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# Davidson on Believers

## Can Non-Linguistic Creatures Have Propositional Attitudes?

Adina Roskies

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Donald Davidson has argued that only language-users can have propositional attitudes. His strongest argument in support of this claim is one that links having propositional attitudes to language via a concept of belief. Here I consider various possible interpretations of this argument, looking first at the canonical conception of a concept of belief from the Theory of Mind literature, then at a weaker notion of the concept of belief corresponding to a conception of objective reality, and finally at an intermediate notion involving the ability to attribute mental states. I argue that under each of these various interpretations, analysis and appeal to empirical evidence from developmental and comparative psychology shows the Davidsonian argument to be unsound. Only on a reading of the argument that slides between different interpretations of “concept of belief” are all the premises true, but in that case the argument is invalid. I conclude that Davidson doesn’t provide sufficient reason to deny that non-linguistic creatures can have propositional attitudes.

### Keywords

Belief | Capacity | Concept | False belief test | Language | Non-linguistic | Propositional attitudes | Rationality | Thought | Truth

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## 1 Introduction

More often than not, great divides have been postulated between humans and other animals: it has variously been maintained that only humans have souls; that only humans laugh; that only humans play; that only humans are rational. The status of these claims is not merely of theoretical interest: human exceptionalism has long been used to justify or discount arbitrary and often inhumane treatment of animals, including the abuses perpetrated in factory farms and the devastation of habitats for human gain. While the issue of the soul is beyond empirical confirmation or disconfirmation, many

other claims about the uniqueness of humans have been shown to be untrue or only half-true. Recently, in response to philosophical and empirical work, there has been significant political pushback. For example, the Great Ape Project (<http://www.projeto-gap.org.br/en/>) aims to establish great apes as persons with recognized legal rights. Whether we should stand behind such a project or other less ambitious efforts to treat animals as entities with moral worth depends at least in part on what kind of capacities they have, both cognitive and affective.

Here I combat a philosophically prominent claim of human uniqueness: Donald Davidson's famous argument that only humans can think. In the light of the complex cognitive activities of which animals are clearly capable, one might think this patently untrue. However, Davidson means by this not that animals have no cognitive capacities at all, but that nonhuman animals cannot have beliefs, desires, and other propositional attitudes. What the thesis does is set animal cognition apart from human cognition as a different natural kind, due to radically different representation schemes (see also arguments in [Malcolm 1972](#)). This is not a straw man, but an interesting and challenging thesis. In critically evaluating the arguments Davidson provides in light of empirical evidence from developmental psychology and ethology, insight can be gained into the nature of the relationship between thought and language. Despite its *prima facie* plausibility, I conclude that in light of contemporary studies from human and animal cognition, arguments for restricting propositional attitudes to humans fail.<sup>1</sup> The implications of this result could be far-reaching. Language as a cognitive ability has held a special status in analytic philosophy, where it is often assumed to be foundational to thought and cognition. Rethinking the role of language as a cognitive newcomer and possibly in large part a cognitive overlay resting atop a toolbox of already-powerful cognitive abilities may lead us to rethink a number of fundamental issues in philosophy, as well as to reconsider our cognitive and ethical relationship to the rest of the natural world. This critique of Davidson is illustrative of Dennett's caution:

[p]hilosophy of psychology driven by the concerns of philosophy of language does not fall happily into place. ([Dennett 1987b](#), p. 204)

The various arguments Davidson supplies for thinking that humans are unique in having propositional attitudes all rest upon the idea that

<sup>1</sup> However, some very interesting and very recent (currently unpublished) work by Susan Carey calls into question the interpretation of some of the extant pro-propositional attitude empirical work.

having language is an enabling condition for having propositional attitudes. Since only humans have language, it follows that only humans have propositional attitudes.<sup>2</sup> Thus, his main argument against animal thought is:

P1 If something has propositional attitudes, then it has language.

P2 Animals don't have language.

C Animals don't have propositional attitudes.

The logic here is unassailable: if P1 and P2 can be established then the conclusion that animals lack propositional attitudes follows. For [Davidson](#), having language is having the ability to speak ([1984](#), p. 167, [2001a](#), p. 99), to express one's thoughts, and to understand the speech and propositional attitudes of others. It is generally accepted that nonhuman animals don't have this ability, despite some evidence that certain birds and higher mammals have some nontrivial linguistic abilities ([Kaminski et al. 2004](#); [Pepperberg 2000](#); [Savage-Rumbaugh 1986](#)). Therefore, we will grant P2.<sup>3</sup> The success of this argument denying propositional attitudes to nonhumans therefore rests on the ability to establish P1, namely the claim that having propositional attitudes requires language. In this paper I consider the various avenues by which Davidson tries to establish P1, for his arguments make contact with a broad range of research concerning mind and language, and serve as a good guide to attempts to link propositional attitudes to language. I begin by situating Davidson's arguments in his larger theoretical context, and raise a few methodological worries about his approach. I then briefly consider some of his minor arguments, before turning to his strongest argument linking propositional attitudes to language. I argue that on the most plausible consistent readings of

<sup>2</sup> Davidson equates thought with propositional attitudes. He famously expresses his denial of propositional attitudes to nonhuman animals as the claim that animals can't think. See [Davidson \(2001a\)](#). Here I focus upon arguments found in his 1975 paper "Thought and Talk", and his later paper "Rational Animals".

<sup>3</sup> Another reason for focusing on P1 rather than is that finding counterexamples to P2 will at most make room to usher specific species into the thought-capable fold, but will not challenge Davidson's argument directly.

his arguments, one or another premise can be empirically falsified. I conclude by considering how to proceed to better understand the nature and limitations of animal thought.

## 2 Initial considerations

### 2.1 Propositional attitudes

A creature is said to have a propositional attitude when she stands in some appropriate relation (i.e., hoping, wanting, fearing, believing, etc.) to a proposition.<sup>4</sup> What propositional attitudes are, and who may enjoy them, may well be influenced by what one takes propositions to be. For instance, a skeptic about propositions may deny that anyone has propositional attitudes in the above sense. For our purposes it is not necessary to resolve questions about the nature of propositions, provided that we accept that humans can (and do) have propositional attitudes—meaning that there is something *proposition-like* to which a thinker can be appropriately related, whether this be a sentence (Fodor 1978), a set of possible worlds (Lewis 1979; Stalnaker 1984), or a state of affairs (Marcus 1990). What remains to be determined is whether appropriate relations to proposition-like entities can be supported in non-linguistic creatures.

### 2.2 Methodological attitudes

Davidson's arguments are offered in the context of his larger theoretical commitments to the nature of mind and meaning, commit-

<sup>4</sup> Some have argued that there is no account of what a proposition is that is both coherent and satisfies the various criteria that propositions are traditionally supposed to satisfy (that tradition stemming initially from Frege). See e.g., Dennett (1987a), and Churchland (1981). It is unfortunate, but true, that if our notion of a proposition is fundamentally incoherent, and no compromises can be reached on the criteria propositions must satisfy, then there is no such thing as a proposition. *A fortiori*, we can't stand in any meaningful relation to propositions, so we lack propositional attitudes. Such is the position of some eliminativists. Others have compromised on the demands put on propositions. Quine, for instance, while being no friend of abstract entities such as propositions as usually conceived, found sentences to be less ontologically troublesome stand-ins for them, and held that to have a propositional attitude is to stand in some relevant relation to an eternal sentence—thereby still satisfying our philosophical intuitions about the role of propositional attitudes in explanations of human thought and behavior.

ments that stem from his interpretationist philosophy.<sup>5</sup> In general, interpretationist strategies answer the following three questions simultaneously: “In virtue of what does a creature have propositional attitudes?”, “which propositional attitudes do they have?” and “when is one justified in attributing these attitudes to a creature?” According to interpretationism, a creature has propositional attitudes in virtue of being interpretable; the most coherent, charitable interpretation that accurately (or accurately enough) predicts behavior is the justified interpretation; and the contents of that interpretation serve to determine the contents of the creature's propositional attitudes. As Byrne puts it, in an interpretationist strategy, “there is no gap between our *best judgments* of a subject's beliefs and desires and the *truth* about the subject's beliefs and desires,” (1998). Thus, if a creature's behavior can be accurately predicted or explained by an attribution of beliefs and desires in conjunction with the assumption of rationality, we are justified in attributing propositional attitudes to the creature.

Davidson's strongest arguments for why thought requires language are motivated by his interpretationism. On a strict interpretationist view, meaning does not exist without interpretation; so if a system is uninterpreted, it lacks contentful states. Davidson believes that language is a prerequisite for entering the world of interpretation. If no language, then no interpretation, so no content. But let us consider, from an interpretationist stance, why one might think that language is a prerequisite for interpretation.

One might think that Davidson is moved by the idea that only linguistic behavior can be interpreted. However, this cannot be Davidson's position. If it were, Davidson's approach to propositional attitude attribution would be at odds with his own interpretive strategy for attributing content to mental states. The basic idea of Davidson's interpretationism is that in ascribing content to another person's mental states, we

<sup>5</sup> In the literature, “interpretationism” is often used interchangeably with “interpretivism”. Since “interpretivism” is more commonly used to denote a strategy of legal interpretation, I will use “interpretationism” here.

assume that that person is rational, and we ascribe content to her utterances, behaviors, and mental states in such a way as to maximize the coherence of that person's beliefs and desires in light of her behavior. Undeniably, there is a class of behaviors that humans have and animals lack, namely linguistic behaviors. However, both humans and animals share a wide range of non-linguistic behaviors that admit of interpretation. On the face of it, those behaviors provide ample evidence upon which to base attributions of mental content, and Davidson himself would not refuse to attribute propositional attitudes to a silent person. However, Davidson pointedly refuses to apply a straightforward interpretationist strategy to non-linguistic animals. To avoid arbitrariness, an independent argument is needed to privilege language over other behaviors.

Perhaps Davidson believes that rationality is impossible without language. If we cannot attribute rationality to a creature, the interpretationist strategy does not apply. More than a few people have argued that animals are not rational, yet there is reason to believe, under some plausible construals of rationality, that they are. To hold that rationality presupposes language commits one to a narrow view of rationality, already colored by a linguistic bias. Such a view implicitly begs the question in which we are interested. Admittedly, what rationality is is a vexed question in philosophy, and determining whether a creature is rational falls prey to the same holistic problems as determining whether it has propositional attitudes. A theory of rationality predicated upon a conception of practical reason instead of upon linguistic manipulation appears to be more neutral. There is abundant evidence for practically rational behavior in the animal world. After all, animals of all stripes are here now because they have been evolutionary successful, and to have succeeded requires in some nontrivial sense that goals are achieved by instrumental behavior.<sup>6</sup> All animals exhibit some degree of ration-

ality, construed in this way. Building on this view of rationality promises to enable us to posit criteria or hallmarks for minimally rational behavior that are independent of language, yet also to concede that some rational behaviors are linguistically dependent, and thus unique to humans. Indeed, one might think that a good way to assess rationality would be to see to what extent an animal's behavior is predictable or explicable with reference to survival requirements and common sense belief-desire psychology. A wide range of animal behaviors certainly seem apt for explanation with reference to the rational interplay of ecologically-relevant propositional attitudes. If one thinks that aptness for explanation in terms of rationality is sufficient evidence for rationality, and accepts, as Davidson does, that rationality rests on the interplay of propositional attitudes, then we have ample evidence that animals have propositional attitudes, rather than that they do not.

Davidson, however, obviously thinks that the reasons to deny animals propositional attitudes supersede reasons to attribute rationality to them; he applies *modus tollens* to my *modus ponens*. Since he denies that animals have propositional attitudes, and he thinks rationality requires propositional attitudes, he denies that animals are rational. We are led to very different conclusions about the nature of animals' mental lives depending upon whether we take ourselves to be more justified in attributing rational behavior to them or in refusing to attribute to them propositional attitudes. Because the questions of propositional attitudes and of rationality are both equally troubling and closely linked, arguments against animal thought based on assumptions about rationality are not compelling.

Thus, we have as yet failed to find ample reason to refuse to apply the basic interpretationist strategy to non-linguistic animal behavior. Perhaps Davidson thinks that, in the absence of language, we have insufficient evidence for attributing propositional attitudes to animals. Perhaps it is because Davidson thinks that "having the gift of tongues" is both necessary and sufficient for having propositional attitudes (1984, p. 156, 2001a, p. 104), he views language

<sup>6</sup> Decision theory, for instance, gives us one model of rationality. Interestingly, in many ecological studies of foraging behavior that use decision theory to assess animal choice, animal behavior is found not to just be adaptive, but optimal. For example, animal foraging decisions approach optimality. See e.g., Stephens & Krebs (1986).

possession as *the* evidential criterion for propositional attitude attribution. He consequently denies that we can be justified in attributing propositional attitudes to creatures on the basis of non-linguistic behavior. Language gives the radical interpreter the green light: evidence of linguistic behavior licenses application of the radical interpretive strategy.

Even if we grant that language is the best evidence for propositional attitudes, we should be immediately suspicious of the presumption that the only evidence relevant for deciding whether something has propositional attitudes is the presence of a necessary and sufficient condition for having them. In normal empirical inquiry, criteria that are necessary and sufficient are rarely the only ones that qualify as evidence for assessing empirical claims. For instance, a rash may be relevant evidence for determining whether a person has Lyme disease, despite the fact that not all people with rashes have Lyme disease, and not all people with Lyme have rashes. Might there not be evidence highly indicative of whether a creature has propositional attitudes, despite the fact that the evidence is not decisive? Reasonable, predictable behavior is surely a clear source of evidence for the existence of propositional attitudes, despite the fact that it only provides defeasible reasons for thinking they exist.

Furthermore, unlike instrumentalists like Dennett, Davidson seems to favor the idea that beliefs are real; his anomalous monism posits a physical-causal substrate for mental states, albeit one that exempts psychology from being reduced to physical laws.<sup>7</sup> One might think, nonetheless, that it would be reasonable for a realist to accept the possibility that beliefs involve some internal representational structures, and that there could therefore be other types of reliable evidence besides linguistic evidence for the presence of propositional attitudes. Thus, Davidson's exclusive focus on language is in tension with his realist leanings. Furthermore, if

one is a realist about thought, it is not the evidential question, but rather the question of the grounds of possibility for having propositional attitudes that should be of primary interest. The Davidsonian mix of interpretationism and realism creates an uneasy tension, for while he tends toward realism about belief, he often seems to think the metaphysical and epistemological construals of the question amount to the same thing: a creature has propositional attitudes if we ought to interpret him as having them. I suspect that this collapsing of the issues accounts for Davidson's view that the question of whether a creature has propositional attitudes is closely tied to the evidential question of what evidence is relevant for deciding whether something has propositional attitudes.

There is, as far as I can tell, a lack of a substantive argument for requiring that a creature has language to be a candidate for interpretation, as well as for holding that only the presence of language provides sufficient evidence for attributing propositional attitudes. Thus, neither the interpretationist strategy itself, nor Davidson's concerns about evidential warrant justify the position that only language-speaking creatures can be candidates for propositional attitudes. Now let us turn to the specific arguments Davidson offers for denying animals propositional attitudes: the reasons he offers for holding that language is necessary for thought.

### 3 Minor arguments

Why might someone think that language is necessary for having propositional attitudes? A common reason for supposing that language is necessary for thought is that one is in the grip of a picture about the nature of thought—namely that thought is a type of language, or is linguistic or language-like. If propositions are linguistic entities, then creatures that lack the capacity for linguistic representation might well be unable to represent propositions and thus be unable to hold an attitude toward a proposition. However, since there are competing accounts of what propositions actually are, several of which see them as non-linguistic in nature, the intuitive language-like characteristics of pro-

<sup>7</sup> The debate about propositional attitudes, language, and capacity for thought has implications beyond philosophy of mind to ethics. As Davidson himself noted, personal and sub personal levels of description refer to different logical subjects, and thus Davidson's argument has implications for the possibility of attributing *personhood* to animals. See again, <http://www.projeto-gap.org.br/en/>.

positions does not settle the question (Lewis 1979; Stalnaker 1984).

In several places Davidson gestures at related arguments for denying non-linguistic creatures propositional attitudes (1984, p. 156, 2001a, p. 98). These stem from an implicit commitment to propositional attitudes having certain characteristics that only languages possess. For instance, Davidson claims that propositional attitudes have definite content, and that only things expressed in language have definite content. Drawing on the discussion of Malcolm (1972) before him, he gives an example of a dog chasing a cat up a tree. Like Malcolm, he notes that we cannot attribute to the dog the thought that the cat ran up the maple, as opposed to that the cat ran up the tree. If there is no particular thought we can attribute to the dog, then the dog hasn't had a thought with definite content, and so hasn't had a propositional attitude. Davidson elsewhere claims that propositional attitudes are opaque<sup>8</sup>, and that language accounts for their opacity (Davidson 2001a, p. 97). Although these claims can be combatted directly, I will not pursue those arguments here. Both the definite content claim and the opacity claim lose their teeth when it is recognized that they take the following form:

P1 Propositional attitudes have a property, p  
 P2 Language has property p  
 —————  
 C Therefore, language is necessary for propositional attitudes

This argument is fallacious—it would only be valid if nothing *but* language had property p. But no such argument is on offer. It is worth noting, moreover, that whether propositional attitudes have the property p in question is itself contentious—do all our beliefs have definite content? Finally, even if having property p were somehow constitutive of thought, and to have p thought had to be linguistic, this would still not entail that a creature with beliefs and desires must have language in Davidson's sense. Fodor

(see Fodor 1975), for instance, thinks that a creature must have a language of thought to have propositional attitudes, but he holds that it need not be able to speak or understand a public language to have a language of thought. Even if claims about definite content and opacity were true, that is, if Fodor is right, Davidson has erred in thinking that thought requires an external as opposed to an internal language. If animals have a language of thought, they are non-language-using believers.

#### 4 Davidson's Master Argument

The above minor arguments don't play a central role in Davidson's support of P1. The strongest support for the crucial premise is found in what I will call his Master Argument.<sup>9</sup> The Master Argument puts psychological restrictions on what it is to be an interpreter, and it supports the claim that one cannot have propositional attitudes without language. If the Master Argument succeeds, then Davidson's arguments for denying that animals have propositional attitudes is compelling. But, as I shall argue, the Master Argument ultimately fails, and thus also fails to support the denial of propositional attitudes to animals.

According to Davidson's interpretationism, having beliefs entails being an interpreter. The basic idea of the Master Argument is that possessing certain concepts is a prerequisite for being an interpreter, and that an organism must have language in order to have these concepts.<sup>10</sup>

<sup>9</sup> Davidson nowhere presents his Master Argument in this precise form. I reconstruct the logical form of his argument from "Thought and Talk" and "Rational Animals".

<sup>10</sup> This ought to be distinguished from the idea that having propositional thought requires having some concepts, and that the contents that can be entertained by a creature in propositional thought are constrained by the set of concepts that the creature possesses. This view, held by a variety of thinkers from Frege to Fodor, stems from the belief that the propositions to which a thinker stands in relation in having a propositional attitude are complex entities composed of concepts. But then the question of whether animals have propositional thought can be recast as the question of whether animals have concepts. If, additionally, one combined this view of the cognitive structure of propositions with a view according to which concept possession requires language, one would have an argument for why language is necessary for propositional thought. However, whether concept possession requires language is a question that depends, among other things, on what concepts are. Whether the vehicles of thought are language-like, as I argued earlier, is orthogonal to the issue of whether an organism possesses the capacity to speak or understand speech. Therefore Davidson's argument cannot rest on the nature of concepts.

<sup>8</sup> Substitution of co-referring terms in "opaque" contexts may not preserve truth. Such is the case with propositional attitudes. Thus, while it is true that Lois Lane believes "Superman is a hero", it may be false that she believes "Clark Kent is a hero", despite the fact that Clark Kent is identical to Superman.

Davidson's position differs from the more widely-held view that having *some* concepts is required for having propositional thought, by supposing that there are *specific* concepts that a creature must possess in order to have propositional thought. The Master Argument links thought to language by way of higher-order thoughts. Specifically, Davidson suggests that a concept of *belief* is a prerequisite for propositional attitudes, and that a concept of belief is unavailable without language. Here is Davidson's Master Argument:

M1 If S has propositional attitudes, then S has beliefs.

M2 If S has beliefs, then S has a concept of belief.

M3 If S has a concept of belief, then S has language.

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MC If S has propositional attitudes, then S has language.

The argument is clearly valid. But is it sound?

**M1** is plausible; it just highlights Davidson's view that beliefs are a fundamental propositional attitude, and that to have any propositional attitudes at all, a creature must have some beliefs. **M2** and **M3**, the remaining premises, are interesting, but their meaning is unclear, for they contain a clause that needs to be unpacked: what exactly is a "concept of belief"? Let us distinguish three different conceptions of a "concept of belief", varying in stringency. One conception of the concept of belief is robust, in which the concept of belief is the fully articulated belief-concept that is taken to be definitive of a mature theory of mind. On this robust view, having a concept of belief is an epistemologically-rich notion that entails having an ability to pass the "false belief test". That is, it is criterial for having the concept of belief that one has the ability to attribute to others a mental representation of the world that may differ from the way the world is, as well as a recognition of the perceptual circumstances that would engender false representations. In contrast, a deflationary conception of what it is to have the concept of belief merely requires an understanding that the world is distinct from how it appears

or how one takes it to be, or that belief can come apart from reality. On a deflationary view, then, having the concept of belief is rather like having the concept of an objective reality. Finally, we might consider an intermediate notion of the concept of belief that involves the ability to attribute representational mental states to oneself and others, without satisfying all the constraints that a robust conception must meet. Which, if any, of these conceptions of "concept of belief" is important for Davidson's argument linking belief to language?

#### 4.1 The robust conception of belief

The robust conception of belief became important in developmental psychology in the context of concerns about Theory of Mind: having a notion of false belief was taken to be diagnostic of a mature TOM, and, according to many researchers in the field, only develops in humans at around four years of age (Saxe et al. 2004; Wellman et al. 2001; Wimmer & Perner 1983). However, requiring a concept of belief in the robust sense seems too demanding a condition for having propositional attitudes. While we might plausibly doubt whether prelinguistic infants really have propositional attitudes, it is hard to deny that young children who have already acquired a sophisticated facility with language have propositional attitudes. Children of two and three, for instance, clearly refer to objects in the world using language, and they readily express their desires ("I want the green monkey!"), beliefs ("I think the ball is under the bed"), as well as fears and other propositional attitudes. They understand others, refer to their own and others' mental states, and communicate effectively. We typically and with great conviction attribute propositional attitudes to children of these ages. Nonetheless, according to most developmental psychologists (See e.g., Perner et al. 1987; Call et al. 1999; [http://youtu.be/8hLubgpY2\\_w](http://youtu.be/8hLubgpY2_w)), until the age of four (two years after they develop considerable language abilities) children lack a concept of belief in the robust sense.<sup>11</sup> And if so, we

<sup>11</sup> Kristen Andrews takes autistic subjects to be counterexamples to Davidson's view, which would also argue against **M2**. (Andrews 2002).

make ordinary propositional attributions to children well before they possess the robust concept of belief. Thus, **M2** is false.<sup>12</sup>

Not all psychologists agree that a robust concept of belief doesn't develop until about four years of age. Some have argued that the methods used in many of the classic false belief studies rely too much on language or on inhibitory control, and that tests other than the classic false belief test are sufficient for demonstrating understanding of false beliefs. For instance, a recent study suggests that children have a concept of belief at far earlier ages than previously thought—earlier, in fact, than the development of language (Onishi & Baillargeon 2005; Baillargeon et al. 2010; Caron 2009). However, if this is so, then **M3** is false, for the robust conception of belief does not depend on having language. This version of the Master Argument depends upon a tight connection between competence in the false-belief task and belief. On one conception of what evidence is sufficient to reflect performance on the false-belief task, **M2** is false, and on another conception, **M3** is false. Either way, the Master Argument is empirically refuted, and the robust conception of “the concept of belief” fails to link language possession and propositional attitudes.<sup>13</sup>

Davidson may well be unperturbed, for there is no textual evidence that he means to implicate the robust conception of belief when he claims the concept of belief is necessary for having beliefs. After all, from the standpoint of his radical interpreter, one can only be a believer in virtue of interpreting others, but it is unclear why the possibility of such interpretation should rest upon a grasp of others' mental states being beliefs in this robust sense, rather than in some weaker sense. In “The Second Person” (1992), for instance, Davidson argues that for our mental

states to have determinate content we must interact with another being in order to “triangulate” and thus make determinate the referents of our thoughts. Nothing in this picture requires that an interpreter have a robust concept of belief as opposed to a more deflationary one.

## 4.2 The deflationary conception of belief

In line with the idea that Davidson has a more deflationary view in mind, in both “Thought and Talk” and “Rational Animals” he mentions a different criterion for having a belief, which he also thinks links the possession of language to the ability to have propositional attitudes. This is the criterion of possessing a concept of “objective truth.” Davidson's argument for language via the criterion of objective truth is as follows:

- O1 In order to have propositional attitudes, one must have beliefs.
  - O2 In order to have beliefs, one must have a concept of objective truth.
  - O3 In order to have a concept of objective truth, one must have language.
- 
- OC Propositional attitudes require language.

The logic here is again unproblematic, but unpacking the premises is not. At times Davidson seems to equate the concept of objective truth with that of belief. I take this as evidence that he intends “the concept of belief” in the Master Argument in its most deflationary interpretation: as an understanding that how the world is can come apart from how one takes the world to be. Given this interpretation one could believe that the concept of objective truth co-occurs with that of belief, or that the cognitive conditions that make possible the concept of belief are the same as those that make possible the concept of objective truth. In any case, Davidson sees a tight connection between the notions of belief and objectivity.

How are we to understand the “concept of objective truth” in **O2** and **O3**? If Davidson means it to be a metasemantic concept, such as having a Tarskian definition of truth, or an understanding that truth applies to propositions, and so on, then it would be almost assured that

<sup>12</sup> In addition, at ages far younger than those at which children pass the false-belief task, they act as interpreters, in Davidson's sense. Any parent knows that their children interpret speech well before they are speakers, and long before the age at which they pass the false-belief task. So if interpretation is central to having propositional attitudes, it doesn't require a robust theory of mind.

<sup>13</sup> Of course, Onishi and Baillargeon's interpretation is subject to refutation. Should their findings (they developed a nonverbal task that suggest that infants much younger than previously supposed represent others' mental states, such as goals, perceptions and beliefs.) reflect something like proto-beliefs rather than full-blown propositional attitude-sustaining beliefs, **M3** would not be falsified.



one could not grasp the concept of truth without language. It would explain the *prima facie* plausibility of the Objective Truth version of the Master Argument. However, if we adopt that reading of objective truth, O2 would be false, for people certainly have propositional attitudes even if they never become philosophers, and even if they never have an inkling about metasegmental notions.

Another clue about what Davidson means by objective truth comes from his emphasis on triangulation. Davidson thinks we need to interact with another person in order to come to see the world as external to us—in order to develop a notion of objectivity. By linguistically triangulating on an object with another, we are forced to recognize that object as part of an objective reality. Davidson illustrates this view in “The second person”:

Belief, intention, and the other propositional attitudes are all social in that they are states a creature cannot be in without having the concept of intersubjective truth, and this is a concept one cannot have without sharing, and knowing that one shares, a world, and a way of thinking about the world, with someone else. (2001b, p. 121)

However, there are two fundamental problems with using triangulation as an argument for the necessity of language for thought. First, there is nothing apparent about triangulation that requires spoken language as opposed to some other sort of joint interaction or non-linguistic communication. It is, indeed, difficult to see why language as opposed to action would be operative in developing a notion of a world external to ourselves. So triangulation fails to show that language is necessary for thought. Second, it is difficult to see how triangulation could itself suffice for a notion of objectivity. In order for me to triangulate with another, I must *first* see the other as part of the external world, as opposed to an element in my mentality. As long as the other is merely a part of the way I take things to be, it cannot fulfil the role of the second person (see for example, Roskies 2011).

So triangulation also fails as a mechanism for constructing the concept of objectivity. Nonetheless, Davidson’s emphasis on triangulation strongly suggests that by “objective truth” he is referring to the appearance/reality distinction.

This interpretation is further strengthened by taking seriously the fact that Davidson thinks the concepts of belief and truth are closely linked (1984). As mentioned earlier, having the concept of objective truth is nothing other than understanding that how the world is can come apart from how one takes the world to be. What evidence do we have that language is required for this?

### 4.3 Surprise

As further evidence that Davidson intends a deflationary view of the concepts of belief and objective truth, we can turn to another formulation of the Master Argument. In his most forthright explication of what he means by “concept of belief”, he suggests that there is a behavioral mark that is coextensive with having such a concept: surprise.

In order to have any propositional attitude at all, it is necessary to have the concept of a belief, to have a belief about some belief. But what is required in order to have the concept of a belief? Here I turn for help to the phenomenon of surprise, since I think that surprise requires the concept of belief. (Davidson 2001a, p. 104)

The willingness to consider some sort of non-linguistic behavior as relevant to the question of whether a creature has propositional attitudes is a methodological breakthrough, for it provides an avenue independent of language for assessing whether an animal has the requisite cognitive machinery to be a believer. Davidson maintains that the ability to be surprised is diagnostic of having the concept of belief. It indicates recognition that one’s own mental representation fails to conform to that which it represents, and as such it constitutes necessary and sufficient evidence of the concept of belief.

Following this intuition, we can amend Davidson's Master Argument to incorporate this insight:

S1 If S has propositional attitudes, then S has beliefs.

S2 If S has beliefs, S has a concept of belief.

S3 S has a concept of belief iff S has the capacity for surprise.

S4 If S has the capacity for surprise, S has language.

---

SC Propositional attitudes require language.

The idea that surprise goes hand-in-hand with the concept of belief is not implausible: if surprise issues from the recognition that one's belief about how the world is fails to correspond with the way the world is, then surprise is good evidence for the concept of belief. Moreover, because this idea does not have implications for the ability to attribute propositional attitudes to others in an operative sense, it suggests that the interpretation of "concept of belief" that Davidson favors is a deflationary interpretation: one that involves appreciation of the appearance/reality distinction, or, as discussed above, the concept of objective truth. Thus, S2 takes the deflationary interpretation of the concept of belief, and for the argument to be valid, S3 must also take that interpretation.

Unfortunately for this version of the argument, S4 is false. There is clear and abundant empirical evidence that the ability to be surprised at the mismatch between the world and one's own representation of the world is independent of language (Dupoux 2001; Feigenson et al. 2002; Hauser & Carey 1998; Santos et al. 2002; Wynn 1992). Take, for example, an invaluable tool in the developmental psychologist's toolkit: the violation of expectancy looking method (V) for testing infants. Many studies performed on pre-linguistic human infants employ this paradigm in order to explore what an infant knows. The idea is simple: infants look longer at stimuli that fail to correspond with their expectations. This method has been used to determine, among other things, that infants have an innate (or very early developing) concept of number. In now classic experiments,

Wynn and colleagues demonstrated that infants can do simple arithmetic (Wynn 1992). She showed infants as young as five months a toy, and placed it behind a screen. Then she showed them another toy and also placed it behind the screen. The screen was then lowered, revealing either two toys (the expected outcome), or only one toy. Infants looked longer at the unexpected outcome. The same paradigm was used with different numerical combinations, demonstrating that for numerosity up to three, infants can do simple addition and subtraction, and are surprised when what is revealed behind the screen does not comply with their expectations. Significantly, this robust effect, which is due to surprise, precedes the development of language by more than a year.

Davidson might reply that it is not actually possessing language, but rather possessing the *capacity for language* that is important for surprise, and thus for the concept of belief. Maybe, even though they cannot yet speak, infants possess a language faculty, which, immature as it may be, is sufficient to support surprise. However, this attempt to patch the argument also fails. The VELM is used frequently in studies with nonhuman primates, and while they never develop language nor seem to have a capacity for natural language, they too exhibit surprise when their expectations are violated (Hauser 2000; Hauser et al. 1996). So, it seems, language is not a requirement for surprise, nor is surprise evidence for the presence of or capacity for language.

The empirical studies of developmental psychologists and primatologists undermine the Surprise version of the Master Argument: surprise does not depend upon having language. Moreover, if premises S2 and S3 are true—if the capacity for surprise is evidence of the concept of belief, and if propositional attitudes depend upon possession of the concept of belief—then propositional attitudes do not depend upon language.

Let us briefly revisit the Objective Truth version of the Master Argument. I have argued that only a deflationary notion of objective truth is a candidate interpretation for the argument. I have also suggested that this is the only

notion of “the concept of objective truth” that meshes with the arguments Davidson raises regarding belief and surprise. Thus, having a concept of objective truth is having a concept that the way the world is can come apart from how one takes it to be. If this is correct, then the Objective Truth version of the Master Argument is false.

In Wynn’s looking-time studies discussed above, the child has clearly developed expectations of what lies behind the screen, and must somehow represent this to herself. When the screen is lowered and the child sees what is behind the screen, there must be some sense in which correspondence with the expectation or lack of correspondence is noted, and in which the data coming in from the senses is privileged over the internal representation. This is, in essence, what it is to recognize that beliefs about the world can come apart from the way the world is. Clearly this sort of grasp of reality does not depend upon language: pre-linguistic infants and non-linguistic animals possess it. One can easily imagine how violation of expectation can be instantiated in a system with imagistic thought. The languageless child need only conjure up an image of the objects behind the screen and compare this with the visual scene before him. As long as the child privileges the sensory information over the mental representation, we might say that he has a concept of reality and of the belief/reality distinction. In summary, then, language is not required for a concept of objective truth.

#### 4.4 The intermediate conception of belief

We have ruled out both the robust and weakest notions of “concept of belief” as candidate notions for a successful interpretation of Davidson’s argument linking belief to language. Perhaps an intermediate notion can do the job. This notion involves the ability to attribute representational states to oneself and others; it is less sophisticated than that required to pass the false-belief task, but more complex than the recognition of an appearance/reality distinction.

One potential reason why representational-state attribution may be important for having

beliefs involves self-reflection: perhaps being a believer requires being able to think of oneself as a believer, and thus requires the concept of belief. This amounts to the claim that beliefs cannot be held non-reflectively. Since we clearly do have beliefs that we do not have beliefs about, what is at issue is not the actuality of having beliefs about beliefs, but the possibility or capacity to do so. However, while there are arguments that the ability to think about oneself as a believer is required for a rich construal of theoretical rationality (see [Bermúdez 2003](#), Ch. 7), there is no clear argument why such reflective ability should be constitutive of having beliefs. Indeed, it seems like the ability to believe things about one’s beliefs would require that one could believe things, so that belief is conceptually prior to self-reflection. In any case, self-reflection is not Davidson’s stated reason for thinking that the concept of belief is important for having beliefs.

The other reason to hold that having belief requires having a concept of belief under the intermediate conception links the ability to attribute mental states to others with having the concept of belief. Thus there are two different strengths of intermediate interpretations to consider. According to the less demanding interpretation, a concept of belief is required in order to attribute contentful states to other creatures; whereas the more demanding interpretation holds that a concept of belief is required to attribute propositional attitudes to others: one must be an interpreter, not just an interpretee.

We can discount the less demanding of these interpretations for the purpose of this argument linking thought to language,<sup>14</sup> because if [M2](#) (“If S has beliefs, then S has a concept of belief”) is interpreted in this way, then [M3](#), the claim that language is required for a concept of belief, read in this way, is false. There is growing evidence that non-language-using animals are able to attribute representational states to other animals. One compelling illustration of this comes from ([Hare et al. 2000](#)), who show

<sup>14</sup> We ought to reject this interpretation for the purposes of Davidson’s argument, despite the fact that we may ultimately agree with it as a necessary condition for having propositional thought.

that subordinate rhesus monkeys only approach food in the presence of a dominant male when they know that the male is unable to see the food (interestingly, dominant males appear not to care whether or not a subordinate male sees food, pointing to yet a further level of sophistication in the cognitive processes of non-linguistic animals). Thus, if it is the case that to believe requires having the ability to attribute contentful mental states to others, then it is not the case that believing requires language. Indeed, recent work on non-human primate theory of mind suggests that monkeys and chimpanzees have a theory of mind that represents goal states and distinguishes between knowledge and ignorance of other agents (the presence and absence of contentful mental representations), even if it fails to account for misrepresentation (Call & Tomasello 2008; Kaminski et al. 2008; Martcorena et al. 2011). Although they may have a less articulated theory of mind than we do, we may nonetheless adequately characterize their representational system with mental-state terms (Butterfill & Apperly 2013; Martcorena et al. 2011).

What remains is the notion that the ability to attribute beliefs qua propositional attitudes to others is necessary for having beliefs. That is, not only must they attribute mental states to others, but those mental states must possess the characteristics of beliefs. Remember that we have already discounted the robust notion of belief as too demanding, so what is necessary is not that animals have a notion of false belief per se, but rather that they have a notion of a belief as a representational mental state that can play a role in behavioral explanation or prediction. So far there is no compelling evidence that nonhuman animals have this, consistent with the possibility that such a representational ability as this may indeed require language, or at least some sophisticated ability to symbolize abstractions and predicate them of objects. Whether this is so is ultimately an empirical question. However, at least some philosophers think monkeys may be able to do this. As Lurz characterizes the above studies, animals do have the ability to represent propositional mental states in others—not as attitudes

aimed at representing objective truth, but instead as attitudes with propositional contents that provide information regarding motivation to act (2011a). Lurz characterizes this as a kind of belief–desire attribution. Baillargeon’s data proves relevant here too, for her results are best explained by taking the infants in her study as postulating representational mental states of the actor in order to predict her behavior; violation of their expectation causes them to look longer. Thus, without imputing these infants some understanding of others’ representational mental states, we would be unable to account for this data. However, in this case M3 would then be false, for the linguistic abilities of fifteen-month-old infants typically are minimal—certainly not of the sophistication we would expect would be necessary to linguistically encode a belief-concept. While the evidence that bears on this case is perhaps the least well-established, and this study involves infants at an age when they are poised to develop language, the burden of proof is shifted to the person who wants to argue that language is necessary for a concept of belief. That burden is not discharged: Davidson lacks a positive argument for why this relatively demanding notion of attributing content to others is the one required for an organism to be a believer.

## 5 Beyond interpretationism

Davidson argues that language is required for thought. His Master Argument posits that having a concept of belief is a necessary intermediary for having propositional attitudes, and that language is necessary for having a concept of belief. Of the various conceptions of “concept of belief” that might play a role in Davidson’s argument, the robust conception is too strong, and empirically falsified. While the robust conception may require language, we attribute propositional attitudes before children are clearly in possession of such concepts. Davidson’s examples and arguments support only deflationary interpretations of the concept of belief and the associated concept of objective truth: those that involve distinguishing between appearance and reality, or those that involve attributing

mental content. However, as numerous studies in developmental and comparative psychology have shown, the deflationary conception is one that many creatures without language enjoy. Even an intermediate conception does not seem to play the role Davidson's argument requires, for the ability to attribute mental content does not require language, and neither does the ability to attribute to others representational mental states, though here the evidence is less clear. Davidson's arguments seem compelling because their plausibility relies upon a slide between less and more demanding conceptions of the concept of belief. For instance, a weak conception of "concept of belief" in M2 and a robust one in M3 yields an argument with apparently true premises, but because the argument equivocates on "concept of belief", the argument is invalid. This analysis, as well as an appreciation of the methodological considerations for using non-linguistic behavior as evidence of propositional attitudes, supports the view that some mental states of non-linguistic animals can aptly be classified as propositional attitudes.

In empirical circles it seems to be taken for granted that at least some non-linguistic animals have mental states best described as propositional attitudes. But this acceptance is merely the first step in a larger project. For example, even if there is good reason to think that non-linguistic creatures have propositional attitudes, how they could have these remains to be elucidated. That is, what is the nature of the representational resources available to them? And given these representational resources, what sorts of contents are they capable of representing? What kinds of reasoning and inference could such representations support? What are the cognitive limitations necessitated by their representational architectures? One can begin addressing these fascinating questions empirically either at the functional psychological level or at the level of representation, and from either level one can work toward answering questions about the other.

Instead of thinking that language itself is what makes complex, structured, or propositional thought possible, we should consider: 1) how non-linguistic capacities could underlie

complex representational abilities 2) the unique elements of linguistic competence and what they may or may not make possible vis-à-vis thought. In an example of the first, Proust (1999); see also [this collection](#)) provides an illuminating philosophical discussion of structured non-linguistic representational abilities (or "structured competences") and how they could make possible objective representations. Structured representations as such could form the building blocks of propositional attitudes. Bermúdez argues for abilities and for certain logical limitations on both the inferential and representational abilities of non-linguistic representers (Bermúdez 2003). Whether such limitations necessarily obtain is a matter of dispute (Lurz 2007).

When considering how linguistic abilities could augment thought, it is useful to identify elements of language that could contribute to representational complexity even if present without all the components of language. For example, Clark suggests that the human language-like ability to use symbols to represent abstract objects allows us to objectify our own thoughts and operate upon them (2000). Depending on what things can be symbolized, this could make possible metacognition or higher-order thought that might not otherwise be possible. Thus, the ability to represent symbolically can influence the kinds and complexity of reasoning available to a creature, even if that creature is not linguistic in Davidson's sense. Symbolic capacities are necessary but not sufficient for linguistic competence, and could be present even when language is not. And if mere use of symbols is taken to be sufficient for language, then some nonhuman primates are capable of language and thus again can have propositional attitudes. Indeed, it is clear that some nonhuman primates can be trained to use abstract symbols, even if they do not do so naturally. Boysen and colleagues, for example, relate how naïve chimps fail to learn to make second-order generalizations about object classification, but those trained to associate objects with symbols (for relations of "same" and "different") are able to succeed on a second-order classification task (Thompson et al. 1997). These interesting res-

ults give causal punch to the notion that symbolic objectification is a prerequisite for higher-level or abstract thought, and help to explain the competences that appear to come along with linguistic abilities.

Focusing less on the vehicles and more on the ways in which they can be exploited, Fitch and colleagues argue that recursion, which is a core element of natural language processing, can only operate on symbolic structures subject to rules, and that neither rules nor the objects on which they operate can exist without language-like representations (Hauser et al. 2002). If so, one might expect that forms of reasoning that rely on recursion may only be possible for creatures that also possess linguistic capacities. Thus, use of symbols and recursive rules are two candidates that could help explain the different representational capacities of linguistic and non-linguistic creatures.

## 6 Conclusion

Here I have argued that Davidson's arguments that nonlinguistic creatures lack thought are either unsound or invalid. While this negative project does not allow us to conclude that they have propositional attitudes or thoughts, it makes room for positive arguments that will take advantage of recent and future empirical work on animal cognition and on the nature of nonlinguistic representations and their role in cognitive processing, as well as for novel negative arguments that might set limits on the capacities of nonlinguistic creatures. Much current research in animal cognition focuses on whether animals have theory of mind paralleling that of humans (Martcorena et al. 2011), or metacognition (Bermúdez 2003; Carruthers 2008; Lurz 2007, 2011a, 2011b; Proust 2010). One might therefore think that the debate has not progressed much since Davidson asked the question about whether animals can have a concept of belief. But Davidson's interest in these questions was narrow, driven by his interpretationism and the view that these states are necessary for being an interpreter and thus for possessing mental content. In contrast, contemporary research does not aim to disprove the existence of

propositional attitudes, but rather to elucidate the scope of these attitudes and understanding the ways in which they may be limited by limitations in representational resources. In the most exciting work, the philosophical and psychological projects come together. This interdisciplinary approach takes seriously evolutionary relationships and has a more nuanced view of the human being's place among other animals. The arguments that result will be of great interest to philosophers of language and mind, as well as to those interested in ethical issues that transcend academia. And while they may vindicate a certain kind of human exceptionalism, they may also articulate our place on a spectrum that will ultimately lead to a more integrated and humane picture of our place in the world.

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# Crediting Animals with the Ability to Think: On the Role of Language in Cognition

A Commentary on Adina Roskies

Ulrike Pompe-Alama

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Davidson's argument for the claim that animals cannot be credited with beliefs rests on the assumption that possessing beliefs—as propositional attitudes—presupposes the possession of language. Based on Roskies' reconstruction of Davidson's argument, I want to discuss the implications of overemphasizing the role of language in thinking. I will offer a (tentative) explanation as to why this overemphasis occurs, namely due to a preoccupation with the way we experience ourselves while thinking or "having thoughts"; I further attempt to defend why a bottom-up strategy for the investigation of thought-invoking mechanisms might be a more promising way to study thought and the role of language therein.

## Keywords

Beliefs | Concept of belief | Davidson | Human cognition | Language | Mental representations, | Metacognition | Non-linguistic creatures | Propositional attitudes | Thought

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## 1 Introduction

What are the defining differences between human and animal cognizers? This concern has driven philosophers and scientists for a long time,<sup>1</sup> well before Darwin's (1871) theory of evolution and its inherent claim of developmental continuity between the species. The prevailing intuition has been, and often still is, that

even though we stand in a direct developmental line with other mammals in a physiological sense, our cognitive and affective abilities far exceed theirs, not only in a quantitative, but also in a qualitative sense. Criteria to support this notion are frequently sought in an array of special cognitive abilities, such as the ability to speak (e.g., [Savage-Rumbaugh et al. 1985](#)), the

<sup>1</sup> See for example, Aristotle's *De anima*.

possession of concepts (e.g., [Newen & Bartels 2007](#)), or behavioral traits like altruism or cooperation ([Hamann et al. 2011](#); [Warneken 2013](#); [Warneken & Tomasello 2009](#)). All of these are to varying degrees attributed to humans, but are either to a much lesser degree or not at all ascribed to animals, thus representing the cornerstones of the critical divide between “us” and “them” ([Hare 2007](#)). The problem raised by Davidson and discussed by Roskies concerns the special case of beliefs and the general case of the attribution of propositional attitudes to nonlinguistic creatures.

According to Davidson, it is only in the domain of human cognition that we can sensibly apply the notion of thinking. His reasons for holding this conviction are manifold, as Roskies uncovers beautifully in her treatment of Davidson. The general line of argument will be sketched out and discussed below. Roskies refutes Davidson’s arguments mainly on empirical grounds, with the aim of establishing that nonlinguistic animals can be cognitive agents with beliefs and mental representations, which function as kinds of propositional attitudes. In this commentary, I would like to complement this line of reasoning by questioning what it takes to credit human cognizers with thoughts; or rather, what we consider to be the prerequisites for attributing thoughts and beliefs to humans. Davidson puts much weight on the possession of language. Here, I want to argue that focusing on language as a necessary cognitive instrument for being able to think poses a methodological barrier for examining what the human ability to think actually amounts to. Stressing the point that the introspectively experienced properties of thinking, a term that requires careful consideration in itself, should not be identified with and reduced to experiencing inner speech, I want to show that our understanding of what thought is needs to be complemented by a bottom-up investigation into the neural processes and mechanisms that produce higher cognitive states, such as thoughts. I argue, therefore, that our introspective access to the way thinking presents itself to us as thinkers is only one part that needs to be considered. What is required in order to understand the phenomenon of think-

ing is first a suitable conceptual framework of the notions “thought” and “thinking”, which distinguishes between their intentional and phenomenological aspects, i.e., between the content of propositional attitudes and the phenomenal states of subjects making use of these attitudes. Second, we need to show how the sub-personal and personal levels of these factors can be distinguished from each other in order to show if and how they are interconnected. These considerations will be discussed in detail after a review of Roskies’s discussion of Davidson’s account of language and belief.

## 2 Roskies’ reconstruction of Davidson

What Roskies dubbed Davidson’s Master Argument is a reconstruction of Davidson’s position, capturing in a nutshell both his basic assumptions about how we understand others and the background to his claims about human cognition. As [Roskies](#) puts it:

According to Davidson’s interpretationism, having beliefs entails being an interpreter. The basic idea of the Master Argument is that possessing certain concepts is a prerequisite for being an interpreter, and that an organism must have language in order to have these concepts. [...] the Master Argument links thought to language by way of higher order thoughts. Specifically, Davidson suggests that a concept of *belief* is a prerequisite for propositional attitudes, and that a concept of belief is unavailable without language. ([this collection](#), pp. 6–7)

According to Roskies, then, Davidson is forced to endorse the view that a cognizer must know what beliefs are in order to have them. Can Davidson’s view be sound? It might be correct to claim that a cognizer must possess the concept of belief to recognize *herself* as having them or to be able to attribute such a state to herself. This seems to be an act of metacognition, in which a subject scrutinizes her own mental states and recognizes them as mental states of a special kind. But is having the concept of belief necessary for first-order cognit-

ive acts, i.e., simply believing a proposition of some kind without reifying this state *as* a belief state?

Before delving into this line of thought, let us review Roskies' structural reconstruction of Davidson's Argument.

M1 If S has propositional attitudes, then S has beliefs.

M2 If S has beliefs, then S has a concept of belief.

M3 If S has a concept of belief, then S has language.

MC If S has propositional attitudes, then S has language.

M1 seems to be correct, if a belief is seen as a paradigmatic kind of propositional attitude.

M2 is a critical premise of Davidson's Master Argument, as we have already indicated above. The question in play here is: does having a belief automatically entail the possession of the concept of belief? We will discuss this point once again further below.

M3 is refuted by Roskies with the help of studies on false belief comprehension in prelinguistic infants (e.g., Onishi & Baillargeon 2005). However, a further point might be made here: M3 might indeed hold if having any concept at all implies the possession of language. However, there are models of non- and pre-linguistic concept possession (cf. Mandler 2004; Newen & Bartels 2007), which allow us to explain concept acquisition during development; theories presupposing language as necessary prerequisite for the possession of concepts, however, fail to do so.

Roskies' main criticism targets the notion of the "concept of belief". She aims to show that Davidson employs the concept of belief inconsistently throughout his argument. If this is so, then the argument fails due to equivocation.

According to Roskies, Davidson's conception of belief can be understood in three ways. She distinguishes three kinds of conceptions of belief: "on this robust view, having a concept of belief is an epistemologically-rich notion that entails having an ability to pass the 'false belief

test'" (this collection, p. 7); the so-called deflationary conception, in which "belief can come apart from reality", (ibid.) and which amounts to "having the concept of an objective reality"; and last, the so-called intermediate concept of belief, which "involves the ability to attribute representational mental states to oneself and others", (ibid.). The intermediate concept of belief, as its name implies, is intended to be a weaker notion than the robust one. In the remainder of the paper, Roskies deconstructs each reading, providing empirical examples with the aim of showing why and how Davidson fails to make his decisive point, namely, that language is a necessary prerequisite for holding beliefs.

The robust conception of belief is convincingly refuted by studies on the ability to understand counterfactual beliefs in others, as demonstrated by the so-called false belief test. Children only display the possession of a concept of belief when they pass the false belief test, usually at around the age of three to four years.<sup>2</sup> It is implausible, though, not to ascribe propositional attitudes to them (in a first-order sense) prior to having acquired such a robust notion of belief. It can even be claimed that they need the ability to ascribe propositional attitudes to develop a robust notion of belief in the first place. Thus, the robust conception of belief is not linked to having propositional attitudes and Davidson's premise M2 fails, if belief is understood in the robust sense.

The second reading of belief, the deflationary view, can be read out of Davidson's stance on so-called triangulation<sup>3</sup> as a means of understanding objects as part of a reality external to us—via linguistic interaction with another person. However, as Roskies rightly states, the ar-

<sup>2</sup> See however, Apperly & Butterfill (2009) and Butterfill & Apperly (2013).

<sup>3</sup> The notion of *triangulation* that appears in Davidson's later works, replacing the notion of the so-called *omniscient interpreter*, captures the idea that we can only attribute mental (propositional) attitudes to others by interpreting their utterances. In both instances, we identify contents: the content of the utterance as well as the content of the underlying mental attitude. This is, according to Davidson, a necessary unit: without an utterance, we cannot ascribe determinate propositional attitudes, which is why Davidson is committed to the view that non-linguistic creatures cannot be interpreted, at least not in a way that allows for the ascription of thoughts. This does not imply that Davidson has to negate mental states in animals, but it does mean that we cannot understand these mental states. The issue of interpretability will be raised below (see issue #3).

gumentative force of forging the link between language as a means of recognizing the external as external, making it thus objective, is quite weak. Further, it would strike us a bit of an overreach, if not as absurd, to assume that non-linguistic creatures cannot develop any sense of the external world as being external to them.

The third and final understanding of belief à la Roskies, the so-called intermediate view, stating that animals understand other animals as having mental representations of some sort, which are behaviorally relevant, rests on empirically undecided ground; here, however, the tight connection between having beliefs and possessing the concept of belief is called into question.

Having a concept of belief might be important for reflective capacities, as we want to attribute them to rational agents that must be capable of justifying their actions, but not important for having beliefs:

perhaps being a believer requires being able to think of oneself as a believer, and thus requires the concept of belief. [...] However, while there are arguments that the ability to think about oneself as a believer is required for a rich construal of theoretical rationality (see Bermúdez 2003, Ch. 7), there is no clear argument why such reflective ability should be constitutive of having beliefs. (Roskies [this collection](#), p. 11)

Roskies has thus shown that the connection between propositional attitudes and the possession of a concept of belief (and its dependence on language possession), which Davidson tries to establish, cannot be held in light of the diverging readings of the notion of the concept of belief. Thus, Davidson's strategy fails.

### 3 Beyond animal cognition: The case of understanding human thought

Davidson's standpoint, from which his thesis makes sense and is plausible, begins from his assumption that "radically different representation schemes" (Roskies [this collection](#), p. 2) gov-

ern in animals and humans.<sup>4</sup> However, such an assumption clearly opens up a plethora of new issues. Roskies targets these by drawing attention to the empirical concerns mentioned above, thereby showing that an empirical foundation to support Davidson's background assumption is missing.

To my mind, these further issues resulting from Davidson's background assumption are the following:

1) How can we defend the intuition that animal and human cognition differ in kind? In order to defend this view, it would seem that one needs to identify a distinguishing criterion that can account for the diverging representation schemes. It also has to be shown that this factor is responsible for abilities that one group of cognizers has and that is at the same time missing in the other group. If language possession were to count as such a factor, it remains to be shown which abilities hinge on its possession and execution. At the same time, following this approach, it apparently needs to be established that no non-linguistic creature cannot execute a similar ability, not even in a partial or proto-form. This difficulty leads us to issue 2:

2) How can we understand representation schemes in animals if we do not suppose a kinship to our own cognition? As Roskies rightly states, we cannot but credit animals with numerous cognitive abilities, given their at times complex and often obviously intelligent behavior. Interpreting this behavior without acknowledging any dependence on sensory states, memory, and certain motor skills, affects, and even social competencies, seems impossible. The representation schemes employed crucially depend on physiological implementation. If the physiological basis for the acquisition of environmental information is alike in humans and

<sup>4</sup> The reason why Davidson is committed to this view can be derived from the triangulation argument: since animals do not possess language, we cannot attribute determinate propositional attitudes to them. We have thus no way of knowing how they represent the world, since this is not graspable to us through our usual means of interpretation. The question, however, is whether this epistemic opacity with regard to animal cognition necessarily entails the ontological statement that their representation schema are in fact different from ours, if representation schema are seen to comprise sensory and affective states as well, and perhaps even doxastic states preceding properly expressed, i.e., propositionally coined, beliefs.

animals, how different can the representation of environmental information in terms of sensory and affective representations be? Even if a complete overlap between human and animal perception cannot be argued for on the basis of isomorphisms, we can (and perhaps must) commit ourselves to the systematicity of behavioral cause-and-effect relations. It is this systematicity that leaves little room for interpreting animal cognition (at least in the sensory and affective domain) as being radically different from ours.

3) In light of Davidson's interpretationism, how much weight does language possession carry in terms of our ability to interpret other cognitive agents? When we think of how we "make sense" of another person, we rarely rely exclusively on the other's verbal utterances. Rather, it would seem that we generally seek to compare the contents of their verbal utterances with their overt behavior; we hold another responsible, as a rational agent, if her expressed intentions diverge "too much" from her behavior. Think of the following case: your neighbor tells you about his plans to save some money for the upcoming summer vacation; the next day you see him walk into the local casino where you know he spends quite some time—and usually loses a fair amount of money. In this case, we would probably be inclined to disregard the verbal utterance ("I'm saving up for a nice summer vacation overseas"), and rather take his actions (which might involve compulsion or gambling addiction) as indicators of his real motivations and driving forces.

4) Considering this case, we can ask which role the analysis of another's beliefs play in interpreting and whether verbal utterances are a true mirror of internal thought mechanisms and proper beliefs.

5) To my mind, the most salient question is whether we can understand human cognition, especially thought, with the help of notions like beliefs (regardless of whether they are faithfully uttered or not) and their conveyance via language. Since the discussion of this issue will require some space, I shall dedicate a proper section to it below.

### 3.1 Experiencing oneself while thinking—the bias towards language

We can understand why Davidson (and with him many others)<sup>5</sup> posits the possession of language as a necessary condition for having propositional attitudes. Namely, one may come to the view that the way a human cognizer experiences her thoughts is predominantly conveyed by her sense of inner speech.<sup>6</sup> Consider for a moment what it feels like to think.<sup>7</sup>

Probably the most prominent, identifiable feeling related to thinking is that of your inner voice, commenting on the world around you and the world inside you, making you feel distinct from, yet embedded within it. Let's call this phenomenon—if you can follow me here—the inner-speech view<sup>8</sup> with regard to thinking. I will argue that this view is misleading. Our intuitive description of what the inner-speech view comes down to is intricately linked to our ability to express the contents of our thoughts in words—the form of thoughts are, presumably, sentences that are composed of concepts and words, in our minds.

But is this identification of thought with mental speech justified? For [Vygotsky \(1934/1987\)](#), it is clear that there are large parts of thinking that do not rely on verbal expression: "There is a large range of thinking that has no direct relationship to verbal thinking" ([Vygotsky 1934/1987](#), p. 115). Such a view

<sup>5</sup> In fact, my point is here not to claim that this is Davidson's motivation proper, but that we, as philosophers, can easily fall for the language-bias, language being not only the instrument but also most often the object of our trade.

<sup>6</sup> One might object that Davidson's focus on language is a result of his roots in British analytic philosophy. While that is certainly true, it remains to be seen where the preoccupation with language as a "window" into the workings of the mind is derived from within this tradition; I have a hunch that the inner-speech bias I sketch plays a role here as well.

<sup>7</sup> It is debated whether there is a special (that is, a unique, proprietary and distinctive) phenomenology of thinking (cf. [Bayne & Montague 2011](#)). I suspect, however, that this debate suffers from a lack of distinction between the contents (or intentional aspects) of thought and the phenomenal aspects of consciousness. The point I wish to make is that the characterization of thought we gain through introspective observation of ourselves while thinking does not grant insight into the processes that precede and produce thoughts – and this point is neutral with respect to the question whether there actually is such a thing as a distinct phenomenology of cognition.

<sup>8</sup> See, for example: [Vygotsky \(1934/1978\)](#); [Watson \(1920\)](#); [Carruthers \(2002\)](#). Inner speech in Vygotsky's view means the overlap (so to speak) of our faculty of thought and our faculty of speech (cf. [Jones & Fernyhough 2006](#)).

thus allows for other, non-verbal types of thought, such as pictorial or imagistic ones, such as come to bear, for example, in mental-rotation tasks or mental imagery (Shepard & Metzler 1971; Weiskrantz 1988; Kosslyn et al. 2006).

If these instances can be found, and identified as kinds of thinking, the hypothesis that language is the one and only tool for producing thoughts in us seems simply false. That thought is exclusively verbal appears thus as a form of theory-induced illusion. One might say that the fixation on language prompted by the analytic tradition has thus resulted in the projection of the method (the analysis of language) onto the phenomenon (the human mind).

Contemporary philosophy of mind left the method of linguistic analysis behind some time ago, and in order to get away from the language-bias we should shift our focus from the surface structure of thinking, namely its intentional and phenomenological (inner-speech) characteristics, to the sub-personal level of the underlying mechanisms and production schemes of thinking.

Such a reductive approach is already in place in the numerous research efforts in cognitive science that aim at describing and explaining information processing in the brain: sensory and affective components of cognition, as well as aspects of motor behavior and memory are studied in a very promising way—in the animal as well as the human domain. The problem is that our faculty of “thinking” is in this research program a rather elusive phenomenon, for various reasons: unlike when studying the neural basis of perception, for example, thought processes cannot be studied on a cellular level, since the identification of a stimulus is virtually impossible: in vision, a stimulus is light hitting the retina, whereas the “stuff” of thought is information provided by the stimulus-processing areas, thus, an “inner-system” medium. Localizing brain areas involved in thought and thinking, on the other hand, is possible. The prefrontal cortex has been shown to be involved in planning future actions and other high-level cognitive tasks (Goldman-Rakic 1996; Fuster 2008); however, this structure is strongly con-

nected to a wide network of other cortical areas and imaging studies show that high-level cognitive tasks often if not always result from correlated activity in multiple areas across the whole of the cortex (Fuster 2008) which makes the individuation of the “center of thought” rather difficult.

In light of these complications, it is helpful to highlight the function that higher-cognitive abilities have with regard to our overall behavior. Most researchers and philosophers would agree that what this involves is the conscious representation of objects, including the deliberate manipulation of information, retrieved from memory as well as from present and actual stimuli, for the purpose of problem solving, decision making, social interaction, communication, and action planning. The involvement of language-processing areas in the execution of these tasks has already been shown (see e.g., Goel et al. 2000)—but does this suffice to support the claim that language is a necessary cornerstone of the neural basis of higher-level cognition in humans?

When “thinking” is divided and described in terms of its functional rather than phenomenal properties, the question of how far thinking relies on our capacity to speak or use language can be replaced by the question of which brain areas and input–output relations we find involved in the faculties mentioned above. This program requires a reorientation in terms of research methods and a redefinition of the phenomenon: the phenomenological description of “thinking”, e.g., in terms of inner speech, does not supply us with an understanding of its underlying processes and mechanisms. It is these, however, that we should know first before we can put our finger on the role that language (the inner and external version alike) plays in the execution and the production of the cognitive capacities listed above.

When we cannot help but attribute the ability to manipulate information in a creative way to animals and intuitively call this “thinking” (think of the Kea, a species of bird known for its curiosity and astonishing abilities in handling difficult mechanisms—they can virtually break into a safe; cf. Auersperg et al. 2009;

Huber & Gajdon 2006; Werdenich & Huber 2006) we seem to have found a satisfactory criterion for crediting animals with a form of demanding cognition, not unlike our own, even though we cannot claim to understand what it feels like or how the world represent itself to the Kea.

Such a language-independent form of high-level cognition might rule in us as well, such that it precedes the formation of beliefs we form on states of the world and their linguistic representation. It might be the case, and this is the point I want to stress in this commentary, that we fall in a systematic way for a fallacy of experienced thinking, which presents us with a linguistic representation of the contents of thought, whereas the mechanisms producing these thoughts may not rely and are not caused by speech and language involving neural mechanisms.

One can object that this is not what Davidson had in mind when he claimed that thought depends on language. Davidson's idea rests (so goes the defense) upon the assumption that language is a universal format of information processing unique to humans (in the first place) and an instance of cognition, which lies at the core of human cognition, regardless of its temporal and causal involvement in the production of thoughts. But this—so I want to claim—amounts to a phenomenological argument, even if Davidson presents it as a theoretical one. So even if language were the universal format of human thought, the empirical basis for such a claim would be quite opaque, and any theoretical argument so far rests on this weak empirical basis.

## 4 Conclusion

The question of whether thought is exclusively verbal or linked to language capacity is not answerable from a phenomenological point of view, since we can think of instances of mental symbol-use that do not rely on language; on the contrary, we know that language “fills in the void”, so to speak: when we acquire language, it fulfills the cognitive demands to express references and relations among them. In this view,

thought and thinking precede the linguistic representation of the involved concepts.

If one wants to follow this line of thought, it remains to be shown how the Davidsonian *dictum* that animals do not have a special form of cognitive ability, namely, propositional attitudes such as beliefs, desires etc., relates to the general argument on higher-cognitive faculties, which do not depend on language possession and which are of the same kind across the animal and human realms. It would thus have to be argued for a language-independent form of propositional attitudes.

Does the inner-speech bias bear not only on thinking at large but also our self-attribution of desires and beliefs? It might. Roskies rightly raises the question, contra Davidson, of whether all our beliefs have definite content ([this collection](#), p. 6). In my view, as soon as we hold a belief *qua* belief, some kind of cognitive meta-representation must come into play. Such a form of meta-representation strikes me as probably being conveyed by the inner speech mechanism and as thus being subject to the phenomenological inner-speech fallacy.

Roskies nicely disassembles Davidson's arguments and reconstructs them in a clear and easy-to-follow fashion. She exposes their argumentative weaknesses (such as the issue of interpretation and behavior) and provides ample empirical examples of, and conceptual arguments for, why we should not follow Davidson in his assessment of animals' cognitive abilities. However, I have tried to show that a further underlying claim can be made, namely that not only is animal cognition a matter of speculation, but that even our own inner workings are less transparent than we commonly like to assume. Davidson's claim rests, to my mind, on the rashly embraced yet unfounded assumption that language plays a key role in higher cognition in humans (1984, 2001). In my view, contemporary research efforts in the cognitive sciences, but also in philosophy, undermines—or at least calls into question—this assumption. Certainly we are dealing with an important philosophical claim, which could only be properly backed up by extensive empirical evidence pointing to the ubiquitous involvement of language-processing

brain areas and mechanisms in higher-level cognitive tasks such as decision-making, action planning, deliberation, etc. Doubtless, human cognition benefits from the linguistic format; abstract thoughts about, e.g., liberty can probably only be executed at a significantly deep level if the relevant concepts have been provided by a linguistic community. But the need to express a certain feeling, like freedom as the opposite of (the feeling of) constraint, for example, certainly originates in a pre-verbal or non-verbal manifestation of this feeling.

Focusing on language, therefore, blocks a fuller examination of what thinking in humans amounts to. We have, I believe, misled ourselves in the face of the phenomenology of inner speech as to what it is like to think, for us as humans. But this gets us only part way towards a full understanding of the underlying mechanisms, structures, and sources of thoughts.

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# Thought, Language, and Inner Speech

A Reply to Ulrike Pompe-Alama

[Adina Roskies](#)

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Pompe-Alama’s commentary raises interesting issues regarding the nature of thought and its relation to language. She underlines the evolutionary relationship we have to other animals and results from cognitive science to argue that human thought is probably not fundamentally linguistic, and notes that the pull of the phenomenal experience of inner speech may mislead us into thinking it is. While I agree with these claims, I disagree that Davidson’s own arguments are predicated on an inner speech view, and raise problems for the idea that functional imaging will easily resolve the debate about the relation of thought and language.

## Keywords

fMRI | Inner speech | Language | Propositional attitudes | Representation

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## 1 Introduction

I largely concur with Pompe-Alama’s commentary on my contribution to this collection. She nicely summarizes my arguments against what I call Davidson’s “Master Argument,” an argument that he levies against the possibility of propositional attitudes for nonlinguistic animals. As Pompe-Alama notes, aside from conceptual clarifications, my arguments are largely empirical. As such, the strength of my arguments depends on the solidity of the empirical facts they are based upon. But provisionally, since all the logically valid reconstructions of Davidson’s arguments have what look to be em-

pirically false premises, none serves to establish the impossibility of animal thought.

Pompe-Alama then offers an interesting discussion of the Davidsonian claim that nonlinguistic animals cannot have propositional attitudes. She locates the source of the dispute at the phenomenological level, citing the phenomenology of thought as “inner speech”, and suggests that it is this that leads Davidson, and us, to mistakenly think that thinking is fundamentally a language-dependent phenomenon. While I disagree that this is the source of Davidson’s perspective, I appreciate Pompe-Alama’s

discussion of some important practical consequences of the Davidsonian view, or any view that posits human thought processes to be qualitatively different than those of all other animals. In her discussion, Pompe-Alama tells us that contemporary cognitive science indicates that Davidson is wrong, and suggests that our own understanding of our own thought processes may be adversely influenced by our introspective recognition of our thoughts as embodied in inner speech. She cautions that too much attention to the phenomenological or introspective sense of inner speech can prevent us from exploring the representational aspects and physiological bases of thought that we share with other animals, and moreover, she suggests that taking language to be a necessary prerequisite for thinking poses a barrier to understanding human thought as well. As a remedy, she suggests that we discount the phenomenal aspects of thinking and instead focus on a reductive strategy for exploring the neural basis of human and animal thought in a bottom-up fashion.

## 2 Inner speech

Pompe-Alama calls attention to the “feeling of what it is like to think”, which she identifies as the experience of our thoughts as inner speech. There is of course debate about whether it feels like anything at all to think. However, regardless of whether our recognition of inner speech is a feeling or a cognitive introspective conclusion, this phenomenon certainly plays a role in the general tendency to and perhaps our willingness to identify thought with language. But Pompe-Alama’s easy identification of the phenomenology of inner speech with Davidson’s denial of animal thought threatens to trivialize what I take to be a fairly sophisticated, if incorrect, view about the nature of animal thought. Davidson’s interpretationism is the root of his denial, and his target is specifically propositional thoughts and related attitudes, not cognitive processing more generally. Pompe-Alama cites Vygotsky’s claim that lots of thought is not verbal thought, and she suggests that pictorial or imagistic thought should be possible

for non-linguistic creatures. I don’t suppose Davidson would refuse to recognize that animals have complex representations and even some relatively high-level cognitive capacities. But he would deny that these forms of thought had propositional contents. So the real question at issue is whether the representational power afforded by representations in nonlinguistic animals allows them to represent propositions.

That said, Pompe-Alama’s claim that the restriction of thought to verbal vehicles may be a “theory-induced illusion” is well taken. The tendency to think that only language-like formulations allow propositional content to be captured or delineated seems ungrounded, especially since philosophy has supplied us with non-linguistic means of representing propositions (Stalnaker 1987), or alternatives to propositional attitudes (Churchland 1992). Undoubtedly, propositional content requires some kind of framework that permits complex structural relationships between representations, but there is no a priori reason to think that such structure can only be achieved with linguistic implementation. Pompe-Alama is correct to point out that in our own interpretation of others, we often privilege behavior over self-report, and much social science has suggested that words, and indeed even one’s own introspective thoughts, are not a reliable window into higher cognitive processes. She also mentions that our own interpretational skills, applied to animals, yields attributions of cognitive processes that are in many ways akin to our own. Indeed, we easily attribute to them propositional attitudes. These observations put pressure on Davidson’s view, and raise the question of what our own propositional attitudes may endow us with, cognitively speaking, that the presumptively propositional-attitudeless animals are missing, if in fact he turns out to be right.

Pompe-Alama doubts whether language really plays a key role in human higher cognitive functions. We know it certainly does in one of them: Linguistic cognition. Whether it plays a fundamental role in other aspects of higher cognition is yet unknown. Davidson himself is not clear about whether he thinks language is necessary as a vehicle for thought. This distin-

guishes him from Fodor, who also thinks language is central to thought, but posits a mental language to serve as the vehicle of thought, and that is available to linguistic and non-linguistic creatures alike. Davidson's view is more subtle, and seems to depend more on social/interpersonal factors and abilities or dispositions than on vehicles per se. Thus, for Davidson, the fact that we can identify instances of non-linguistic symbol use in high-level thought is not telling, since it is the fact that we are language-using creatures that is of prime importance. It is within Davidson's purview to claim that our mastery of language makes possible thoughts that rely on non-linguistic (yet symbolic) properties.

### 3 Methodological difficulties

Pompe-Alama suggests that to lessen the grip of the illusion, we must pay attention to the low level realization of our thoughts. That is of course a goal of many cognitive neuroscientists, but as Pompe-Alama well recognizes, it is a difficult one to achieve. Unlike perception and action, both which can be correlated with measurable external phenomena (perception with the stimuli occurring in the external world; action with elicited motor activity), thoughts are seemingly spontaneous, and largely uncoupled from immediate environmental stimulation and control. The unpredictability of the content and occurrence of our thoughts, together with the fact that we have no idea how they are realized in neural activity (and thus which aspects of the remarkably complex signals we can record from the brain are relevant), has the consequence that thoughts promise to be extremely difficult to measure scientifically. What exactly are we supposed to look for in signals from neural tissue that is supposed to correspond to propositional thoughts as opposed to other (non-propositional) forms of mental representation? Unless we discover some means of answering this question, it will be difficult to determine empirically whether other animals have the capacity for propositional thought or not.

Taking a reductive approach, [Pompe-Alama](#) says "the question of how far thinking

relies on our capacity to speak or use language can be replaced by the question of which brain areas and input-output relations we find involved in the faculties mentioned above" ([this collection](#), p. 6). She suggests that the progress we have made in understanding the neural basis of language processing could help us resolve the debate about whether human and nonhuman cognitive processes are fundamentally different. Work in cognitive science has shown that a network of brain areas seem consistently linked with processing of natural language. Pompe-Alama suggests that we could approach the question of whether human thought is primarily linguistic by determining with functional imaging whether these areas are consistently active during human propositional thought. This will not be determinative, for reasons I sketch here. Most importantly, even if we do see activity in these areas, it will not serve to answer the question of whether human thought is fundamentally linguistically-based. Suppose phenomenal inner speech typically accompanies our thought, and it is dependent on activity in these areas. This may be because our thoughts are fundamentally linguistic, but it could also be merely a causal consequence of the deeper thought processes, without constituting them or being a necessary component of them at all. Thus, if we consistently saw activity in language-relevant areas, it might not be reflective of the fundamental nature of our thought. Suppose, on the other hand, that we failed to see such activation (and suppose we knew that inner speech was dependent on activation of language areas). This could be due to the low signal-to-noise ratio of the methods, or to the fact that language pervades brain representation and is not restricted to the areas that we typically see "light-up" in a language task, or it could indicate the non-linguistic nature of thought. In this domain, negative results are not decisive. Thus, the question of whether language centers are always active during human propositional thought will not resolve the issue.

That said, significant progress is being made in understanding at least some aspects of the representational coding of thought contents. The object perception literature demonstrates

that cognitive neuroscience has achieved much in the last few years, due to work with both noninvasive fMRI in humans and invasive recording in humans and nonhuman primates. In particular, we have gained much greater insight into the representational coding of faces, with access to regional information about coding of representational aspects of face identity, similarity, expression, and so on (see e.g., [Haxby et al. 2014](#), and [Freiwald & Tsao 2011](#)). Other work suggests that the visual cortex represents semantic features in the form of a cortical map ([Huth et al. 2012](#)). Although this kind of work is in its infancy, novel analytical and modeling techniques promise to continue to yield a deeper understanding of how our brains represent semantic properties. An important result stemming from this kind of research is evidence of the extensive homologies between neural processes of visual representation in humans and nonhuman primates ([Sha et al. in press](#); [Kiani et al. 2007](#)). These homologies seem to extend in large part to complex cognitive processes such as decision-making ([Gold & Shadlen 2007](#)). At the neural level, we have no evidence of qualitative differences in neurological processing between humans and nonhuman primates, nor evidence that we and they possess radically different representational frameworks. Nonetheless, none of the work mentioned explicitly targets propositional contents, and very little extant work has looked at the combinatorial or structural properties of these mental representations. In my own view, answers to these difficult questions will not come from bottom-up approaches alone or even in large part. Only a high-level theory of brain function is likely to make real headway on this issue. It will be interesting to see whether new work in predictive coding (see [Clark this collection](#); [Hohwy this collection](#); [Seth this collection](#)) allows for new ways of approaching these fundamental questions.

## 4 Conclusion

Pompe-Alama seems to argue that Davidson's argument about the impossibility of animal thought is at base an argument based on the phenomenology of thought as inner-speech. I

don't see this. His is an argument about the process of interpretation, and the interpersonal nature of objective thought. While I disagree with Davidson's arguments, and in particular with the view that animals cannot have propositional attitudes, I am nonetheless sympathetic to the possibility that the ability to use language makes possible cognitive feats that are unavailable to nonlinguistic creatures (see e.g., [Roskies 2015](#)). These may only be quantitative differences, allowing us to represent contents that nonlinguistic creatures cannot represent, or they may be more qualitative leaps, such as giving us metarepresentational abilities that make possible culture, cross-generational learning, and science. Thus, whether Davidson is right or wrong, we are still left with the fascinating question: What does language or linguistic competence allow us to do that we otherwise couldn't do?

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