Do Bees Really Have Concepts?: A Discussion of Carruthers' Criteria for Conceptuality

Laura Duhau

RESUMEN

Peter Carruthers (2004, 2007, 2009) argumenta que las abejas tienen pensamientos conceptuales porque satisfacen criterios que él cree que son necesarios y conjuntamente suficientes para la posesión de conceptos. En este artículo argumento que los criterios de Carruthers no son suficientes, y que hay otro criterio que es necesario para la posesión de conceptos. Este criterio adicional concierne a la intensionalidad del pensamiento conceptual: es esencial a los conceptos el que sus posesores sean susceptibles a los casos de Frege. Por lo tanto, si se quiere afirmar que las abejas o cualesquiera otras criaturas poseen conceptos, debemos tratar de encontrar evidencia de que éstas son susceptibles a los casos de Frege.

PALABRAS CLAVE: *pensamiento conceptual; constricción de generalidad; intensionalidad; casos de Frege; Carruthers.*

ABSTRACT

Peter Carruthers (2004, 2007, 2009) argues that bees have conceptual thoughts because they satisfy criteria that he believes are necessary and jointly sufficient for concept possession. In this paper I argue that Carruthers' criteria are not sufficient, since there is a further criterion that concerns the intensionality of conceptual thought which is necessary for concept possession.

KEY WORDS: *Conceptual Thought; Generality Constraint; intensionality; Frege Cases; Carruthers.*

What does it take to be a conceptual creature? In recent articles (2004, 2007, 2009) Carruthers intends to give an answer to this question by giving necessary and jointly sufficient conditions for thinking conceptually. Since he thinks bees satisfy these criteria, he claims that they are capable of conceptual thought.

Here I will argue that satisfying Carruthers' criteria is not sufficient for having conceptual thought and that therefore the alleged fact that bees satisfy these criteria does not imply that bees have conceptual thought. I will propose that conceptual thought must satisfy a further condition, an "intensional-

ity condition". This further condition requires that conceptual creatures be susceptible to Frege Cases, cases in which the creature believes *Fa* and yet does not believe *Fb* despite the fact that *a* and *b* are concepts that refer to the same thing.[1] In other words, it is essential to beliefs (or any other propositional attitude) that they are fine-grained enough that they generate opaque contexts of attribution: substitution of co-referential terms can change the truth value of the attribution, so that attributing correctly to a subject the belief *Fa* does not guarantee that we are also correct when we attribute the same subject the belief *Fb*, even if *a* and *b* refer to the same thing.

It was Davidson (1984, 1985, 1997) who first argued that no creature could have beliefs unless we could attribute to it *de dicto* beliefs, beliefs that describe the way the subject thinks or conceives of some object or state of affairs. This Davidsonian criterion is usually referred to in the philosophical literature as the "intensionality test" or "the argument from the intensional nature of thought". Davidson argued that the only evidence that could allow us to attribute *de dicto* beliefs to a creature would be linguistic evidence, and therefore argued that only linguistic creatures could satisfy the intensionality test. My intensionality condition is related to, but distinct from, Davidson's intensionality test, since I believe that there could be behavioral evidence of a non-linguistic kind that would allow us to attribute *de dicto* beliefs to a creature. Behavior that showed the creature as being the subject of a Frege Case would be evidence of the relevant kind.

In the first part of this paper I will explain Carruthers' criteria for conceptuality and why he thinks that bees satisfy them. In the second part I will present my argument in favor of the claim that concept possessors must be susceptible to Frege Cases, so that we should add this as another necessary condition for conceptual thought. In the third part I will explain why this condition is a further necessary condition on conceptual thought, and not one that is implied by the conditions Carruthers proposes. Finally, I will discuss whether we can claim that bees satisfy this additional criterion.

I. CARRUTHERS' CRITERIA FOR CONCEPTUALITY

Before explaining Carruthers' criteria for conceptual thought, it is important to make explicit an assumption that he makes about the relation between thought and concepts. This assumption is relevant for the kind of criteria he proposes.

Carruthers takes concepts to be the building blocks of thoughts, which means that for him thinking essentially involves concepts, so that no creature which does not possess concepts could think. Concepts are the mental representations that are the constituents of thoughts, and thus, according to Carruthers, one could not have beliefs (or any other propositional attitude) without pos-

sessing concepts. (Not all theorists accept this; Glock (2000) is an example of someone that claims that we can attribute beliefs to creatures without attributing concepts to them). This assumption makes the task of giving criteria for concept possession and giving criteria for having beliefs (or any other propositional attitude) to be one and the same task. Thus, Carruthers does not differentiate between conditions necessary and sufficient for having concepts and conditions necessary and sufficient for having beliefs, desires, etc.

Having made this assumption explicit, I can proceed to explain the criteria which Carruthers claims are necessary and jointly sufficient for a creature to have beliefs/conceptual thought.

According to Carruthers, a creature has states that can count as beliefs[2] iff:

1. These states interact with "goal" states, since it is of the essence of beliefs that they should be apt to interact with desires in such a way as to issue in motor plans and behavior, and

2. These states satisfy Evans' Generality Constraint[3], since it is of the essence of beliefs that they should be structured out of distinct conceptual components, each of which can figure in other attitudes and be suitably combined with other concepts to formulate distinct thoughts.

Carruthers believes that bees satisfy these criteria because there are behavioral data about bees' spatial navigation that show both that they have belief-like states and desire-like states that interact with one another in simple practical inferences to select and guide behavior; and that the belief-like states possess a component structure, containing symbols that refer to various landmarks and substances as well as encoding the distances and directions between them.

In particular, Carruthers claims that there is evidence that bees can use one and the same item of directional information to guide them in search of nectar and to guide them in their return to the hive. He thinks that this shows that bees

> must be capable of something resembling the following pair of practical inferences (using BEL to represent belief, DES to represent desire, MOVE to represent action – normally flight, but also walking for short distances – and square brackets to represent contents).

> (1) BEL [nectar is 200 meters north of hive]
>   BEL [here is at hive]
>   DES [nectar]
>   MOVE [200 meters north]

(2) BEL [nectar is 200 meters north of hive]
   DES [hive]
   MOVE [200 meters south] [Carruthers (2004), p. 216].

Moreover, Carruthers claims that "these are inferences in which the conclusions depend upon structural relations amongst the premises" [Ibid.].

I will not discuss here whether or not Carruthers is right in claiming that the empirical evidence is sufficient to support the claim that bees perform something like these inferences and therefore satisfy Carruthers' conditions (1) and (2). I will grant him this empirical premise. My point will rather be that, even if we grant him that the evidence shows that bees make inferences of this kind and therefore satisfy (1) and (2), there is a further condition for concept possession that requires the performance of a different kind of inference. Therefore we also need to look for evidence that bees perform inferences of this other kind and thus satisfy this further condition if we want to claim that they are conceptual thinkers.

II. THE INTENSIONALITY CONDITION

The further condition that a creature must satisfy to be conceptual is the intensionality condition: in order to have conceptual thought, a creature needs to be susceptible to Frege Cases.

A first motivation for introducing the intensionality condition comes from observing a characteristic of human thought, which constitutes the paradigmatic example of conceptual thought. It is clear that we humans are susceptible to Frege Cases. There is plenty of behavioral evidence that this is so. Many times we end up acting in ways that seem irrational because we have two concepts for the same thing and do not realize that they are concepts for the same thing. Oedipus married his own mother because he did not realize that his concept JOCASTA and his concept MY MOTHER referred to the same individual. Lois Lane did not ask Superman to help her on many occasions in which she could have benefited from his powers because she did not realize that her concept SUPERMAN and her concept CLARK KENT referred to the same individual. These of course are invented examples, but there is plenty of real evidence that cases like this happen all the time, we just have to look around. For example, many murders of innocent people have been committed as a result of the murderer being subject of a Frege Case.

However, the fact that we humans are susceptible to Frege Cases does not do much towards showing that being susceptible to Frege Cases is a necessary condition for conceptual thought. Thus, an argument is called for.

This is my argument for the claim that concept possessors must be susceptible to Frege Cases in standard form:

(1) If *x* has conceptual thought, then *x* can perform *object learning* (can gather new information about an object and combine it with old information to draw inferences).

(2) If *x* can perform *object learning*, then *x* can simultaneously deploy different representations of the same object.

(3) If *x* can simultaneously deploy different representations of the same object, then it is possible that *x* deploy representations *a* and *b* and either,

> (i) not believe *a* = *b*, or

> (ii) believe *a* ≠ *b*.

(4) If it is possible that *x* deploy representations *a* and *b* and either,

> (i) not believe *a* = *b*, or

> (ii) believe *a* ≠ *b*,

then *x* is susceptible to Frege Cases.

Therefore:

(5) If *x* has conceptual thought, then *x* is susceptible to Frege Cases.

Let me consider premise (1) first. One characteristic about conceptual thinkers that is widely recognized by theorists of concepts and concept acquisition [see Carey (2000), Millikan (2000), Camp (2009)] is that conceptual thinkers can learn about the objects they interact with. Creatures that do not have the capacity to learn new things about objects are just reactors: they react towards specific properties of objects but they do not store information about an object and then process this information in light of new information about the same object, and use this information to guide their actions. It seems to be constitutive of conceptuality that having concepts allows the integration of different pieces of information to amplify one's knowledge about the same object. But, as I will demonstrate, amplifying one's knowledge about specific objects in this way requires to make inferences in which different representations are associated with the same object.[4]

Thus, suppose a creature has one representation of an object, and in a different situation or from a different perspective comes to form another representation of the same object. When this creature realizes that the first representation and the second refer to the same object, it can infer that this object has the properties associated with both representations. This realization is

very useful for the creature, which has now learnt something new about the object in question and can act accordingly. For example, suppose that this creature first comes to think of a given predator under some visual description – something along the lines of "the thing with big teeth". The creature might come to believe, on visual evidence,

(*Fa*) (The thing with big teeth) is dangerous.

But now suppose the creature comes to think of the predator via an auditory description and comes to believe,

(*Gb*) (The thing making the growling noise) is approaching.

Now, if the creature can form a belief that combines *a* and *b*, such as

(*a =b*) The thing with big teeth is the thing making the growling noise,

then the creature can infer some very useful information:

(*Fb*) The thing making the growling noise is dangerous and

(*Fa* & Ga) the thing with big teeth is dangerous and approaching.

The point is that inferences in which old information gathered when an object is encountered in one context is combined with new information about an object that is encountered in a new context require that different representations be combined in a belief of the form $a = b$. This takes us to premise (2). In order to entertain such identifying beliefs the creature must be able to simultaneously entertain different representations of the same object.

Premise (3) should be uncontroversial. If a creature can simultaneously entertain different representations of the same object, it is possible that either (i) the creature does not realize that they are representations of the same object, or (ii) believes that they are representations of different objects. This gives us premise (4), since the possibility that the creature can entertain different representations of different objects and either (i) or (ii), implies that the creature is susceptible to Frege Cases.

Therefore, no creature that was not susceptible to Frege Cases could be said to have conceptual thought.

III. Is the Intensionality Condition a *Further* Necessary Condition for Conceptual Thought?

Now, Carruthers could claim that, even if it is true that only creatures that are susceptible to Frege Cases and therefore satisfy the intensionality

condition can be said to be conceptual thinkers, the intensionality condition is implied by the conditions he proposed. He could claim that creatures that satisfy the Generality Constraint necessarily satisfy the intensionality condition, so that we do not need to take the intensionality condition as a further independent condition for conceptual thought.

I think that the intensionality condition is not implied by Carruthers' criteria and therefore it is a further necessary condition on conceptual thought. Why is it not implied by Carruthers' criteria? It is possible to conceive of a creature that satisfies both of Carruthers' conditions and nonetheless is incapable of representing things in more than one way at the same time, and thus incapable of object learning. A creature like this would be one that represents different objects and represents different properties and relations among these objects, and can combine these representations in different ways, but nonetheless cannot represent an object in more than one way at the same time, thus being incapable of performing inferences that amplify its knowledge about an object.

Notice that the inferences that Carruthers claims bees can perform are not inferences that combine more than one representation of an object to gain new knowledge about the object. They are inferences that deploy only one representation of the hive and one representation of the pollen. We can grant Carruthers that bees can represent that the hive is 100 meters north from the pollen, that the hive is 100 meters south from the pollen, that the pollen is 100 meters north from the hive and that the pollen is 100 meters south from the hive. We can also suppose that they can represent both the pollen and the hive in different ways, via different properties. Still, this does not imply that bees can represent the hive (or the pollen) in more than one way at the same time, since it is quite possible that, even if bees represent different properties of the hive (or the pollen) depending on the situation, they cannot hold these different representations in mind at the same time, so that they are not capable of realizing that they refer to the same thing. However, they could very well satisfy the Generality Constraint, since they could be able to represent the hive and different properties of it in different situations (and similarly for the pollen). I am not saying that this is in fact the case. I am saying only that it is conceivable that this could be the case, and if it were the case, then bees would satisfy the Generality Constraint,[5] and we could also claim that bees can combine their belief-like states with their desire-like states, without this implying that bees satisfy the intensionality condition. Since they could not represent the hive and/or the pollen in more than one way at the same time, they would not be capable of realizing that their two different representations of the hive (or the pollen) refer to the same thing. This means that they would not be susceptible to Frege Cases, because they would not be capable of even entertaining the possibility of concepts *a* and *b* referring to the same thing. Thus, the intensionality condition is a further condition on concept posses-

sion, since satisfying the Generality Constraint, at least in Carruthers' weak version, does not imply the satisfaction of the intensionality condition.

IV. DO BEES SATISFY THE INTENSIONALITY CONDITION?

Suppose that Carruthers accepts that the intensionality condition is a *further* necessary condition on conceptual thought. He could still claim that bees are conceptual thinkers, by claiming that there is empirical evidence that bees satisfy this condition.

Is there empirical evidence that bees are susceptible to Frege Cases, and thus satisfy the intensionality condition? What would count as evidence? One thing that someone could point out is that there is a trivial sense in which bees are subject of Frege Cases. If bees in fact could not represent an object in more than one way at the same time, it would always be the case that bees believe *Fa* and do not believe that *Fb* when *a* and *b* refer to the same thing, since they could not even entertain both beliefs at the same time. However, what we want is to see if bees are susceptible to Frege cases in a more substantial way. Only subjects that could believe *Fa* and *Fb* at the same time, and that could believe that *a* = *b*, are susceptible to Frege Cases in the sense we are interested in. So what would count as evidence that bees are susceptible to Frege Cases in this substantial way? Suppose we move the hive 50 mts. north from where the bee last saw it. Suppose we then release the bee at a distance of 100 mts. to the north of where the hive originally was, and the bee, who is looking for it, flies in the direction of where it thinks it is, that is, to the south. Suppose further that the bee makes a stop where the hive now is, but does not enter it, and carries on a further 50 mts. to where it originally was, and when it gets there it flies in circles. In a situation like this, it seems plausible to say that the bee is being the subject of a Frege Case. It seems to be representing the hive in two different ways (via two different and incompatible locations) without realizing that these two different ways of representing correspond to the same thing. However, it is important to notice that this would only constitute evidence that the bee is being subject of a Frege Case in the substantial sense if there was also evidence that there are occasions in which the bee recognizes the moved hive as the same. Only if we had this second kind of evidence we could claim that bees are able to represent an object in two different ways at the same time.

Thus, in contrast to Davidson, I think there are non-linguistic behaviors of the bee that considered together could count as evidence that bees are susceptible to Frege Cases. I do not know if bees actually exhibit such behaviors, since I am no expert on bee behavior, but if we found that they do, then we would have reason to accept Carruthers' claim that bees have conceptual thoughts. My point is only that we need to look whether bees show behaviors

that constitute evidence of them being subject to Frege Cases (in the substantial way I explained above) if we are to claim that they are conceptual thinkers.

So, in conclusion, I do not deny that we could find evidence that bees are susceptible to Frege Cases. But this evidence, I claim, would not be the same evidence that would count as evidence for the claim that bees satisfy the Generality Constraint. The inferences Carruthers' claims we have empirical evidence that bees perform are not the same kind of inferences that would allow us to claim that bees are susceptible to Frege Cases. We would need further empirical evidence, evidence that bees can perform the inferences required by object learning and are susceptible to Frege Cases. The intensionality condition is a further necessary condition on conceptual thought, and not one that is implied by the criteria that Carruthers proposes. Therefore, satisfying Carruthers' criteria is not enough for having conceptual thought.

Instituto de Investigaciones Filosóficas
Universidad Nacional Autónoma de México
Circuito Mario de la Cueva s/n
Ciudad Universitaria, 04501, Coyoacán, México DF, México
E-mail: lauraduhau@yahoo.com.mx

NOTES

[1] Formulating Frege Cases in terms of beliefs is not essential, any propositional attitude will do.
[2] Carruthers frames his criteria in terms of beliefs, for which they seem specially tailored, but similar criteria should be applicable to all propositional attitudes.
[3] Carruthers interprets the Generality Constraint weakly. According to him, it must be read like this: If a creature possesses the concepts F and a (and is capable of thinking Fa), then for *some* other concepts G and b that the creature could possess, it is metaphysically possible for the creature to think Ga, and in the same sense possible for it to think Fb [see his (2009)]. This is important because under stronger readings of the Generality Constraint the inferences that he believes bees make would not be enough to claim that they satisfy it.
[4] Millikan (2000) is an example of a theorist of concepts that believes conceptuality involves this sort of capacities.
[5] At least on Carruthers' own version of it (see note 3).

REFERENCES

CAMP, E. (2009), "Putting Thoughts to Work: Concepts, Systematicity and Stimulus-Independence", *Philosophy and Phenomenological Research* 78, pp. 275-311.

CAREY, S. (2000), "The origin of concepts", *Journal of Cognition and Development* 1, pp. 37-41.

CARRUTHERS, P. (2004), "On Being Simple Minded", *American Philosophical Quarterly* 41, pp. 205-220.

— (2007), "Invertebrate Minds: A Challenge for Ethical Theory", *Journal of Ethics* 11, pp. 275-297.

— (2009), "Invertebrate concepts confront the Generality Constraint (and win)"; in R. Lurz (Ed.) *Philosophy of Animal Minds.* Cambridge: Cambridge University Press, pp. 89-107.

DAVIDSON, D. (1975), "Thought and Talk"; in *Inquiries into Truth and Interpretation.* Oxford, Clarendon Press, pp. 155-170.

— (1982), "Rational Animals"; in E. Lepore & B. McLaughlin (Eds.), *Actions and Events: Perspectives on the Philosophy of Donald Davidson*, New York: Basil Blackwell, pp. 95-105.

— (1997), "The Emergence of Thought", *Erkenntnis* 51, pp. 7-17.

GLOCK, H. (2000), "Animals, Thoughts and Concepts", *Synthese* 123, pp. 35-64.

MILLIKAN, R. (2000) *On Clear and Confused Ideas.* Cambridge, Cambridge University Press.