Can Animals Think?

A Thesis on the Possibility of Animal Thought

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Abstract

The aim of this thesis is to demonstrate by means of empirical research results that Davidson's claim that animals cannot have thoughts is mistaken and that we are justified to ascribe some beliefs to animals. First, I describe Davidson's three arguments against animal thought and summarize them schematically. Second, I investigate what the conditions of thought are. I argue, by using empirical research results, that Davidson's conditions of thought are mistaken. Language and the concepts of *belief, truth* and *falsity* are not needed for thought. Third, I argue that Davidson's main argument's conclusion and his denial of animal thought are mistaken by describing examples of animals solving puzzles in one try. Thus, our only explanation of the behaviour of animals solving puzzles must involve the attribution of thoughts to the animals in question. Fourth, I argue that the conclusion of Davidson's argument from holism, that we are not justified to ascribe *de re* beliefs to animals, is mistaken by discussing several examples of animal behaviour in which our best explanation involves ascribing a theory of mind to the animals in question and therefore we are justified to ascribe them *de re* beliefs. To do so, I argue that animals can have a system of beliefs. But even if we do not want to ascribe an entire system of beliefs to animals, I argue that animals can have concepts or proto-concepts without having an entire system of beliefs. Fifth, I argue that the conclusion of Davidson's intensionality test, that we are not justified to ascribe *de dicto* beliefs to animals, is right. However, I argue that this does not imply that we are not justified to ascribe no beliefs at all to animals. Therefore, I can finally conclude that animals have thoughts and we are justified in our ascription of *de re* beliefs to animals.

Keywords: animal cognition, animal language, animal thought, Donald Davidson, philosophy of animal mind, theory of mind

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Introduction

If a mouse had vocal cords of the right sort, you could train it to say "Cheese". But that word would not have a meaning when uttered by the mouse, nor would the mouse understand what it "said".[1]

In philosophy, there is a tendency to distinguish humans from animals. Aristotle, for example, argued that only humans have rational minds and that animals do not. His main reason for denying that animals can think was their lack of a possession of language, causing an assumed inability to grasp concepts and propositions that are needed in order to be able to think.[2] In contemporary philosophy, philosophers such as Donald Davidson still deny that animals can think. Similarly to Aristotle, Davidson argues that "a creature cannot have a thought unless it has language. In order to be a thinking, rational creature, the creature must be able to express many thoughts, and above all, be able to interpret the speech and thoughts of others."[3] And since Davidson assumes that animals do not have language, they cannot have thoughts.

However, many empirical studies in animal cognition make us doubt whether animals really are so different from man as is assumed and whether philosophers such as Davidson are right in their denial of animal thought. David Hume, for instance, was among the few philosophers who argued that there is sufficient evidence to believe that animals are rational, stating that "no truth appears to me more evident, than that beasts are endow'd with thought and reason as well as men. The arguments are in this case so obvious, that they never escape the most stupid and ignorant."[4] I think such arguments can be found in some of the famous experiments conducted by Frans de Waal. These experiments convince us that there is perhaps more to the mind of chimpanzees and other primates than we ordinarily assume and that we might have good reasons to assume that animals have thoughts after all.

De Waal states that humans might exaggerate the number of distinguishing features they possess that separate us humans from non-human animals. For example, he argues that 'theory of mind' is a concept that originates from primatology, but that was later redefined in such a way to make it appear as if only humans could possess it. Moreover, primates use tools in similar ways as humans do, but the use of tools by man is often viewed as a sign of our rationality whereas this rationality is denied in the use of tools by primates.[5] I think examples such as these give rise to all kinds of important questions. Are we right in our binary thinking that places humans and animals opposite each other? Are philosophers such as Davidson justified in denying that animals have thoughts based on philosophical argumentation alone? Are questions such as 'can animals think?' truly philosophical in nature rather than empirical?

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[1] Donald Davidson, "The Emergence of Thought," *Erkenntnis* 51, no. 1 (1999), 11.
[2] Robert W. Lurz, *The Philosophy of Animal Minds* (New York: Cambridge University Press, 2009), 1-2.
[3] Donald Davidson, "Rational Animals," *Dialectica* 36, no. 4 (1982), 322-323.
[4] David Hume, *A Treatise of Human Nature* (London: Oxford Press, 1960), 176.
[5] Frans de Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?* (Amsterdam: Atlas Contact, 2016), 135.

In this thesis, I hope to provide some answers to these questions and to contribute to the general discussion in the philosophy of animal minds by arguing against Davidson's philosophical arguments against animal thought. The aim of this thesis is to demonstrate by means of empirical research results that Davidson's conclusion that animals cannot have thoughts is mistaken and that we are justified to ascribe some beliefs to animals.

My thesis has the following structure. First, I describe Davidson's three arguments against animal thought and summarize them schematically. Davidson presents two epistemological arguments against the ascription of beliefs to animals and one metaphysical argument against the possibility of animal thought. Hereby, I explain that Davidson's arguments are based on the premise that language and the concepts of belief, truth and falsity are needed for thought. Second, I investigate what the conditions of thought are. After describing Davidson's view on beliefs and language, I argue, by using empirical research results that Davidson's conditions of thought are mistaken. Language and the concepts of belief, truth and falsity are not needed for thought. Third, I argue that Davidson's main argument's conclusion and his denial of animal thought are mistaken by describing examples of animals solving puzzles in one try without having learned how to solve them, which implies that the animals must have solved the problem via spontaneous, goal-directed operations on internal representations of aspects of the situation, and thus have thoughts. Hereafter, I investigate which of Davidson's premises is at fault. I argue that thought is possible without having language, and the concepts of belief, falsity and truth. Fourth, I argue that the conclusion of Davidson's argument from holism, that we are not justified to ascribe *de re* beliefs to animals, is mistaken by discussing several examples of animal behaviour in which our best explanation involves ascribing a theory of mind to the animals in question. If animals have a theory of mind, they are able to recognize objects as objects and other animals as potential rivals and we are thus justified to ascribe them *de re* beliefs. Hereafter, I again investigate which of Davidson's premises is at fault. I argue that it is possible that animals can have a system of beliefs. But even if we do not want to ascribe an entire system of beliefs to animals, I argue that animals can have concepts or proto-concepts even when they do not have an entire system of beliefs, since having an entire system of beliefs is not a necessary condition for the possession of concepts. Fifth, I argue that the conclusion of Davidson's intensionality test, that we are not justified to ascribe *de dicto* beliefs to animals, is right. However, I argue that this does not imply that we are not justified to ascribe no beliefs to animals at all. Therefore, I can conclude that animals have thoughts and we are only justified to ascribe them *de re* beliefs. Lastly, I briefly reflect on the philosophical implications my thesis has.

1. Davidson's Arguments Against Animal Thought

No contemporary philosopher is better known for his denial of animal thought than Donald Davidson. Davidson has presented multiple objections to the possibility of animal thought and our ascriptions of thoughts to animals. According to Robert Lurz, these objections can be reduced to three related

arguments against animal thought: (1) the intensionality test, (2) the argument from holism, and (3) the main argument.[6] In this thesis I use Lurz's characterization of these three arguments to clarify Davidson's objections against animal thought given in his essays "Thought and Talk", "Rational Animals" and "The Emergence of Thought".

1.1 The Intensionality Test

The first argument is the intensionality test, in which Davidson argues that our *de dicto* belief ascriptions to animals are unjustified.[7] To describe Davidson's first argument, it is first necessary to explain what beliefs are according to Davidson and what the *de re/de dicto* distinction is. Davidson describes beliefs in the following way: "Beliefs for me are states of people with intentions, desires, sense organs; they are states that are caused by, and cause, events in sight and outside the bodies of their entertainers."[8] The *de re/de dicto* distinction can best be explained by giving an example. Consider the following propositional attitude I can ascribe to Mary Jane: 'Mary Jane wants to marry Spider-Man'. This ascription can be interpreted in two ways: (1) the ascription is true if and only if Mary Jane thinks of the person she wants to marry as 'Spider-Man', or (2) the ascription is true if and only if Mary Jane wants to marry the person that happens to be Spider-Man, independent of whether Mary-Jane is aware of that or not. In this manner, the *de dicto* interpretation of a belief ascription has an intensional semantic feature. We can see that because under the *de re* reading we can substitute 'Spider-Man' for a co-extensional expression, for example 'Peter Parker'. Since Peter Parker is Spider-Man, it is true that Mary Jane wants to marry Peter Parker, if it is the case that she wants to marry Spider-Man. However, under the *de dicto* reading this substitution is not admissible. Mary Jane may not know that Peter Parker is Spider-Man, thus it may be true that she wants to marry Spider-Man, thinking of him as 'Spider-Man', but does not want to marry Peter Parker, thinking of him as 'Peter Parker'. The substitution does not work, because the two expressions are not co-intensional.[9]

To argue that our *de dicto* belief ascriptions to animals are unjustified, Davidson states that without linguistic behaviour to appeal to there is no way of knowing how an animal thinks about an object in the world.[10] Davidson starts his objection by describing the following example given by Norman Malcolm:

> Suppose our dog is chasing the neighbor's cat. The latter runs full tilt toward the oak tree, but suddenly swerves at the last moment and disappears up a nearby maple. The dog doesn't see this maneuver and on arriving at the oak tree he rears up on his hind feet, paws at the trunk as if trying to scale it, and barks

[6] Robert W. Lurz, "Animal Minds," in *The Internet Encyclopedia of Philosophy*, http://www.iep.utm.edu/ani-mind/ (accessed on 30-04-2017).
[7] Lurz, *The Philosophy of Animal Minds*, 7-8.
[8] Donald Davidson, "A Coherence Theory of Truth and Knowledge," in *Truth and interpretation: Perspectives on the Philosophy of Donald Davidson*, ed. Ernest LePore (Oxford: Basil Blackwell, 1986), 310.
[9] Lurz, "Animal Minds."
[10] Lurz, *The Philosophy of Animal Minds*, 7-8.

> excitedly into the branches above. We who observe this whole episode from a window say, 'He thinks that the cat went up that oak tree'.[11]

From this example, Malcolm concludes that such a belief ascription to an animal, in this case the dog, would be justified. However, according to Davidson there is no method to decide whether this belief ascription is right. To prove this claim, he provides the following example:

> But how about the dog's supposed belief that the cat went up that oak tree? That oak tree, as it happens, is the oldest tree in sight. Does the dog think that the cat went up the oldest tree in sight? Or that the cat went up the same tree it went up the last time the dog chased it? It is hard to make sense of the questions. But then it does not seem possible to distinguish between quite different things the dog might be said to believe.[12]

This example shows that, according to Davidson, there are countless ways to describe how an animal can think about some object and there is no method to decide which is the correct *de dicto* belief ascription. According to Davidson, the only possible way to decide between equally valid *de dicto* belief ascriptions is to appeal to linguistic behaviour, but since animals do not have speech, this would be impossible in the example given by Malcolm.[13] Therefore, our *de dicto* belief ascriptions to animals are underdetermined and thus unjustified.[14]

1.2 The Argument from Holism

The second argument is the argument from holism, in which Davidson argues that we are also unjustified in our *de re* belief ascriptions to animals. Davidson observes that there are infinitely many different categories of objects about which an animal might be thinking and the only way to decide which one is correct, is by interpreting linguistic behaviour, which is impossible in the case of animals.[15] Malcolm could have replied to Davidson: when I said that the dog believes the cat went up the tree, I did not mean it as the ascription of a *de dicto* belief. I do not know how the dog thinks of the tree or the cat and whether he thinks of it as 'cat' and 'tree', or as something entirely else, but the dog surely thinks of both somehow, and in that sense he believes that the 'cat' went up the 'tree'. In this way Malcolm could have argued that we are still justified in our ascription of *de re* beliefs to animals. Davidson, however, argues that we are also not justified in our ascription of *de re* beliefs to animals.

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[11] Davidson, "Rational Animals," 319.
[12] Ibid., 320.
[13] Donald Davidson, "Thought and Talk," in *Inquiries into Truth and Interpretation* (Oxford: Clarendon Press, 2001), 163-164.
[14] Lurz, *The Philosophy of Animal Minds*, 7-8.
[15] Ibid., 8.

To do so, Davidson first argues that beliefs do not come one at a time.[16] For the dog in Malcolm's example to believe that it saw a cat, the dog must know what a cat is, what seeing is, and must be able to entertain the possibility that it might be mistaken. According to Davidson, it is impossible for the dog to have an isolated belief. For the dog to have a belief about a cat, the dog must have mastered the concepts that are involved in having a belief about a cat. The dog demonstrating that it can discriminate cats from other things in its environment, does not mean that the dog has the concept of a cat. Because, according to Davidson, being able to discriminate cats is not the same thing as having the concept of a cat. The dog can only have a concept of a cat if it can make sense of the idea of misapplying the concept of a cat. And for the dog to be able to have the concept of a cat, the dog must first have the concept of an animal, of moving objects and of movement et cetera. Therefore, Davidson states: "There is no fixed list of things you have to know about, or associate with, being a cat; but unless you have a lot of beliefs about what a cat is, you don't have the concept of a cat."[17] Davidson argues for this claim by stating: "Because of the fact that beliefs are individuated and identified by their relations to other beliefs, one must have a large number of beliefs if one is to have any. Beliefs support one another and give each other content."[18] Thus, regardless of all the ways the dog could possibly think about the cat, the dog would have to conceptualize the cat as a moving, integrated object with certain spatial boundaries, and certain features et cetera, but such a conceptualization can only happen when it is integrated into a holistic web of other beliefs, which animals cannot do.

So, according to Davidson, to be justified to state that the dog in Malcolm's example has a *de re* belief about a cat, we must assume that the dog has multiple other beliefs about cats, for we otherwise cannot know if the dog really is thinking about the cat in the tree, or just about the cat's legs or its tail or something else entirely. [19] Davidson explains that "one belief demands many beliefs, and beliefs demand other basic attitudes such as intentions, desires, and if I am right, the gift of tongues. This does not mean that there are not borderline cases. Nevertheless, the intrinsically holistic character of the propositional attitudes makes the distinction between having any and having none dramatic."[20]

For us to be able to justifiably conclude that the dog has multiple beliefs about cats and related objects, which is necessary for the dog to be able to have the concept 'cat', the dog must display a very complex pattern of behaviour. But, according to Davidson, this is only possible when the dog has a language. Because of the dependence of beliefs on other beliefs, Davidson states that a complex pattern of behaviour must be observed to justify the ascription of a single thought to an animal. And when there is no such complex pattern of behaviour, there is no thought according to Davidson: "I

[16] Lurz, "Animal Minds."
[17] Davidson, "The Emergence of Thought," 8.
[18] Ibid., 8.
[19] Davidson, "Rational Animals," 320.
[20] Ibid., 318.

think there is such a pattern only if the agent has language."[21] However, according to Davidson this is not the case with animals.[22] If this is correct then, following Davidson, Malcolm was only justified in attributing thought to his dog if he believed that his dog had language.[23]

To summarize the second argument, following Davidson's holism, beliefs require concepts, which one can only form when one has multiple beliefs. Therefore, animals cannot have single beliefs, they would have to have a whole system of beliefs. But to be able to justifiably attribute a whole system of beliefs to animals, animals would have to show complex patterns of linguistic behaviour, which they do not. Davidson therefore concludes that we are also not justified in our *de re* ascriptions of beliefs to animals.[24]

1.3 Davidson's Main Argument

The third argument is Davidson's main argument against animal thought in which he argues that if animals have beliefs, they should be surprised when their beliefs turn out to be false. But to be able to be surprised, Davidson maintains, animals have to be aware that their false belief failed to correspond to the facts and thus animals need to have an idea of truth. To have an idea of truth, animals have to be able to compare their own beliefs with the beliefs of others. But, since animals do not speak a language, animals cannot interpret the speech of other animals and are therefore not able to compare their own beliefs with the beliefs of others, cannot have an idea of truth, and can therefore have no beliefs.[25]

Davidson explains that his main argument against animal thought consists of two steps:

> *First*, I argue that in order to have a belief, it is necessary to have the concept of belief.
> *Secondly*, I argue that in order to have the concept of belief one must have language.[26]

By following the two steps and by arguing that animals do not have language, Davidson can conclude that animals do not have beliefs. Furthermore, Davidson argues that the possession of beliefs is required for having thoughts, which enables him to conclude that animals cannot have thoughts.[27]

In the first step, Davidson argues that to have a belief about a belief, as we have seen in the argument from holism, it is necessary to have a concept of belief. Davidson claims: "My claim is rather this: 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."[28] To have the concept of belief, an animal would have to be

[21] Ibid., 322.
[22] Ibid., 322.
[23] Ibid., 322.
[24] Lurz, "Animal Minds."
[25] Lurz, *The Philosophy of Animal Minds*, 8.
[26] Davidson, "Rational Animals," 324.
[27] Lurz, "Animal Minds."
[28] Davidson, "Rational Animals," 326.

able to reflect on its own beliefs and be surprised when its beliefs turn out to be false. This means that animals would have to understand that beliefs can be true or false, according to Davidson.[29] Moreover, Davidson says the following about the ability to be surprised: "Surprise about some things is a necessary and sufficient condition of thought in general."[30] So when an animal can be surprised, it can think, according to Davidson. However, he thinks this is not the case, since he believes that animals cannot be surprised, they can only be startled. An animal can adjust its behaviour after being startled, but Davidson claims that this does not mean that the animal considered that it had a belief that was false.[31]

In step two, Davidson argues that for an animal to be surprised it would need to be able to have the concept of truth, since only when an animal realizes that its belief is false, can it be truly surprised. Davidson claims the following: "I claim, then, that the concept of intersubjective truth suffices as a basis for belief and hence for thoughts generally."[32] But how can this intersubjective truth be achieved? According to Davidson, it can only be achieved through comparing one's own beliefs with the beliefs of others. One must be able to interpret the beliefs of another, to be able to have the concept of truth.[33] Davidson then argues that the only way to interpret another's beliefs is through language, as a concept of truth is needed to be able to interpret another's beliefs.[34] But animals do not have language according to Davidson and can therefore not have thoughts if his arguments are correct.

Now that I have given a description of the three arguments by Davidson, I can summarize them schematically and use this schema in the following parts of this thesis in which I will argue against Davidson:

1.4 Davidson's Arguments Schematically Summarized

1.4.1 Steps of the Intensionality Test:

(1.1) For us to be justified to ascribe *de dicto* beliefs to animals, we must have a principled method of deciding between different *de dicto* belief ascriptions

(1.2) For us to have a principled method of deciding between different *de dicto* belief ascriptions, we must appeal to animals' linguistic behaviour

(1.3) For us to be able to appeal to animals' linguistic behaviour, animals must have language

(1.4) Animals do not have language, ergo we are not justified to ascribe *de dicto* beliefs to animals

[29] Kristin Andrews, "Animal Cognition," in *The Stanford Encyclopedia of Philosophy* (Summer 2016 Edition), ed. Edward N. Zalta, https://plato.stanford.edu/archives/sum2016/entries/cognition-animal/ (accessed on 30-04-2017).
[30] Davidson, "Rational Animals," 326.
[31] Kristin Andrews, *The Animal Mind: An Introduction to the Philosophy of Animal Cognition* (Abingdon: Routledge, 2015), 105.
[32] Davidson, "Rational Animals," 327.
[33] Davidson, "Thought and Talk," 170.
[34] Andrews, *The Animal Mind: An Introduction to the Philosophy of Animal Cognition*, 105.

1.4.2 Steps of the Argument from Holism:

(2.1) For us to be justified to ascribe *de re* beliefs to animals, animals must have concepts

(2.2) For animals to have concepts, they must have a system of beliefs

(2.3) For us to be justified in ascribing animals a system of beliefs, animals must show complex patterns of linguistic behaviour

(2.4) For animals to show complex patterns of linguistic behaviour, they must have language

(2.5) Animals do not have language, ergo we are not justified to ascribe *de re* beliefs to animals

1.4.3 Steps of the Main Argument:

(3.1) For animals to have thoughts, they must have beliefs

(3.2) For animals to have a belief, they must have the concept of belief

(3.3) For animals to have the concept of belief, they must be able to be surprised

(3.4) For animals to be able to be surprised, they must have the concept of intersubjective truth

(3.5) For animals to have the concept of intersubjective truth, they must be able to compare their own beliefs with the beliefs of others

(3.6) For animals to be able to compare their own beliefs with the beliefs of others, they must have language

(3.7) Animals do not have language, ergo they cannot have thoughts

2. The Conditions of Thought

To answer the question whether animals can think, it is first necessary to explain what thinking is and what the necessary conditions for thinking are. To do so, I first describe Davidson's conditions of thought. Second, I argue that Davidson's conditions of thought are mistaken. Third, I summarize my findings by describing my conditions of thought.

2.1 Davidson's Conditions of Thought

What is it to think according to Davidson? Davidson explains that there are various forms of thought: a thought can be a desire, knowledge, belief, fear, or interest.[35] From Davidson's main argument against animal thought a few, and according to Davidson necessary, conditions of thought can be distilled. First, one must have beliefs, because belief is central to all kinds of thought. In order to have desires, knowledge, fears, or interests, one needs to have beliefs about what one desires, knows about, or has interest in.[36] As I mentioned earlier, beliefs for Davidson are propositional attitudes which he defines as "states of people with intentions, desires, sense organs; they are states that are caused by, and cause, events in sight and outside the bodies of their entertainers."[37] Second, one must have the

[35] Davidson, "Thought and Talk," 156.
[36] Ibid., 156-157.
[37] Davidson, "A Coherence Theory of Truth and Knowledge," 310.

concept of belief, third, one must have the concept of truth and false belief, fourth, one must be able to compare their own beliefs with the beliefs of others, and fifth, one must have language. Davidson argues that thought is only possible when one can meet all of these necessary conditions of thought. I agree with Davidson that one must be able to have beliefs, and one must be able to compare one's own beliefs with the beliefs of others. I however, do not agree with Davidson that one must have the concepts of belief, truth and falsity, and that one must have language to be able to think. In the following two paragraphs, I explain why I reject those conditions.

2.2 The Necessity of the Concepts of Belief, Truth and Falsity

Davidson's main argument against animal thought is based on the premise that to have a belief one needs the concept of belief. I think this premise can be challenged by the existence of individuals who speak yet who are not able to attribute true beliefs and false beliefs to others. Davidson assumes that all language speakers are thinkers. Therefore, if some language speakers are not able to attribute true beliefs and false beliefs and thus do not have the concept of belief, while they do have thoughts, Davidson is mistaken about the concepts of belief, truth and falsity being necessary for thought. To argue that Davidson is mistaken, I discuss a case-study and several experiments that involve theory of mind research. 'Theory of mind' is a concept first investigated by Emil Menzel in 1974 in his study of young chimpanzees.[38] The term 'theory of mind' was first coined by David Premack and Guy Woodruff in 1978 when they investigated chimpanzees.[39] I understand theory of mind to be the capacity to know what others know, to imagine oneself in somebody else's position and to ascribe mental states and beliefs to oneself and others.[40]

In empirical studies, there are several cases in which people with severe brain damage still have great linguistic abilities.[41] One of those case studies centres around Christopher, a man diagnosed with a mental handicap. For four years, Neil Smith and Ianthi-Maria Tsimply investigated Christopher's linguistic abilities and his non-linguistic behaviours. Christopher is unable to live on his own because of his handicap, but he is able to write, read and speak in approximately fifteen to twenty different languages.[42] Another interesting observation is that in several tests, Christopher, who has linguistic abilities that are enhanced compared to most others, did not seem able to correctly assign beliefs to others, whereas in other tests, Christopher was able to do so.[43] It can thus be questioned if

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Donald Davidson, "Responses to Barry Stroud, John McDowell, and Tyler Burge," *Philosophy and Phenomenological Research* 67, no. 3 (2003), 695.

[38] De Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?*, 139.

[39] David Premack and Guy Woodruff, "Does the Chimpanzee Have a Theory of Mind?" *The Behavioural and Brain Sciences* 1, no. 4 (1978), 515.

[40] Ibid.

[41] Neil Smith and Ianthi-Maria Tsimpli, *The Mind of a Savant: Language Learning and Modularity* (Oxford: Blackwell, 1995), 3.

[42] Ibid., 1.

[43] Ibid., 6-7.

Christopher is fully able to attribute true and false beliefs to others, and therefore if he has the concept of belief, truth and falsity, even though he clearly has thoughts he can express through language.

Similarly to Christopher, children under the age of four have no theory of mind, however, they have language and propositional attitudes. In a research conducted by Heinz Wimmer and Josef Perner, three to nine-year-old children were tested on their understanding of deception. In the experiment, the children had to watch a sketch in which a person X put an object into a certain location. After person X left the room, the object was transferred to another location. The children had to assume that X did not know about the transfer and were asked where they thought X would look for the object.[44] The results of the experiments showed that starting from four years of age, children can distinguish between their own knowledge and the absence of such knowledge in others.[45] In the group of children aged between four to five year old, 78 percent could correctly construct wrong beliefs after seeing the sketch, whereas only 15 percent of the three to four year old children could do so.[46] The researchers concluded that within the period of four to six years, the children seem to develop new cognitive skills.[47]

Simon Baron-Cohen and his colleagues conducted an experiment to test whether autistic children lack a theory of mind. In their experiment, the children with autism were compared to normal children and children with Down's syndrome.[48] The experiment consisted of two steps. First, the researchers introduced two dolls to the children and checked whether the children could correctly remember their names. After that, the first doll would place a marble into her basket and leave the scene. Next, the marble was transferred to the other doll, who hid the marble in her own box. The researchers would then ask the children where they think the first doll would look for the marble after her return to the scene.[49] The results of the experiment showed that all the children could correctly answer the control questions asked by the researchers. However, almost all of the autistic children, unlike the other children, were not able to correctly distinguish between their own knowledge of where the marble was and the knowledge of the first doll. When asked where the doll would look for her marble, they pointed to the real location of the marble instead of the location where the doll left the marble. The researchers concluded that this is strong evidence for their hypothesis that autistic children lack a theory of mind and cannot represent mental states of others correctly.[50]

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[44] Heinz Wimmer and Josef Perner. "Beliefs about Beliefs: Representation and Constraining Function of Wrong Beliefs in Young Children's Understanding of Deception," *Cognition* 103 (1983), 103.
[45] Ibid., 106.
[46] Ibid., 124.
[47] Ibid., 126.
[48] Simon Baron-Cohen, Alan M. Leslie and Uta Frith, "Does the Autistic Child have a "Theory of Mind"?*", *Cognition* 21 (1985), 37.
[49] Ibid., 41-42.
[50] Ibid., 42-43.

Davidson assumes that all language speakers are thinkers. But some language speakers, like (autistic) children, are not able to attribute beliefs and false beliefs and thus do not have the concept of belief according to Davidson. They do however have language and thus have thought. This seems to demonstrate that the concepts of belief, truth and falsity are not necessary to have thoughts, since some thinkers are not able to attribute right or wrong beliefs to others. I therefore conclude that the concepts of belief, falsity and truth are not necessary to have thoughts.

2.3 The Necessity of Language

After examining whether the concepts of belief, falsity and truth are necessary to have thoughts, I now examine whether language is a necessary condition. According to Davidson, language is necessary to be able to compare one's own beliefs with the beliefs of others. And being able to compare one's own beliefs with the beliefs of others is necessary for thought. I agree with Davidson that being able to compare one's own beliefs with the beliefs of others is necessary for thought, I however do not think that language is needed for thought. The examples of (autistic) children and Christopher demonstrate that language and cognition are less intricately linked than Davidson assumes. In all cases, the subjects had language, they however did not have the ability to fully attribute mental states and beliefs to others. I think it can therefore be questioned if language is necessary for thought at all. To investigate this, I must first explain Davidson's notion of language. Hereafter, I discuss empirical research results that demonstrate that language is not necessary for thought.

According to Davidson, language is a social phenomenon.[51] On Davidson's view, one possesses a language when one has the ability to interpret others and to speak in such a way that other speakers are able to interpret him or her.[52] This view commits Davidson to disagree with many philosophers and linguists. Therefore, in his article "A Nice Arrangement of Epitaphs", Davidson argues that language should be understood in a different way than most philosophers and linguists do: "There is no such a thing as a language, not if a language is anything like what many philosophers and linguists have supposed. There is therefore no such thing to be learned, mastered, or born with."[53] Davidson argues against the view that language is the "ability to operate in accord with a precise and specifiable set of syntactic and semantic rules; verbal communication depends on speaker and bearer sharing such an ability, and it requires no more than this."[54] He argues that sharing such an ability is "neither necessary nor sufficient for successful linguistic communication."[55] According to Davidson, actual linguistic practice is only loosely related to any language consisting of phonetics, semantics,

[51] Ernie Lepore and Kirk Ludwig, *Donald Davidson: Meaning, Truth, Language, and Reality* (Oxford: Oxford University Press, 2005), viii.
[52] Ibid., 1.
[53] Donald Davidson, "A Nice Arrangement of Epitaphs," in *Truth, Language and History* (Oxford: Clarendon Press, 2005), 107.
[54] Donald Davidson, "The Social Aspect of Language," in *Truth, Language and History* (Oxford: Clarendon Press, 2005), 110.
[55] Ibid.

and syntax. We share a language if we use the same words to mean the same.[56] He states: "'Sharing a language' with someone else consists in understanding what they say, and talking pretty much the way they do. There is no additional entity we possess in common any more than there is an ear we share when I lend you an ear."[57] Because the linguistic skills people have typically differ, mutual understanding is achieved "through the exercise of imagination, appeal to general knowledge of the world, and awareness of human interests and attitudes."[58] Davidson thereby does not want to deny that in most cases we do depend on the syntax and semantics we have been taught to use in a similar way, he only wants to deny that our shared syntax and semantics are sufficient or necessary to explain our communication.[59]

Davidson thinks understanding is not achieved through conscious reflection on the meaning of what the other has said, we understand each other automatically, because we have learned to talk as most others do.[60] According to Davidson, language, if language is understood as "shared ways of speaking" is not a necessary condition of successful linguistic communication.[61] He argues for this claim by stating that almost no two people share their entire vocabulary, we often understand what was meant when someone makes an error or slip of the tongue, we understand children, even though they tend to use the past tense of some verbs wrong and we are able to communicate with foreigners, even though we do not speak the same language.[62] From this it follows that there is no fundamental reason why linguistic practices must be shared according to Davidson.[63] He concludes: "It is absurd to be obligated to a language; so far as the point of language is concerned, our only obligation, if that is the word, is to speak in such a way as to accomplish our purpose by being understood as we expect and intend."[64]

After establishing what language is and is not on Davidson's view, I continue with arguing that it is possible to think without possessing language. To do so, I discuss empirical research by Hurlburt and Akhter. Hurlburt and Akhter investigated the occurrence of unsymbolized thinking, "the experience of an explicit, differentiated thought that does not include the experience of words, images, or any other symbols."[65] Through the use of Descriptive Experience Sampling, "a method aimed at providing faithful descriptions of moments of inner experience as they naturally appear in people's everyday lives", they investigated how often unsymbolized thinking occurs.[66] A participant was given

[56] Ibid., 111.
[57] Ibid., 131.
[58] Ibid., 111.
[59] Ibid.
[60] Ibid., 112.
[61] Ibid., 115.
[62] Ibid., 115.
[63] Ibid., 125.
[64] Ibid., 118.
[65] Russel T. Hurlburt and Sarah A. Akhter, "Unsymbolized Thinking," *Consciousness and Cognition* 17, no. 4 (2008), 1364.
[66] Ibid.

a beeper and was instructed to carry it with him/her during the day. When the beeper would beep at random intervals, the participant would be instructed to describe the "last undisturbed moment before the beep" in a small notebook.[67] The participant would collect a few, mostly six, of these "beeped experiences" and meet within twenty-four hours with an investigator for an interview.[68] This cycle would then be repeated for five to eight days, after which an investigator would collect and summarize all the data.[69] Hulburt found that roughly one quarter of all collected "beeped experiences" could be categorized as unsymbolized thinking.[70] As this experiment demonstrates that language is not necessary for all thoughts, I conclude that Davidson is wrong to assume that language is needed to be able to think.

2.4 What Is Thinking?

To summarize, in this second part of my thesis I argued against Davidson's conditions of thought. Now that I have established by means of empirical research results that language and the concepts of belief, falsity and truth are not necessary conditions for animals to have thoughts, I can revise Davidson's conditions of thought. To repeat, Davidson's conditions of thought are: first, one must have beliefs, second, one must have the concept of belief, third, one must have the concept of truth and false belief, fourth, one must be able to compare their own beliefs with the beliefs of others, and fifth, one must have language. I have argued that language and the concepts of belief, falsity and truth are not necessary for animals to have thoughts. That leaves two conditions: one must have beliefs, and one must be able to compare their own beliefs with the beliefs of others to be able to have propositional attitudes.

Now that I have revised Davidson's conditions of thought, I still need to define what thought is and how we can investigate whether animals can have thoughts. If thinking is defined in such a manner that it is restricted to what humans can do, then it is obvious that animals cannot think. But that would be a trivial claim. So, what is it to think, independent from if you are human or a non-human animal? Although I disagree with some of Davidson's conditions of thought, I still use Davidson's notion of thought to investigate whether animals can think in the following parts of this thesis. In this way, it cannot be argued that the differences between Davidson and me rest solely on a definitional difference. As aforementioned, according to Davidson, there are various forms of thought: a thought can be a desire, knowledge, belief, fear, or interest.[71] Thus, in the remaining parts of this thesis, I consider empirical research results that can justifiably be used to ascribe desires, knowledge, beliefs, fears or interests to animals as evidence of thought.

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[67] Ibid.
[68] Ibid.
[69] Ibid.
[70] Ibid., 1365.
[71] Davidson, "Thought and Talk," 156.

In the following parts of my thesis, I argue directly against Davidson's arguments. First, in the next part of my thesis, I argue against Davidson's main argument's metaphysical conclusion that animals cannot have thoughts. Hereafter, I argue against one of Davidson's two epistemological arguments.

3. Animal Puzzle Solving: An Examination of Davidson's Main Argument

Steps of the Main Argument:

(3.1) For animals to have thoughts, they must have beliefs

(3.2) For animals to have a belief, they must have the concept of belief

(3.3) For animals to have the concept of belief, they must be able to be surprised

(3.4) For animals to be able to be surprised, they must have the concept of intersubjective truth

(3.5) For animals to have the concept of intersubjective truth, they must be able to compare their own beliefs with the beliefs of others

(3.6) For animals to be able to compare their own beliefs with the beliefs of others, they must have language

(3.7) Animals do not have language, ergo they cannot have thoughts

To argue that animals have thoughts and that the conclusion of Davidson's main argument is mistaken, I discuss one example of animals solving complex puzzles in one try, without having learned how to solve them, which implies that the animals must have solved the problem via spontaneous, goal-directed operations on internal representations of aspects of the situation, and thus have thoughts. Hereafter, after establishing that the conclusion of the main argument is mistaken, I investigate which of the premises of Davidson's main argument is at fault.

3.1 Animal Puzzle Solving

As I have just described, I consider empirical research results that can justifiably be used to ascribe desires, knowledge, beliefs, fears, or interests to animals as evidence of thought. Moreover, I explained that the necessary conditions of thought that I could not reject are the possession of beliefs and being able to compare own's one beliefs with the beliefs of others. In this part of my essay, I discuss examples of animal behaviour in which the only explanation of animal behaviour we have, is that the animals in question have thoughts and thus have (proto-)beliefs. In this way, the first necessary condition of thought is satisfied.

3.1.1 Animal Puzzle Solving: Chimpanzees

De Waal describes an experiment that investigated human children's and apes' abilities to solve a particular puzzle conducted at the Yerkes Primate Center's field station in Georgia.[72] The experiment demonstrates that the chimpanzees and orangutans were better at solving the puzzle than most of the human children that participated were. In the puzzle, the 'inaccessible peanut task', the apes and children had to find out how they could retrieve a peanut that was placed at the bottom of a vertical transparent tube. Only 8 percent of the four year old children and 58 percent of the eight year old children were able to solve the task.[73] Most children only attempted to reach for the peanut with their fingers and gave up after this attempt failed. Many of the apes however, solved the puzzle instantly. After the apes concluded that the peanut could not be retrieved by kicking and shaking the tube, they searched for another solution. One of the apes that de Waal describes, the female chimp Liza, filled her mouth with water and then poured the water in the tube. After repeating this process several times, the peanut was at the right level for Liza to reach it. De Waal emphasizes that the experiment was new for the chimpanzee. Liza had not been trained to deal with this problem ever before, thus she had to be able to come up with using the water as a tool all by herself.[74]

This example shows that the chimpanzees that were investigated had some knowledge about how to solve the puzzle, for they knew how to use the water to increase the water level in the tube. Without learning through observation or through trial-and-error, they were able to successfully complete the puzzle at once using this knowledge. Moreover, they had a desire to acquire the peanut that was placed at the bottom of the tube. Thus, if having thoughts is possessing knowledge or having desires, we are right to ascribe thought to the chimpanzees that participated in this experiment. Since I explained that possessing knowledge or having intentions entails having beliefs about what one has knowledge about or about what one desires, the animals in this example must have some form of beliefs or proto-beliefs as well. In this way, the first necessary condition of thought is satisfied.

3.2 An Examination of Davidson's Main Argument

Steps of the Main Argument:

(3.1) For animals to have thoughts, they must have beliefs

(3.2) For animals to have a belief, they must have the concept of belief

(3.3) For animals to have the concept of belief, they must be able to be surprised

(3.4) For animals to be able to be surprised, they must have the concept of intersubjective truth

(3.5) For animals to have the concept of intersubjective truth, they must be able to compare their own beliefs with the beliefs of others

[72] De Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?*, 101.
[73] Ibid.
[74] Ibid.

(3.6) For animals to be able to compare their own beliefs with the beliefs of others, they must have language
(3.7) Animals do not have language, ergo they cannot have thoughts

Since the conclusion of Davidson's main argument that animals cannot think is mistaken, one of his premises must be at fault. In my discussion of the conditions of thought, I argued that premise (3.1) for animals to have thoughts, they must have beliefs, is true. I argued that premise (3.2) for animals to have a belief, they must have the concept of belief, is mistaken, since thought is possible without having the concepts of belief, falsity and truth. Furthermore, I also argued that language is not a necessary condition of thought.

To summarize, in the first part of my thesis, I argued against Davidson's main argument. To do so, I argued that animals have thoughts and the conclusion of Davidson's main argument is mistaken. I first described an example of animal puzzle solving behaviour from which the conclusion that animals are able to think must be drawn. Hereafter, since Davidson's conclusion is wrong, I investigated which of the premises of Davidson's main argument is mistaken. I argued that thought is possible without having language, and the concepts of belief, falsity and truth. And if animals have thought, animals can have beliefs, without necessarily having language, and the concepts of belief, falsity and truth.

After refuting Davidson's main argument by proving that his metaphysical conclusion is wrong, I investigate his epistemological arguments in the next parts of my thesis. First, I investigate Davidson's argument from holism, his epistemological challenge to the justification of the ascription of *de re* beliefs to animals, in the following part of my thesis. Hereafter, I investigate Davidson's intensionality test, his second epistemological challenge, this time to the justification of the ascription of *de dicto* beliefs to animals.

4. Animal Theory of Mind: An Examination of the Argument from Holism

(2) Steps of the Argument from Holism:
(2.1) For us to be justified to ascribe *de re* beliefs to animals, animals must have concepts
(2.2) For animals to have concepts, they must have a system of beliefs
(2.3) For us to be justified in ascribing animals a system of beliefs, animals must show complex patterns of linguistic behaviour
(2.4) For animals to show complex patterns of linguistic behaviour, they must have language
(2.5) Animals do not have language, ergo we are not justified to ascribe *de re* beliefs to animals

Now I have countered Davidson's main argument against the possibility of animal thought and shown that animals can think without having language and the concepts of belief, falsity and truth, I investigate whether we are justified in our ascriptions of *de re* beliefs to animals. To do so, I discuss

an example of animal behaviour in which I think our best explanation of this behaviour involves ascribing a theory of mind to the animals in question. In this way, after establishing that animals can have thoughts in the third chapter, in this chapter I also establish that the second condition of thought can be met, that is, that animals are also able to compare their beliefs with others. By demonstrating that animals have a theory of mind, I argue that Davidson's conclusion of his argument from holism is mistaken. We are justified to ascribe animals *de re* beliefs. Hereafter, I investigate which of Davidson's premises is at fault.

4.1 Theory of Mind: Chimpanzees

The example of animal behaviour that I discuss is based on research by Frans de Waal and colleagues, who investigated whether chimpanzees are aware of another chimpanzees' knowledge. Over the course of several months, they tested multiple chimpanzees in pairs that consisted of a dominant chimpanzee and a subordinate chimpanzee.[75] The two chimpanzees were repeatedly placed next to each other in cages. The subordinate chimpanzee's cage had a small window with a view of the outside terrain. The dominant chimpanzee could only see the other chimpanzee, not the outside terrain. An investigator would then enter the outside terrain and hide a banana and a cucumber in two different hiding spots. Only the subordinate chimpanzee could see where the food was hidden. The two chimpanzees were then simultaneously released in the outside terrain. In most cases the subordinate chimpanzee would first lead the dominant chimpanzee to the cucumber and, when the dominant chimpanzee started eating the cucumber, the subordinate chimpanzee would run towards the spot where the banana was hidden and eat it fast, such that the dominant chimpanzee could not take it. Sometimes the dominant chimpanzee would, after a couple of experiments, start to see through the deceit of the subordinate chimpanzee.[76] In a follow-up experiment, Katie Hall used cameras to track the gaze of the chimpanzees during the food competition tasks.[77] She concludes that dominant chimpanzees monitor the gaze and direction of movement of the subordinate chimpanzees to find out where the food is hidden. In turn, the subordinate chimpanzees would try to hide their knowledge of the whereabouts of the food by avoiding to look at the hiding place directly.[78]

These experiments seem to show that chimpanzees are aware of the knowledge of other chimpanzees. The subordinate chimpanzee seems to know that the dominant one does not know where and what food is hidden. The subordinate chimpanzee exploits his/her knowledge by leading the dominant chimpanzee to the least desirable food, so he/she can then acquire the desirable food.

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[75] Ibid., 139.
[76] Ibid., 139-140.
[77] Katie Hall et al., "Using Cross Correlations to Investigate How Chimpanzees (Pan Troglodytes) Use Conspecific Gaze Cues to Extract and Exploit Information in a Foraging Competition," *American Journal of Primatology* 76, no. 10 (2014), 934-935.
[78] De Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?*, 140.

4.1.1 The Logical Problem

However, there arises a problem when we want to ascribe a theory of mind to animals. According to Andrews, this problem, the "logical" problem, arises when we have to decide between two kinds of hypotheses to explain animal behaviour: mindreading hypotheses and behaviour reading hypotheses.[79] How can we justifiably decide if an animal's behaviour is best explained by ascribing it mindreading skills, a theory of mind, or by ascribing it behaviour reading skills? If the animal's mental state attributions are largely due to its observations of an experimenter's or another animal's behaviour, then, whenever it predicts behaviour, the animal's prediction might just as likely be based on associations between behaviour as it might be based on associations between mental states and behaviour.[80] How are we to decide between the two explanations?

An answer is given by Josep Call and Michael Tomasello. In their review article "Does the Chimpanzee Have a Theory of Mind? 30 Years Later" they describe ten studies on the possibility of chimpanzees having a theory of mind They conclude: "We believe that there is only one reasonable conclusion to be drawn from the ten studies reviewed here: chimpanzees, like humans, understand the actions of others not just in terms of surface behaviors but also in terms of the underlying goals, and possibly intentions, involved."[81] They argue that even though behavioural explanations might be used to explain the results of any of the chimpanzee studies, this would require many different ad hoc behavioural explanations for which there is no positive evidence.[82] Humans and chimpanzees share a common ancestor, the *Australopithecus* (southern ape) and diverged thirteen to six million years ago. That is why we still share an estimated 95% of our DNA with chimpanzees.[83] Thus the simplest, and most evolutionary parsimonious explanation, of the chimpanzee behaviour in the studies of De Waal and Hall would be that chimpanzees are very much like humans and that it is therefore plausible that chimpanzees, like humans, are able to develop a theory of mind in the course of their lives. This explanation is also the only explanation that does not make the predictive success of ascribing a theory of mind to chimpanzees to successfully explain and predict their behaviour a miracle. If our best theories to predict chimpanzee behaviour are successful, then what best explains this success? Hilary Putnam argues that this predictive success can best be explained by assuming that the theory works because it is true, otherwise the predictive success of the theory would be a miracle.[84]

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[79] Andrews, *The Animal Mind: An Introduction to the Philosophy of Animal Cognition*, 145.
[80] Ibid.
[81] Josep Call and Michael Tomasello, "Does the Chimpanzee Have a Theory of Mind? 30 Years Later," *Trends in Cognitive Sciences* 12, no. 5 (2008), 189.
[82] Ibid.
[83] Roy Britten, "Divergence Between Samples of Chimpanzee and Human DNA Sequences is 5%, Counting Indels," *Proceedings of the National Academy of Sciences of the United States of America* 99, no. 22 (2001), 13633-13635.
[84] Anjan Chakravartty, "Scientific Realism," in *The Stanford Encyclopedia of Philosophy* (Summer 2017 Edition), ed. Edward N. Zalta, https://plato.stanford.edu/archives/sum2017/entries/scientific-realism/ (accessed on 10-07-2017).

It can however also be argued that the behaviour reading theories or explanations, when they can be used to successfully predict animal behaviour, are true, since otherwise it would be a miracle that they are successful. But, as Tomasello and Call argued, behaviour reading explanations would require many different ad hoc explanations for which there is no evidence. Tomasello and Call argue that the postulated behavioural rules to explain behaviour reading must be different in each case, and that most of these behavioural rules do not explain more than one experiment.[85] They conclude: "This patchiness of coverage gives this kind of explanation a very ad hoc feeling, especially since there is rarely any concrete evidence that animals actually have had the requisite experiences to learn the behavioural rule - there is just a theoretical possibility."[86] Therefore, I conclude that the attribution of a theory of mind to the chimpanzees is the best explanation of their behaviour in the example I discussed.

Nevertheless, it can still be questioned if animals have a theory of mind as rich as humans do. For example, can animals understand others to have false beliefs? Thus far there is no conclusive evidence to prove that they can.[87] Thus, if having a theory of mind is to be construed as the ability to understand that others can have false beliefs, animals seem to have no theory of mind. However, earlier I argued against Davidson's assumption that a concept of false belief is necessary for thought. Young and autistic children do not pass the false believe test, yet they do have beliefs and propositional attitudes and thus have thoughts. I therefore conclude that the best scientific explanation of this experiment is to conclude that the chimpanzees that were investigated have a theory of mind and are thus able to compare their own beliefs with the beliefs of others.

4.2 Theory of Mind: Scrub Jays

Nathan Emery and Nicky Clayton investigated whether scrub jays display different patterns of food caching behaviour when they are being watched by another scrub jay.[88] Twenty-one hand-raised scrub jays were used in the trials. The scrub jays were given food to cache while they were either being watched by another scrub jay and human observers they could see or only by the human observers. After a while the food caches were taken and then given back to the scrub jays after fifteen minutes. The scrub jays who were watching had a towel placed over their cage so they could not see the other scrub jay. The scrub jays who cached their food fifteen minutes earlier, were then given ten minutes to recache their food.[89] The scrub jays who were watched during the caching of their food were

[85] Michael Tomasello and Josep Call, "Do Chimpanzees Know What Others See – or Only What They Are Looking at?," *In Rational Animals?,* ed. Susan Hurley and Matthew Nudds (Oxford: Oxford University Press, 2006), 541.
[86] Ibid.
[87] De Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?*, 157.
[88] Nathan Emery and Nicky Clayton, "Effects of Experience and Social Context on Prospective Caching Strategies by Scrub Jays," *Nature* 414, no. 6862 (2001), 443.
[89] Ibid., 446.

significantly more likely to recache their food in new places, but only if they had experience with stealing from a rival themselves, than the birds who were not watched.[90]

One possible explanation of the scrub jay's behaviour in this example is that the scrub jays are able to ascribe mental states to other scrub jays. If this is the case, the scrub jays would know they are being watched and that it is therefore more likely that their food will be stolen by a rival, given the chance.[91] To prevent this, they recache their food in new places. In the chimpanzee example, I argued through the use of an evolutionary parsimony argument and an application of Putnam's no miracles argument that the best scientific explanation of the behaviour of the chimpanzees in De Waal's and Hall's studies is that chimpanzees have a theory of mind. The evolutionary parsimony argument cannot be used in the scrub jay example, since we do not share a relatively close common ancestor with scrub jays. Moreover, Putnam's no miracles argument is also not applicable to the scrub jay example: the behaviour of the scrub jays could also be explained without presupposing that the scrub jays have a theory of mind. To illustrate this alternative explanation, consider the following example. Suppose that I do not want my hair to get wet in the rain. Therefore, whenever it rains, I use an umbrella, because I realize that my hair gets wet when it rains and I am not using my umbrella. When it is not raining, I do not use an umbrella. In this case, I can display these behaviours without having to ascribe beliefs or desires to the rain. Such an explanation could also be given in the scrub jay example. Since this explanation is parsimonious, I do not think we are justified to ascribe a theory of mind to the scrub jays.

Nevertheless, the ascription of a theory of mind seems to be justified in the chimpanzee example. Thus, after concluding that some animals have thoughts and a theory of mind, I argue that the conclusion of Davidson's argument from holism is mistaken. In the puzzle solving examples, the animals seem to be aware that the food can be reached through a sequence of events that must be executed at the right order. In the theory of mind examples, the animals seem aware of the limited sight of their rivals that leads to an advantage in knowledge over their rivals. If animals were not able to recognize objects as objects or were not able to recognize that a towel or wall could block the sight of other animals, they would not have been able to behave in the way they did in the examples I described. Even if the animals in the examples were only capable of behaviour reading instead of mindreading, they would still have to recognize objects as objects and rival animals as rivals. Therefore, they must have some form of spatiotemporal awareness and object type representation, and they thus have some sort of *de re* beliefs about the objects and other organisms they perceive, since they are able to perceive objects as objects and other animals as other animals. Davidson argued that for us to be able to justifiably ascribe *de re* beliefs to animals, animals must have concepts. Since these

[90] Ibid., 444.
[91] De Waal, *Zijn we slim genoeg om te weten hoe slim dieren zijn?*, 156.

examples show that animals must have some sort of concepts or proto-concepts, we are justified to ascribe *de re* beliefs to animals and the conclusion of Davidson's argument from holism is mistaken.

After arguing that the conclusion of Davidson's argument from holism is mistaken, I investigate in the next part of this chapter which of Davidson's premises is at fault.

4.3 Examining Davidson's Argument from Holism

(2) Steps of the Argument from Holism:

(2.1) For us to be justified to ascribe *de re* beliefs to animals, animals must have concepts

(2.2) For animals to have concepts, they must have a system of beliefs

(2.3) For us to be justified in ascribing animals a system of beliefs, animals must show complex patterns of linguistic behaviour

(2.4) For animals to show complex patterns of linguistic behaviour, they must have language

(2.5) Animals do not have language, ergo we are not justified to ascribe *de re* beliefs to animals

In the previous chapter, I discussed an example of animal puzzle solving which was only explainable by ascribing some sort of concepts or beliefs to the animals in question, since their behaviour was not taught and did not involve a sequence of trial-and-error. From these examples, I concluded that animals must have thoughts. Furthermore, I think the puzzle solving and theory of mind examples can be used to demonstrate that we are also justified to ascribe *de re* beliefs to the animals in question, since animals must have some sort of concepts or proto-concepts to be able to behave in the ways I have described. However, Davidson thinks one can only have concepts if one has a system of beliefs. Since animals have concepts or proto-concepts, and we are justified to ascribe *de re* beliefs to animals, there are two options: either animals have an entire system of beliefs, or an entire system of beliefs is not needed to have concepts.

It can be argued that animals have a system of beliefs.[92] Consider the dog from Malcolm's example, the dog's beliefs about things such as trees, may perhaps not resemble our human beliefs, but may nonetheless be relatively rich. The dog's beliefs might involve a number of beliefs about a tree generally neglected by humans, such as beliefs about the scent, their use in the marking of a territory, or their use in scratching one's back.[93] It can be argued that the dog's understanding of a tree is as rich as the human understanding of some things about which we have beliefs, but do not know much about.[94] For example, a mathematically unschooled person may believe that the number 2 is a prime number without knowing very much about prime numbers, apart from the fact that 2 is a prime number.

[92] Eric Schwitzgebel, "Belief," in *The Stanford Encyclopedia of Philosophy* (Summer 2015 Edition), ed. Edward N. Zalta, https://plato.stanford.edu/archives/sum2015/entries/belief/ (accessed on 25-07-2017).
[93] Ibid.
[94] Ibid.

However, even if one does not want to admit that we can justifiably ascribe a system of beliefs to animals, I argue that animals can still have concepts without possessing an entire system of beliefs. To defend this claim, I argue that Davidson's holism is viciously circular. According to Davidson, the possession of concepts is needed to be able to have beliefs, while simultaneously one must have an entire system of beliefs to be able to have concepts. If this is true, then how we do ever acquire our first belief or concept? That would imply that we form our first concepts and an entire system of beliefs simultaneously. However, since the possession of concepts presupposes the possession of a system of beliefs and vice versa, it seems impossible to acquire both at the same time. In this way, it seems impossible to learn anything at all. This does not seem right. A more plausible explanation would be that the development of beliefs and concepts is a more gradual process.

To summarize, I argued that the best explanation for some examples of animal behaviour is that the animals in question have beliefs and have a theory of mind. If animals have a theory of mind, they must have concepts or proto-concepts. If animals have concepts, we are justified to ascribe them *de re* beliefs. Davidson argued that for someone to be able to have concepts, someone must have an entire system of beliefs. However, I argued that it is possible for animals to have a system of beliefs, even though it may differ from our human beliefs. Furthermore, I argued that even when one does not want to ascribe an entire system of beliefs to animals, animals can still have concepts, since it is not necessary to have an entire system of beliefs to be able to have concepts. Therefore, premise (2.2) for animals to have concepts, they must have a system of beliefs, is mistaken.

After refuting Davidson's main argument and his argument from holism, I investigate Davidson's intensionality test in the next part of my thesis.

5. Animal Language: An Examination of Davidson's Intensionality Test

(1) Steps of the Intensionality Test:

(1.1) For us to be justified to ascribe *de dicto* beliefs to animals, we must have a principled method of deciding between different *de dicto* belief ascriptions

(1.2) For us to have a principled method of deciding between different *de dicto* belief ascriptions, we must appeal to animals' linguistic behaviour

(1.3) For us to be able to appeal to animals' linguistic behaviour, animals must have language

(1.4) Animals do not have language, ergo we are not justified to ascribe *de dicto* beliefs to animals

According to Davidson's intensionality test, animals must possess language for us to be justified to ascribe animals *de dicto* beliefs. I argued that language is not a necessary condition of thought in response to Davidson's metaphysical challenge to animal thought. However, his epistemological doubts about the justification of *de dicto* belief ascriptions remain unchallenged. Therefore, I now investigate whether animals have language. To do so, I first describe Charles Hockett's, a linguistic anthropologist, notion of language. Hereafter, I discuss two examples of animals who are taught a

human language. But before I start, it is important to distinguish between communication and language. While it seems obvious that animals communicate, it seems not so obvious that animals have a language. Communication is a much broader concept than language is, and can be characterized as behaviour that affects the behaviour of others by the transmission of certain information.[95] In this sense, even machines communicate.

5.1 Hockett's Design Features of Language

In his article "The Origin of Speech" Hockett defines a set of thirteen features that all human languages share.[96] According to Hockett, the first five design features are common to the vocalizations of many species of mammals and birds.[97]

Vocal-auditory channel: refers to the idea that human language is primarily a spoken language.[98]

Broadcast transmission and directional reception: when a human language is spoken, sounds are transmitted in all directions. However, listeners can discern the direction from which the sounds came.[99]

Transitoriness or rapid-fading: sounds exist for only a brief period of time, after which they can no longer be perceived.[100]

Interchangeability: The idea that humans can transmit and receive linguistic signals.[101]

Total feedback: a speaker of a language can hear his own speech and modify what he is saying while saying it. A sender is able to receive the signals he himself has transmitted.[102]

The next three features are also features of linguistic signals in the communication of many other mammals and birds.[103]

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[95] Bruce Rowe and Diane Levine, *A Concise Introduction to Linguistics Fourth Edition* (Abingdon: Routledge, 2016), 2.
[96] Charles Hockett, "The Origin of speech," in *Human Communication: Language and Its Psychobiological Bases: Readings from Scientific American*, ed. William Wang (San Francisco: W. H. Freeman and Co., 1982), 6-8.
[97] John Coleman, "Design Features of Language," in *Encyclopedia of Language & Linguistics (Second Edition)*, ed. Keith Brown (Amsterdam: Elsevier, 2006), 471.
[98] Hockett, "The Origin of Speech," 6.
[99] Ibid.
[100] Ibid.
[101] Ibid.
[102] Ibid.
[103] Coleman, "Design Features of Language," 471.

Specialization: the purpose of linguistic signals is intentional communication and nothing else. It is no by-product of a different physiological function.[104]

Semanticity: specific linguistic signals are meaningful and are tied to specific meanings.[105]

Arbitrariness: whatever sound or word a human language attributes to an object is arbitrary. For example: the word 'whale' is nothing like an actual whale; it is a small word for a large animal. And different languages use different linguistic signals to refer to the same object.[106]

Discreteness: linguistic signals can be broken down into small units which can be combined in rule-governed ways. Linguistic signals are perceived categorically, not continuously. For example, if someone slightly mispronounces the word 'bin' by pronouncing the 'b' sound more as a 'p' sound, one still only hears either 'pin' or 'bin' and not something in between.

Hockett thought that the remaining four features were specific to early hominoids and modern humans.[107]

Displacement: humans can communicate about things that are remote in space or time, or things that do not even exist.[108]

Productivity: human language users can create and understand novel linguistic signals.[109]

Traditional transmission: human language is learned after birth through cultural and social influences.[110]

Duality of patterning: languages have two levels of structure. First, meaningless units which are called phonemes and which can be combined to make up words and morphemes. Second, words and morphemes can then be used to form meaningful phrases and sentences.[111]

Later Hockett added three additional design features of language.[112]

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[104] Ibid.
[105] Ibid.
[106] Ibid.
[107] Ibid., 472.
[108] Hockett, "The Origin of Speech," 6.
[109] Ibid.
[110] Ibid.
[111] Ibid., 8.
Coleman, "Design Features of Language," 472.
[112] Coleman, "Design Features of Language," 472.

Prevarication: humans can produce linguistic signals with the intension of deceive someone. Humans are capable of producing false or meaningless statements.[113]

Reflexiveness: human language can be used to talk about language itself.[114]

Learnability: human language is teachable and learnable. Someone can learn multiple languages.[115]

5.2 Washoe and Kanzi

To investigate whether animals have language, I discuss two examples of primates who were taught a human language. Hereafter, I examine whether animal language can meet the criteria as described by Hockett. The question whether animals have language is hard to answer, since we do not speak any animal language. A lot of research has therefore focussed on the question if animals, mostly apes, can be taught a human language. I think that if apes can be taught a human language, this demonstrates that animals, in this case apes, are able to have a language. The first example concerns Beatrix and Allen Gardner, who raised a chimpanzee called Washoe from when she was one year old and taught her American Sign Language.[116] At the age of four, Washoe was able to produce about 85 signs, and understand many more. A couple of years later, Washoe was able to produce about 200 words, including nouns, names, verbs and grammatical words. Washoe learnt words similarly to the way human children do and made the same errors as human children. When children start learning language, they sometimes extend words inappropriately. For example, they might use the word ‘dog’ to refer to other four-legged animals such as cats. These over-generalisations are similar to the way human children learn to apply new words they have learned. Washoe used the sign for ‘flower’ to refer to everything that smelled like a flower. Washoe was also able to produce new signs for things she had not been taught to sign. When she saw a duck for the first time, she signed ‘water bird’.[117] Washoe was able to combine signs and produce them in combinations of several words long. She was able to answer questions correctly and was sensitive to the importance of word order in sentences. And remarkably, Washoe’s adopted son, Loulis, started using sign language without any training from the Gardners. Loulis learned to sign by observing Washoe and by being taught by her.[118]

However, there are two types of criticism against this experiment. The first type is methodological criticsm. For example, because the Gardners did not keep a journal with all the signs Washoe produced, the experiment is not sufficient to justify strong conclusions about Washoe’s

[113] Ibid.
[114] Ibid.
[115] Ibid.
[116] Trevor Harley, *Talking the Talk: Language, Psychology and Science* (Sussex: Psychology Press, 2010), 40.
[117] Ibid., 40.
[118] Ibid., 41.

language capabilities.[119] The second type of criticism against the experiment with Washoe is that she learned less language than she seemed to have done. Washoe tended to make more use of signs that are related in their movement to the word they denote. For example, she made more use of the sign 'give', because the sign for 'give' resembles the meaning of the word it denotes closer than other signs. Furthermore, the signs Washoe produced were mostly concerned with the present and things directly in front of her and lacked the syntactic structure of sentences made by children with a vocabulary of a similar size to Washoe.[120]

Another experiment to teach language to an ape was done with the bonobo Kanzi.[121] Kanzi was not taught language. At first, he only accompanied his adoptive mother to her training sessions, who was taught to communicate through a language based on symbols (lexigrams) displayed on a keyboard. One-day, Kanzi spontaneously started using lexigrams. By the age of 30 months, Kanzi had learned to use seven symbols (for orange, apple, banana, peanut, bedroom, chase, and Austin). At the age of 46 months he had learned nearly 50 symbols and was able to produce 800 combinations. At six years old, he had learned around 200 symbols. Kanzi was sensitive to word order and verb meaning and was able to produce spontaneous utterances.[122]

The researchers in Kanzi's experiment were sensitive to the criticisms of the earlier work, and their research programme is methodologically sound. However, the claim that Kanzi learned language through observation only has been disputed.[123] The experimenters did not reward Kanzi with food, but could have implicitly rewarded him with smiles, verbal prompts et cetera. I however do not think this criticism is justified. How does this this differ from the way a child learns language? Children are also implicitly rewarded with smiles and verbal stimulation, so I do not think the difference between the way Kanzi and children learn language is that great. It can however still be questioned if Kanzi used language like a human child would.[124] There seems to be a difference. Kanzi was mostly concerned with things he wanted and the grammatical structures Kanzi produced were relatively simple, because he learned grammar at a slower pace than human children. Another criticism on Kanzi's language abilities is that Kanzi seemed to use words in a different manner than children would. For example, Kanzi used the word 'strawberry' as a name, but also as a request for strawberries. I however do not find this criticism justified. I often use words in this manner if I want something, so I do not think Kanzi differs from humans in that respect. These examples show that animals are to some extent able to learn a human language, and that the difference is not as clear cut as Davidson makes it out to be.

[119] Ibid.
[120] Ibid., 42.
[121] Ibid., 44.
[122] Ibid.
[123] Ibid., 45.
[124] Ibid.

Hockett originally thought that primate communication only utilized the first nine features of the original thirteen features and that only human languages were capable of the final four features.[125] However, it can be argued that chimpanzees and bonobos, who are taught sign language seem to utilize at least twelve features of the sixteen design features of human language as described by Hockett.[126] Broadcast transmission, transitoriness and interchangeability can easily be applied to describe chimpanzees using sign language, as can specialization, semanticity, arbitrariness, discreteness and displacement. Sign language also has a duality of patterning and it is learnable.[127] As I have described in one of the examples of animal behaviour, chimpanzees are capable of deceit, therefore the design feature prevarication can also be applied to chimpanzees using sign language.[128] Only the vocal-auditory channel, total feedback, productivity, and traditional transmission features do not seem to be design features of chimpanzees using sign language.[129]

The question if animals have a language can maybe best not be viewed as a simple yes or no question.[130] Even though human languages are more complex than animal communication, animal communication has a lot in common with human language.[131] But to refute Davidson's intensionality test, the important question is, do animals have enough language for us to be justified to ascribe *de dicto* beliefs to them? I argue that they do not. Consider the example of Malcolm's dog I described earlier:

> But how about the dog's supposed belief that the cat went up that oak tree? That oak tree, as it happens, is the oldest tree in sight. Does the dog think that the cat went up the oldest tree in sight? Or that the cat went up the same tree it went up the last time the dog chased it? It is hard to make sense of the questions. But then it does not seem possible to distinguish between quite different things the dog might be said to believe.[132]

In this case, I agree with Davidson that the only way to describe how an animal can think about some object and to decide which is the correct *de dicto* belief ascription, is by an appeal to linguistic behaviour.[133] Because of a lack of sufficient linguistic capacities, our *de dicto* belief ascriptions to animals are underdetermined. Even though we know that animals who can use sign language can distinguish between an apple and a banana for instance, we do not know how those animals think about the apple or the banana. It could be the case that the animals think about an apple as a red, or a round, or a tasty object, or a combination of these three options, but if the animals cannot express

[125] Hockett, "The Origin of Speech," 11.
[126] Coleman, "Design Features of Language," 473.
[127] Ibid., 474.
[128] Ibid.
[129] Ibid.
[130] Rowe and Levine, *A Concise Introduction to Linguistics Fourth Edition*, 21.
[131] Harley, *Talking the Talk: Language, Psychology and Science*, 48.
[132] Davidson, "Rational Animals," 320.
[133] Davidson, "Thought and Talk," 163-164.

these beliefs adequately, it is impossible to know which belief ascription is correct. However, this does not mean that no beliefs at all can be ascribed to animals. Since animals are able to learn a sign language, they are able to individuate objects and learn the appropriate sign to refer to a certain object, and therefore we are justified to ascribe *de re* beliefs to animals.

6. Conclusion

The aim of this thesis was to argue against Davidson's denial of animal thought. My thesis had the following structure. First, I described Davidson's three arguments against animal thought and summarized them schematically. I explained that Davidson presents two epistemological arguments against the ascription of beliefs to animals and one metaphysical argument against the possibility of animal thought. Hereby, I explained that Davidson's arguments are based on the premise that language and the concepts of belief, truth and falsity are needed for thought. Second, I investigated what the necessary conditions of thought are. After describing Davidson's view of beliefs and language, I argued, by using empirical research results, that Davidson's conditions of thought are mistaken. Language and the concepts of belief, truth and falsity are not needed for thought. Third, I argued that Davidson's main argument's conclusion and his denial of animal thought are mistaken by describing examples of animals solving puzzles in one try without having learned how to solve them, which implies that the animals must have solved the problem via spontaneous, goal-directed operations on internal representations of aspects of the situation, and thus have thoughts. Hereafter, I investigated which of Davidson's premises is at fault. I argued that thought is possible without having language, and the concepts of belief, falsity and truth. Fourth, I argued that the conclusion of Davidson's argument from holism, that we are not justified to ascribe *de re* beliefs to animals, is mistaken by discussing an examples of animal behaviour in which our best explanation involves ascribing a theory of mind to the animals in question. If animals have a theory of mind, they are able to recognize objects as objects and other animals as potential rivals and we are thus justified to ascribe them *de re* beliefs Hereafter, I again investigated which of Davidson's premises is at fault. I argued that it is possible that animals can have a system of beliefs. But, even if we do not want to ascribe an entire system of beliefs to animals, I argued that animals can have concepts or proto-concepts, since having an entire system of beliefs is not a necessary condition to be able to have concepts. Fifth, I argued that the conclusion of Davidson's intensionality test, that we are not justified to ascribe *de dicto* beliefs to animals, is right. However, I argued that this does not imply that we are not justified to ascribe no beliefs at all to animals. Therefore, I concluded that animals have thoughts and we are justified in our ascription of *de re* beliefs to animals.

As I have already said in the introduction of my thesis, I think the subject of animal thought, language and theory of mind gives rise to important questions. Are we right in our binary thinking in which humans and non-human animals are placed opposite each other? Are philosophers such as Davidson justified in denying that non-human animals have thoughts based on philosophical

argumentation alone? Are questions such as ‘can animals think?’ truly philosophical in nature rather than empirical? To answer these questions, I think we are not right in our binary thinking and our placement of animals directly opposite humans. I tend to agree with Hume that it is a matter of degree rather than an absolute qualitative difference between humans and animals. We have far more in common with them than we seem to think or want to admit. I also think that we, as philosophers, would be wise not to ignore empirical research and experiments, for they can contain valuable information and knowledge and can shed a new light on philosophical problems.

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