

## **Thinking without words**

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Nonlinguistic animals can be very clever. Anecdotes from proud pet owners abound like the one recounted by Daniel Dennett (1976) of a dog quite possessive of a particular chair. Supposedly on one notable occasion, her owner was sitting in the only chair that the dog is permitted to sleep in. The dog went to the door, ostensibly wanting to go out, but as soon as the owner followed, the dog hurried back and climbed into her now empty chair. And however compelling pet stories (and however sincere their owners), empirical research into infant and animal cognition proves even more suggestive. Chimpanzees, for example, display complex social behaviors that seem to include dissembling to secure food and mates, and many developmental psychologists assure us that we have little scientists hypothesizing in our cribs.

Suggestiveness does not pass for theory but instead calls out for it. How should we account for such behavior? Upon hearing the story above, we might be tempted to ascribe to the dog the intention to trick her owner into believing that she wanted to go out. As Dennett points out, doing so means that we treat the dog as a higher-order intentional system, one capable of harboring beliefs about beliefs. And since we construe the dog as succeeding to deceive her owner, she causes him to believe *falsely*—the hallmark of a higher-order intentional system. This fairly intuitive explanation, then, relies upon an assumption about rather advanced cognitive capabilities in the absence of public language.

Bermúdez observes that the fields of developmental and comparative psychology, along with cognitive ethology, have all grown friendly to this assumption that “the domain of the cognitive far outstrips the domain of the linguistic” (p. 5). Because this assumption has proved so fruitful to these pursuits, he dedicates his ambitious book to placing this assumption on firm

theoretical footing, drawing upon both philosophical progress regarding the nature of thought and language and the substantial empirical contributions from these lines of research themselves.

As one might expect, the problem of thinking without words proves precisely the kind of difficulty that the interdisciplinary approach of cognitive science excels at taking on. And Bermúdez doesn't disappoint, demonstrating a capacious knowledge of both the philosophical and psychological literature. Broadly speaking, he argues that explaining the complex behavior of many creatures lacking a public language requires appealing to propositional-attitude psychology. We can ascribe to such creatures thoughts with determinate, compositionally structured content, and they engage in primitive inference under empirically specifiable modes of presentation. Nevertheless, thinking without language involves severe limitations—lacking linguistic vehicles for their thoughts, Bermúdez concludes that non-language-using creatures are in principle limited only to first-order representational states and reasoning exhausted by protologic.

Bermúdez sets himself a rather ambitious goal here. He maintains that a complete account of thinking without language that vindicates current empirical practice of providing psychological explanations of various sorts must not only provide the metaphysics of and semantics for the content of such thinking, it must explain how these contents relate to produce behavior and, most importantly, how we can identify the thoughts we attribute to nonlinguistic creatures in the absence of linguistic behavior.

Bermúdez begins to answer these central questions by situating his own approach to understanding cognition between the extremes of a Fregean account and the language of thought hypothesis. The Fregean approach takes language as the window to the mind, and hence the study of the former yields insights about the latter. Applying this model to the nonlinguistic case

does highlight the problem, voiced forcefully by Davidson (1975), that without language we seem to have no clear way of capturing the fine-grained distinctions in thoughts that we employ when giving psychological explanations of the behavior of language users. The language of thought hypothesis, in contrast, furnishes a framework more friendly to nonlinguistic thought since it reverses the order of explanation, accounting for linguistic behavior in terms of a preexisting internal language of thought. Moreover, the language of thought hypothesis readily explains how thoughts lead to action; according to the hypothesis thoughts have the causal power they do in virtue of the syntactic structure of their mentalese vehicles that encode their semantic content.

Though the language of thought hypothesis meets his metaphysical, semantic, and explanatory goals, Bermúdez finds it ill-equipped to answer the epistemological question. Sentences in mentalese may be causally responsible for action, but the language of thought hypothesis includes no direction as to how we can discover exactly what those sentences are in a particular case. Hence, Bermúdez sees the major challenge facing a proponent of thinking without words as providing a satisfactory account of how we can attribute the determinate thoughts necessary for psychological explanations commonly given in the study of nonhuman animals, prelinguistic infants, and early hominids.

Why think that propositional-attitude psychology should be extended to nonlinguistic creatures in the first place? Bermúdez spends an early and enlightening chapter demonstrating the limits of what he calls a minimalist or deflationary theory of nonlinguistic thought, one that attempts to account for the full range of behaviors exhibited by nonlinguistic creatures in terms of non-propositional thinking-how. A minimalist believes that such creatures can only represent the world via quasi-perceptual states that are context bound and that lack the internal structure of

propositional content. Though much behavior of nonlinguistic creatures can be explained in minimalist terms, Bermúdez convincingly argues that it fails to provide a comprehensive account. Phenomena like tool use by chimpanzees and prelinguistic hominids, and instrumental conditioning in which rats learn to choose actions based upon their consequences require appeal to propositional attitude psychology.

How, then, can we defensibly specify the relevant beliefs and desires in the absence of linguistic data? Bermúdez believes that success semantics can provide the answer. Under this picture, a belief's content amounts to its utility condition—namely, the state of affairs that satisfies the desires to which it is related. Similarly, a desire's content consists in its satisfaction conditions, the state of affairs that would lead to the cessation of the behavior funded by the desire. An animal's finding food, for example, satisfies the desire for nourishment and halts food-seeking. In linking behavior and content so closely, success semantics thus supplies a satisfactory way of specifying and identifying the content of nonlinguistic beliefs and desires.

Still, ascertaining content in this way faces Quinean inscrutability, for the “developmental psychologist animal behaviorist, or cognitive ethologist is in exactly the position of an idealized radical translator, with the utility/satisfaction-condition corresponding to the field linguist's stimulus situation” (p. 71). The way in which a creature represents the state of affairs that satisfies a desire can be regimented in any number of ways that yields differing ontologies. Bermúdez contends that we can in fact determine which particulars a nonlinguistic creature reifies and therefore provide the determinate contents of nonlinguistic thought. Spelke's work with infants and object perception, for example, suggests that infants consider two or more spatially contiguous entities to be a single object. Accordingly, we can conclude that they carve up the world according to higher-level physical properties that can be elucidated empirically.

Moreover, we can determine the sense or mode of presentation under which a nonlinguistic creature apprehends a utility condition by observing constancies across stimulus situations. Similar flight reactions to the same individual in differing contexts, for example, indicates that it is being represented not merely as a physical object but also as a predator.

After powerfully defending the commonalities of thinking with and without words, Bermúdez devotes the latter part of his book to elucidating the limits of the latter. Nonlinguistic thinking differs fundamentally in kind from linguistic thinking since “intentional ascent requires semantic ascent” (p. 151, e.g.). Higher-order thoughts require vehicles, Bermúdez maintains, and those vehicles must be personal-level, public-language sentences. Why? Reflection on our own reflexive thinking reveals that “[a]ll the *propositional* thoughts that we consciously introspect ... take the form of sentences in a public language” (pp. 159-160). Since nonlinguistic creatures have no suitable vehicles for thinking about thoughts, they are limited to first-order thinking and what little that entails, including only the rudimentary mechanics of protologic that precludes the possibility of nonlinguistic creatures’ conforming to prevailing models of practical rationality. They can have thoughts—just not thoughts about *other* thoughts.

This negative conclusion doesn’t prove as convincing as his positive one, however. One might be puzzled, for example, why Bermúdez emphasizes that success semantics provides a way of entering the minds of nonlinguistic creatures that doesn’t depend upon assuming their subjective perspective, only to hang his argument against nonlinguistic intentional ascent upon the phenomenology of our conscious experience—what it is like *for us* to think about thoughts. Why think that all thinking about thinking must share our phenomenology? Higher-order-thought theorists about consciousness—who, if Bermúdez is right, must deny that nonlinguistic creatures have conscious states at all—hold that the way in which we are conscious of ourselves

determines the phenomenology of our conscious experience, and in our case that may be ineluctably linguistic, shot through with “inner speech.” But we need better reason to conclude that one can only be conscious of one’s thoughts in this way.

And many believe that we have empirical grounds to think we aren’t the only creatures capable of introspection. Since Gordon Gallup, Jr. introduced the mark-test paradigm into comparative psychology over thirty years ago, evidence has continued to mount that a number of nonlinguistic species such as non-human primates, dolphins, and prelinguistic infants are capable of grasping that the reflection they see in a mirror is their own. Gallup’s (1987) explanation of this ability still dominates the literature—namely that mirror self-recognition demands that a creature know who it is in some cognitive sense, and this self-awareness is gained fundamentally through introspection. One may disagree with Gallup’s explanation (as I do), but given Bermúdez’s methodology and larger conclusion its omission here is notable and unfortunate.

Moreover, empirical data adduced throughout the book in support of thinking without words is curiously absent when Bermúdez makes his case for its limitations. Indeed, his claim that intentional ascent requires semantic ascent depends upon the reliability of introspection, but many philosophers and psychologists think less highly of this faculty than Bermúdez does. From Nisbett and Wilson’s (1977) seminal paper to Wegner’s (2002) recent work on the feeling of conscious will, many believe that ostensibly direct and immediate judgments about one’s own thoughts often prove confabulatory. Some have argued that introspection amounts to a kind of conscious self-interpretation not unlike the kind of intentional explanations given of the actions of others.

Perhaps most importantly, though, making a sharp distinction in kind between linguistic and nonlinguistic thinking makes it utterly mysterious how prelinguistic infants come to be

language users. According to the language of thought hypothesis, acquiring a public language requires translating between, say, sentences of English and sentences of mentalese, but this translation requires second-order hypotheses such as “Goats eat grass” is true in English if and only if *P*, where *P* is a sentence in mentalese. But it’s arguable that *any* account of language learning will include thinking about sentences—thinking, according to Bermúdez, unavailable to those on the wordless side of the linguistic divide.

Overall, those interested in the scope of cognition will be rewarded greatly by the read. Bermudez demonstrates convincingly that the complex suite of behaviors exhibited by creatures lacking language—and those studied by developmental and comparative psychologists and cognitive ethologists—cannot be explained without appeal to the tools of propositional-attitude psychology. Minds can be found all around us, in our chairs and in our cribs—and they may just be more like our own than we imagined.

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