TOBIES GRIMALTOS AND CARLOS J. MOYA

Belief, Content, and Cause

In this paper we intend to analyse two cases of change in belief. These cases have been designed by John Perry and William G. Lycan in order to show that the semantic properties of a subject's beliefs, such as their propositional content, cannot explain the change in that subject's behavior. Both Perry and Lycan think that the conclusion they extract from these cases can be raised to a general thesis, namely that a fairly sharp boundary must be drawn, inside the concept of belief, between semantic properties and causal powers. Perry thinks we need a distinction between belief object, or proposition believed, and belief state. It is the latter that accounts for the belief's causal role. Lycan, in turn, elaborates on Perry's distinction by asking us to distinguish between two individuative schemes for beliefs, namely the truth-conditional scheme and the computational scheme: "The truth-conditional individuative scheme is typically imposed when what concerns us are the truth-values or other semantic aspects of beliefs; the computational scheme is imposed when what we care about is causal effects" (Lycan 1988: 86). We shall contend, instead, that both cases can be accounted for with no need to create a gap between propositional content (individuated in terms of truth conditions) and causal or computational role. We shall try to show that, in both cases, the relevant change in the subject's behavior is explained by a

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change in the propositional content of his beliefs. Our critical analysis of Perry's and Lycan's cases is meant to enhance the prospects for the view that ordinary, wide content or meaning is causally efficacious and explanatorily relevant, against the nowadays widely spread scepticism about such a causal efficacy and explanatory relevance.

1. Perry's example.

Let us start with the by now famous Perry's example: "I once followed a trail of sugar on a supermarket floor, pushing my cart down the aisle on one side of a tall counter and back the aisle on the other, seeking the shopper with the torn sack to tell him he was making a mess. With each trip around the counter, the trail became thicker. But I seemed unable to catch up. Finally it dawned on me. I was the shopper I was trying to catch"(Perry 1993: 33). Perry comments on his own example: "I believed at the outset that the shopper with a torn sack was making a mess. And I was right. But I did not believe that I was making a mess. That seems to be something I came to believe... My change in beliefs seems to explain my change in behavior" (Perry 1993: ibid). Let us call the time when Perry is looking for the shopper with the torn sack 't1', and the time where he discovers that he himself is the shopper with the torn sack 't2'. Obviously, a change in belief occurs at t2. But it is not an easy task to say exactly what this change consists in. Perry says that this change is not a change in the proposition believed, either *de re* or *de dicto*. According to Perry, it is a change in belief state, a state that would be shared by "all the good-hearted people who have ever been in a supermarket, noticed sugar on the floor, and been ready to say 'I am making a mess'" (Perry 1993: 47). What all these shoppers have in common "is not what they believe. There is no *de dicto* proposition that all the... shoppers... believe. And there is no person whom all the shoppers believe to be making a mess..."(Perry 1993: ibid). What all these shoppers have in common is a belief state and we classify them in the same group for the purposes of "explanation and prediction"(Perry 1993: 48). Perry seems to suppose that, in his own example, the crucial step towards this state would occur when he starts thinking of the shopper with a torn sack (namely himself) not as *the shopper with a torn sack*, but as *he himself*.

We do not want to deny that indexicals are essential in many cases for action causation and explanation. This is something that Perry beautifully shows. It is also true that, if we tried to say what all the aforementioned

shoppers have in common, we should have to use indexicals. We should have to say something like "each believes of himself that he himself is making a mess." However, we think that Perry is overstating his case. In our opinion, what explains his change in behavior is (or is also) a change in what he believes, a change in the proposition he believes. There is also a change in his psychological state, a complex change indeed, but this change is prompted by a change in what he believes. We shall try to show that, at t1, Perry believes a certain proposition and that, at t2, he ceases to believe this and goes on to believe a different proposition, one whose truth conditions are, not just different, but even opposite to those of the proposition he believes at t1. Nevertheless, we shall also try to see why Perry's proposal looks correct, though it is not so.

In dealing with Perry's and Lycan's examples, we will make rather free use of some of the theoretical tools we can find in Stalnaker's book *Inquiry* (Stalnaker 1984). We are not sure that Stalnaker himself will approve of this use. In fact, we can find in his book some remarks that could align him with Perry and Lycan.[1] We think, however, that the main stream of his work goes against these authors' proposals. We will take side with Stalnaker in favouring a pragmatic picture of intentionality and in holding that propositions, the contents of intentional states, are possibilities, sets of possible worlds. Moreover, we shall make use of some ideas that have been developed at length in a previous paper by T. Grimaltos and C. Hookway (Grimaltos and Hookway 1995).

2. What Perry believes.

Let us start analysing Perry's example. He says that, at t1, he believed that the shopper with a torn sack was making a mess and that he was right in believing this. In saying that he was right in believing this, Perry seems to imply that his being making a mess was a truth condition of his belief at t1, a truth condition that, as he discovers later, was in fact satisfied at t1. That Perry was the shopper with a torn sack and was making a mess would be what makes true both what he believes at t1, namely that the shopper with a torn sack was making a mess, and what he comes to believe at t2, namely the belief he would express by saying or thinking "I am making a mess." But only this latter way of thinking this fact, this essentially indexical,

1. See, e.g., Stalnaker (1984: 82).

first-personal way, would be what explains his change in behavior. We seek to show, instead, that this change is due to a change in the proposition believed too.

It seems clear that the definite description "the shopper with a torn sack" cannot have a referential use in this context, for Perry does not know who the shopper in question is. The use of this definite description seems to be attributive (though maybe not purely so, as will be seen). Let us eliminate, for simplicity, the specification "with a torn sack." So, one way of characterizing what *he says* he believes at t1 is to say that he believes that there is someone (and only one) who is a shopper and is making a mess. Let us call this proposition 'P'. In formal terms (where 'S' stands for 'being a shopper' and 'M' for 'being making a mess'),

(P) $\exists x\,[(Sx \wedge Mx) \wedge (y)(My \rightarrow x=y)]$

According to this interpretation, any shopper present in the supermarket at t1, *including Perry himself*, can be the one who is making a mess. To make things easier to represent, let us suppose that, both at t1 and at t2, there are only four shoppers in the supermarket, that is, that the predicate "being a shopper" (Sx) could be satisfied by only four people at t1: a (Perry himself), b, c, and d. Now, under this assumption, what Perry believes at t1, on this interpretation, is as follows, in formal terms,

(P′) Ma v Mb v Mc v Md

where 'v' is to be read as an exclusive 'or'. Is this interpretation of what Perry believes at t1 correct? We do not think it is. Here is why. In order to find who the messy shopper is, Perry undertakes due action. This action consists in following the trail of sugar in order to find the culprit. But Perry is a rational agent, who seeks to reach his ends in as much economical a way as is possible for him. And it is obvious that the most economical way to finding the culprit is to look into his own cart first, before embarking in looking for other shoppers, *if only he had considered the possibility that he himself were the culprit*, that is, if he had believed the proposition P′. So, he had not considered that possibility and he did not believe P′. What Perry believes at t1 is not P either, namely that there is someone (and only one) who is a shopper and is making a mess, but rather something like this: that there is someone (and only one), *different from himself*, who is a shopper and is making a mess. Let us call this proposition 'Q'. In formal terms,

(Q) $\exists x\,[(Sx \wedge Mx) \wedge (y)(My \rightarrow x=y)] \wedge \neg Ma$

Now, adopting the same assumption about the shoppers that were present in the supermarket, what Perry believed, at t1, is the following, in formal terms,

(Q′) $(Mb \vee Mc \vee Md) \wedge \neg Ma$

again with an exclusive 'or'. And he was wrong in believing this, and not right. What Perry says he believes at t1 is ambiguous between these two readings, namely P (P′) and Q (Q′). However, a pragmatic perspective on belief makes it clear that the second reading is the correct one. Under the first reading, Perry would have inspected his own cart first.

Let us go now to t2. When Perry acknowledges that he himself is making a mess, he comes to believe a proposition that is not only different from, but also opposite to, the one he believes at t1, a proposition that excludes just the possibilities included by the proposition he believes at t1 and includes the only possibility excluded by this proposition. At t1 he believed that

(Q′) $(Mb \vee Mc \vee Md) \wedge \neg Ma$

Now, at t2 he comes to believe the proposition R:

(R) $Ma \wedge \neg(Mb \vee Mc \vee Md)$

The truth conditions of these two propositions, Q′ and R, are not only different, but opposite. It is this dramatic, radical change in the proposition believed that explains his change in behavior.

3. A diagnosis.

Let us try a diagnosis of what is happening here. Perry seems to suppose that there is a proposition he believes all the time, namely that the shopper with a torn sack is making a mess. Since he says that he is right in believing this, he must suppose that this proposition corresponds to our proposition P (or P′). What changes at t2 would be his belief state, roughly the way he believes this proposition. He starts believing it in a general, descriptive way, thinking of the culprit as the shopper with a torn sack, and then he goes on to believe it in a first-person, essentially indexical way, thinking of the messy shopper as himself. Our analysis has been different. We have denied that Perry believed proposition P (or P′) at any time. At t1,

Perry believed proposition Q (or Q′). At t2, he came to believe proposition R and stopped believing Q (or Q′). But is there not a sense in which Perry believed also proposition P (or P′) all the time? Well, here is how we see things. P can be deductively derived from Q, that is, from a proposition we have contended Perry believed at t1. P can be derived from Q by detaching its first conjunct. And P′, in turn, can be derived from Q′ by first detaching the first conjunct, namely Mb v Mc v Md, and then introducing a new disjunct, Ma. So, at t1, propositions P and P′ can be derived from the propositions Perry believes, namely Q and Q′. Besides, P and P′ are true, though Q and Q′ are false. Now, P′ can also be derived from R, the true proposition Perry comes to believe at t2, by first detaching the first conjunct, Ma, and then introducing the appropriate disjunctions. And P, with appropriate assumptions, namely that the range of x are the four shoppers a, b, c, and d, can also be derived from R by means of existential generalization. P and P′ are true all the time. Does Perry believe them all the time? Perry is rational and knows logic. So, he would have come to accept P and P′, in the sense of believing that these propositions were true, because they followed from the propositions he believed at t1 and from the proposition he came to believe at t2. But he would not believe P (or P′) in the sense in which he believed Q (or Q′) and R. His belief about P (or P′) would only be a belief about the truth value of that proposition. The only behavioral consequences of this belief would be to assent if asked whether this proposition was true. Taking this meta-belief (as we could call it) as a basis for his dispositions to act would be irrational, given that it contains less information than the propositions he believes and on which he is disposed to act. The truth of P (or P′) leaves open more possibilities than the truth of either Q (or Q′) or R. This is most clearly seen at t2, when Perry comes to believe that he himself is making a mess (though it also holds at t1). Once he believes this, namely R, and reduces the possibilities to one, there is no point in widening the range of possibilities again, believing that he himself is making a mess or any of the other shoppers is. This is a loss, and not a gain of information. There is no point in taking again as objects of belief possibilities that have been excluded by what he now believes. Deduction does not always lead to belief, as one of us has shown in a different paper.[2]

2. Grimaltos and Hookway (1995). Grimaltos' and Hookway's position is contained in the following: "Deduction gives rise to belief when there is a question to

Our diagnosis, then, has two parts. First, it might be this gap between psychology of belief and logic, and not a supposed split between proposition believed and state of belief, or between semantics and causal role, what is at stake in Perry's example. And it might be the presence of proposition P (or P′), that Perry would believe true both at t1 and at t2, in that it is logically implied by the propositions he believes at either time, that creates the appearance that the change in behavior is not due to a change in the proposition believed.

4. What if...?

Suppose, however, that it had been a shopper, other than Perry, say shopper c, who was making the mess. If this were the case, it might be objected that what Perry believed at t1′, namely Q or Q′, would also be true at t2′. This is right, but it does not show that there is no change in proposition believed. In this alternative story, the propositions Perry would believe at t1′ and at t2′ would also have had different (though not opposite) truth conditions. At t1′ Perry would have had the same belief as at t1, that is, he would have believed Q (or Q′). And at t2′, after finding the shopper who was making the mess, namely shopper c, his belief would have been that c, and only c, was making a mess. Let us call this proposition 'S'. In formal terms,

(S) Mc∧¬(Ma v Mb v Md)

Once Perry comes to believe this latter proposition, he cannot go on believing Q (let alone P), though he would believe that Q (and P) were still true, in that they follow from what he now believes. In this case, there would be a proposition, P, that Perry would believe true at t1′ and at t2′, and another proposition, Q, that he would believe at t1′ and would merely believe true at t2′. But the presence of P and Q as objects of Perry's 'believing-true' would not show that P or Q were what Perry believed all the time and, therefore, that there was no change in proposition believed, in terms of truth conditions. S is true if, and only if, c, and no one else, is making a mess. P and Q are obviously more permissive. They could be true even if c was not making a mess. Again, once Perry comes to believe S, he ceases to believe Q, for S

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which the conclusion of the inference is the strongest answer possessed by the believer" (p. 41). It is clear that this condition is not satisfied by the inference to P or P′, in the context of Perry's example.

contains more information and rules out more possibilities than Q. Perry, as any of us, is psychologically unable to go on seriously believing Q after coming to believe S. Q would be merely the object of an attitude of believing-true, with negligible behavioral consequences.

Someone might object, however, (in fact, someone has objected) that we are not reaching the core of Perry's position, namely that indexicals such as 'I', even if they refer to the same person as other expressions, including proper names, and are semantically equivalent to them, differ in causal role, so that, in the end, semantics and causal role must be kept apart. This is related to the uneasiness someone might feel about our use of the constant 'a' in the formal representation of our analysis of the original Perry's example. Should it be read as 'I' or 'Perry' or what? Let us go to this point. Suppose that, while Perry is pouring sugar and looking for the messy shopper, the loudspeakers of the supermarket announce: "John Perry is making a mess." Perry, in hearing this, comes to believe that John Perry is making a mess. This, Perry would contend, is not sufficient to bring about the relevant change in behavior unless he also believes that *he* is John Perry, which brings in the indexical and its distinctive causal role. Suppose that, in fact, in hearing the loudspeakers' announcement, Perry does not realize that John Perry is himself. He believes that John Perry is making a mess but he does not believe that he is making a mess (in fact, he believes he is not making a mess). After a while, he realizes that he is John Perry and comes to believe that he is making a mess. Perry's belief that John Perry is making a mess and his belief that he is making a mess seem to be semantically equivalent, though causally different.

Our answer would run thus. When Perry believes that John Perry is making a mess without realizing that he is John Perry and so without believing that he is making a mess, "John Perry" is functioning, in the context of Perry's belief, as a definite description, such as "the shopper called 'John Perry'," or maybe as an indefinite description, such as "a shopper called 'John Perry'." In this case, again, these descriptions cannot have a referential use, since Perry does not know who the shopper in question is. Their use seems to be attributive, though, again, maybe not purely so, since he has excluded himself as a potential fulfiller of the descriptions. So, under this plausible interpretation, the two beliefs are semantically different and have different propositions as objects. Perry's first belief is that the (or a) shopper called "John Perry," who is not himself, is making a mess. This belief is false and

would be true in a world in which Perry's name is not "John Perry' and in which someone different from Perry, called "John Perry," was making a mess in the supermarket. His second belief, that he is making a mess, would not be true in that world, and is true in the actual world. There are worlds where Perry's name is not "John Perry," though there are not worlds where Perry is not Perry or where he is not himself. The two beliefs have different causal roles, but, unfortunately for the defenders of the split, they also have different truth conditions.

So far, we have been assuming that Perry has excluded himself from the extension of the relevant descriptions. It might be thought that our thesis rests crucially on this assumption. Let us give it up and see what happens. Suppose, then, that Perry suffers a sudden amnesia attack. He has momentarily forgotten his name and, when he hears the loudspeakers' announcement, he is agnostic about whether his name is "John Perry." In this case, he has not excluded himself as a potential fulfiller of the description "the shopper called 'John Perry'." As far as he knows, he might be the relevant shopper, though he is not sure about that matter. So, let us suppose, he looks at his driving licence to discover that his name is, in fact, "John Perry," as a consequence of which he modifies his behavior in the relevant way and rearranges his cart. What about this case? We cannot say, as in our previous example, that what he starts believing, namely that the shopper called "John Perry" is making a mess, is false. However, this belief and his later belief that he is making a mess are not semantically equivalent either. Though both beliefs are true in the actual world, their truth conditions are different. "The shopper called 'John Perry'," unlike 'I', as thought by Perry, can designate different individuals in different possible worlds. There are worlds, namely those in which "John Perry" is not Perry's name, but the name of a different shopper in the supermarket, where his first belief would still be true but where his second belief would be false. Even in this case, then, Perry believes different propositions, individuated in terms of truth conditions, before and after his discovery. Again, his change in psychological state and behavior is prompted by a change in the proposition he believes. His second belief excludes possible worlds included in what he starts believing.

The case we have just considered is one in which what Perry believes at t1″ would be close to P (or P′) while what he believes at t2″ would be close to R, with the appropriate changes in the predicates. This case, in fact, seems to be closer to Perry's interpretation of his own original example, according

to which, as we saw, he did not seem to exclude himself from the set of potential culprits. This interpretation of the original Perry's example can be dealt with along the lines of our last example and is not in the way of our contention.

5. Lycan's example.

Let us go now to Lycan's example. As in Perry's example, we shall also distinguish t1 and t2. Lycan's example is, at a first sight, importantly different from Perry's, for in it the subject, Smith, starts with a belief whose object can be expressed with a sentence containing a demonstrative expression, namely 'that man', and not a definite description, such as "the shopper with a torn sack."

Here is Lycan's example: "Suppose Smith believes that that man he is ostending is about to be pounced on by a crazed, homicidal puma, but unbeknownst to Smith the man he is ostending is again himself reflected in a mirror. He will proceed on his way, unconcerned about his own safety, until he turns and sees the puma in the flesh and thereby suddenly acquires the belief that *he himself* is about to be pounced on, which change of belief will prompt an immediate and striking change in behavior" (Lycan 1988: 85). Lycan argues that, in terms of truth conditions, Smith believes the same proposition all the time: "Smith already believed that *that* man he was ostending was about to be pounced on; he already believed what Kaplan (1975) calls the 'singular proposition' <Smith, $\hat{x}$ (x is about to be pounced on)>. So what he comes to believe upon seeing the puma in the flesh is not that proposition. Yet what he does come to believe, that he himself is about to be pounced on, has exactly the same truth-conditions as that singular proposition and is true in just the same possible worlds" (Lycan 1988: ibid). So, his change in belief is to be characterized in computational terms, not in truth-conditional terms: the representations 'I' and 'that man' play different roles in Smith's psychological economy, though both in fact refer to the same person in the same possible words, so that they give rise to sentences that, though syntactically different, express the same proposition. It is the narrow, computational individuation scheme that explains the difference in beliefs and the corresponding difference in behavior. So Lycan contends.

Lycan's example, then, seems to be harder to deal with than Perry's. A definite description, such as "the shopper with a torn sack," unlike 'I', as thought by Perry, can designate different individuals in different possible

worlds, so that "the shopper with a torn sack is making a mess" and "I am making a mess," as thought by Perry, express propositions that have different truth conditions and can be true in different possible worlds. However, demonstrative expressions such a 'that man' and the personal pronoun 'I' seem to designate rigidly, so that if they succeed in designating the same individual on an occasion, namely Smith in Lycan's example, they designate this same individual in all possible worlds where this individual exists. Therefore, "that man is about to be pounced on" and "I am about to be pounced on" express propositions that are true in the same possible worlds if, in fact, 'I' and 'that man' designate the same person in the actual world. It seems, then, that the change in Smith's behavior cannot be caused by a change in the proposition he believes, individuated in terms of truth conditions, which remain the same from t1 to t2.

However, we shall try to show, against Lycan's analysis of his own example, that what explains Smith's change of behavior is a change in the proposition he believes, though this latter change certainly triggers a change in his psychological state. If so, there is no need to resort to a split between the truth-conditional and the computational individuative schemes for the subject's beliefs.

6. What Smith believes.

We can distinguish two possible interpretations of Lycan's example. According to the first, Smith is not aware that he is looking at a mirror. In this case, the reference of 'that man' somehow fails, for there is no man where he is ostending. Then, the belief he has at t1, that he would express by saying "that man is about to be pounced on," is not true. It is not, as Lycan says, that what he believes at t1 has the same truth conditions as what he comes to believe at t2, upon seeing the puma in the flesh, namely that he himself is about to be pounced on. 'That man' does not refer to himself. It does not refer at all. Or, if it does, it refers to an image in the mirror or to a place that is at a distance of 2d from the place Smith stands, where d is the distance between Smith and the mirror. Let us say that his belief at t1 is true in a possible world in which there is a man, different from himself, in the place he is pointing at, who is going to be pounced on. This possible world is different from the world Smith inhabits at t1, where he himself is about to be pounced on where he stands, though, as we said, it is the first world where Smith's belief would be true. So, on the first interpretation, Smith believes, at t1, a

proposition that is different from the proposition he starts believing at t2. The two propositions have different truth conditions and are true in different possible worlds. No need to split individuation of beliefs into two different schemes: causal, computational role and truth conditions go together.

Now to the second interpretation. According to this, Smith is aware that he is looking at a mirror. On this interpretation, Lycan's example comes very close to Perry's, for now 'that man' does not function as a demonstrative expression any more. This apparently demonstrative expression is rather a disguised form of a definite description, namely "the man reflected in that mirror", and can designate different individuals in different possible worlds. Again, as in our interpretation of Perry's original case, Smith is excluding himself from the range of possible persons that fill the description. The proposition Smith believes at t1 can be expressed by this sentence: "There is a man reflected in that mirror, who is not myself and who is going to be pounced on." In this case, it is even clearer than in Perry's case that, had Smith included himself in the range of the variable, the rational thing for him to do, assuming a normal amount of selfishness, would be to test this hypothesis first. So, Smith's belief at t1 is false, not true, and is true in the possible worlds in which the man reflected in the mirror is not himself. At t2, Smith comes to have a different belief, a belief whose object is a different proposition, a true one, namely that he himself is about to be pounced on. As in Perry's case, the new proposition includes the only possibility excluded by the first and excludes the possibilities that the first includes. The "striking change in behavior" at t2 is caused by the fact that Smith comes to believe a proposition that is different from the one he believed at t1, a proposition with opposite truth conditions and true in a set of possible worlds not compossible with the set in which the other proposition is true. Again, no need to split individuation of belief into two separate schemes: causal role goes hand in hand with truth conditions. Possible variations on Lycan's example could be dealt with along the lines suggested by the above treatment of variations on Perry's example.

It has often been emphasized that indexicality is implicit in many apparently non indexical expressions. Putnam suggests that natural kind terms are implicitly indexical. Perry, in turn, speaks about "the implicit nature of much indexicality" (Perry 1993: 49). Our analysis of Lycan's example shows that there is also much description implicit in many utterances of demonstrative expressions and other reference terms. Besides, as we have also tried

to show in section 4, beliefs apparently involving rigid designators can contain in fact definite descriptions which do not need involve a referential use. They can even contain indefinite descriptions.This might provide a way of dealing with some puzzles, such as Kripke's puzzle about 'London' and 'Londres'. In one of the cases, 'London' (or 'Londres') might be a covert definite description, as is 'that man' in the second interpretation of Lycan's example. This can also show that, to use a Wittgensteinian expression, the craving for generality, the seek for universal reductions of concepts, is misguided.

This completes the task we have meant to carry out in this paper. Our aim has been a modest one. We have not tried to show that semantics and causal role should not be kept apart for what concerns intentional states. What we have tried to show is that Perry's and Lycan's examples do not prove that they should. We hope we have succeeded.

Departament de Metafísica i Teoria del Coneixement
Universitat de València
Apartat Oficial 22109
46010 València
Tobies.Grimaltos@uv.es
Carlos.Moya@uv.es

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