

---

# Thought, Language, and Inner Speech

A Reply to Ulrike Pompe-Alama

[Adina Roskies](#)

---

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

## Author

[Adina Roskies](#)

adina.l.roskies@dartmouth.edu  
Dartmouth College  
Hanover, NH, U.S.A.

## Commentator

[Ulrike Pompe-Alama](#)

ulrike.pompe-alama@  
philo.unistuttgart.de  
Universität Stuttgart  
Stuttgart, Germany

## Editors

[Thomas Metzinger](#)

metzinger@uni-mainz.de  
Johannes Gutenberg-Universität  
Mainz, Germany

[Jennifer M. Windt](#)

jennifer.windt@monash.edu  
Monash University  
Melbourne, Australia

## 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?

## References

- Churchland, P. (1992). *A neurocomputational perspective: The nature of mind and the structure of science*. Cambridge, MA: MIT Press.
- Clark, A. (2015). Embodied Prediction. In T. Metzinger & J. M. Windt (Eds.) *Open MIND* (pp. 1-21). Frankfurt a.M., GER: MIND Group.
- Freiwald, W. R. & Tsao, D. (2011). Taking apart the neural machinery of face processing. In A. J. Calder, G. Rhodes, M. H. Johnson & J. V. Haxby (Eds.) *Handbook of face perception* (pp. 707-718). Oxford, UK: Oxford University Press.
- Gold, J. I. & Shadlen, M. N. (2007). The neural basis of decision making. *Annual Review of Neuroscience*, *30*, 535-574. [10.1523/JNEUROSCI.1939-07.2007](https://doi.org/10.1523/JNEUROSCI.1939-07.2007)
- Haxby, J. V., Connolly, A. C. & Swaroop Guntupalli, J. (2014). Decoding neural representational spaces using multivariate pattern analysis. *Annual Review of Neuroscience*, *37*, 435-456. [10.1146/annurev-neuro-062012-170325](https://doi.org/10.1146/annurev-neuro-062012-170325)
- Hohwy, J. (2015). The neural organ explains the mind. In T. Metzinger & J. M. Windt (Eds.) *Open MIND* (pp. 1-22). Frankfurt a.M., GER: MIND Group.
- Huth, A. G., Nishimoto, S., Vu, A. T. & Gallant, J. L. (2012). A continuous semantic space describes the representation of thousands of object and action categories across the brain. *Neuron*, *76* (6), 1210-1224. [10.1016/j.neuron.2012.10.014](https://doi.org/10.1016/j.neuron.2012.10.014)
- Kiani, R., Esteky, H., Mirpour, K. & Tanaka, K. (2007). Object category structure in response patterns of neuronal population in monkey inferior temporal cortex. *Journal of Neurophysiology*, *97* (6), 4296-4309. [10.1152/jn.00024.2007](https://doi.org/10.1152/jn.00024.2007)
- Pompe-Alama, U. (2015). Crediting Animals with the Ability to Think: On the Role of Language in Cognition—A Commentary on Adina Roskies. *Open MIND*. Frankfurt a. M., GER: MIND Group.
- Roskies, A. L. (2015). Monkey decision making as a model system for human decision making. In A. Mele (Ed.) *Surrounding free will* (pp. 231-254). New York, NY: Oxford University Press.
- Seth, A. K. (2015). The cybernetic Bayesian brain. In T. Metzinger & J. M. Windt (Eds.) *Open MIND* (pp. 1-25). Frankfurt a.M., GER: MIND Group.
- Sha, L., Haxby, J. V., Abdi, H., Guntupalli, J. S., Oosterhof, N. N., Halchenko, Y. O. & Connolly, A. C. (in press). The animacy continuum in the human ventral pathway. *Journal of Cognitive Neuroscience*
- Stalnaker, R. C. (1987). *Inquiry*. Cambridge, MA: MIT Press.