{Hob}\,(\exists x/B_{Hob})\,[\text{witch}(x)\ \&\ ACT\ B_{Nob}\ \text{angry}(x)]$.

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[15] P.T. Geach, óIntentional Identityô, *The Journal of Philosophy*, 74 (1967), pp. 627ï 632.

[16] For the actuality operator, see J.N. Crossley and L. Humberstone, óThe Logic of ñActuallyòô, *Reports on Mathematical Logic*, 8 (1977), pp. 11ï 29. Its semantics is a straightforward adaptation of the semantics of ónowô introduced in H. Kamp, óFormal Properties of ñNowòô, *Theoria*, 37 (1971), pp. 227ï 274.