Karen Neander's *A Mark of the Mental**

Karen Neander, *A Mark of the Mental*. Cambridge, MA: MIT Press, 2017. Pp. xv, 327.

Karen Neander's *A Mark of the Mental* is a noteworthy and novel contribution to the long-running project of naturalizing intentionality. The aim of the book is to "solve the part of Brentano's problem that is within reach" (3). Brentano's problem is the problem of explaining intentionality; the part of this problem that is supposedly within reach is that of explaining nonconceptual sensory-perceptual intentionality; and Neander aims to solve it via an informational teleosemantic theory. In this review, we provide a chapter-by-chapter summary followed by some discussion.

Summary

Chapter 1 outlines the book's project. Neander is interested in the phenomenon of intentionality, which she introduces through everyday examples

and Brentano's discussion of "intentional inexistence." One of Neander's starting assumptions is that most intentionality is ultimately derived from the underived (or *original*) intentionality of nonconceptual sensory-perceptual representations and perhaps some core concepts.[1] Neander's aim in her book is to help explain original intentionality by offering an account of nonconceptual sensory-perceptual intentionality.

Neander aims to provide a naturalistic theory of intentionality, one appealing only to nonsemantic ingredients that are "condoned by the natural sciences" (3). The theory she proposes centrally invokes three such ingredients: functions, causal relations, and relations of second-order similarity. The relevant notion of function is "malfunction-permitting" in that something might not fulfill its function. Neander is open-minded about how to further understand the notion of function at play, but her own preference is for an etiological understanding: roughly, something's function is what it was selected to do.

Although chapter 1 fixes reference on intentionality through discussion of Brentano and everyday cases, the rest of the book focuses almost exclusively on the subpersonal states posited by cognitive science. Chapter 2 provides some examples of such states and argues that they are "error-permitting" and hence genuinely intentional.

Chapter 3 argues that physiological and neurophysiological explanations

---

[1]This way of dividing the problem of intentionality is developed in more detail by proponents of the phenomenal intentionality theory, e.g. in Bourget 2010, Kriegel 2011, and Bourget and Mendelovici 2016.

of how systems operate appeal to (malfunction-permitting) functions. This is an interesting and surprising conclusion, since functions are not causally potent. Neander argues for her claim by describing ways in which an etiological notion of function can be useful in explanations of how systems operate, such as in specifying a "species design," abstracting away from pathology, and distinguishing normal from abnormal functioning.

Chapter 4 presents Neander's "methodological argument" for informational teleosemantics, the view that "natural-factive information" (roughly, what H. P. Grice [1957] calls "natural meaning") and functions both play a role in grounding intentionality. The lynchpin of the argument is the claim that mainstream cognitive science posits information-processing functions—functions to carry, send, or otherwise use (natural-factive) information. For Neander, information has a basic kind of "aboutness" and functions are "normative" in that they are malfunction-permitting. So, Neander claims, the information-processing functions that cognitive science appeals to have a kind of "normative aboutness." Neander concludes that informational teleosemantics is supported by cognitive science.

Chapter 5 provides a detailed discussion of the processing involved in toad prey-capture, arguing that when toads snap at their prey, the relevant visual representations represent *something small, dark, and moving*. To argue for this claim, Neander considers the contents it makes sense to posit from the perspective of an information-processing approach, proposing the principles that, first, perceptual representations must be normally causally sensitive to

3

what they represent and, second, "visual content must be extracted from the retinas by subsequent processing" (116). This provides Neander a theory-independent way of arguing for the kind of view she eventually proposes over alternatives like Ruth Millikan's (1984) and Carolyn Price's (2001).

Chapter 6 is a defense of response functions—"functions to respond to something by doing something" (126)—from detractors like Millikan (1984). The discussion is interesting in its own right but also paves the way to Neander's overall theory, which appeals to response functions.

Chapters 7–9 present Neander's theory of nonconceptual sensory-perceptual intentionality and argue that the view can handle six kinds of challenging cases for naturalistic theories of content determination. In offering her theory, Neander distinguishes between the question of representational status—the question of what it takes for something to count as a mental representation—from that of representational content—the question of what particular content some representation has. She focuses primarily on the question of representational content.

Neander's theory of content determination for sensory-perceptual representations has three parts, which are introduced sequentially in chapters 7–9. Chapter 7 introduces the first part of Neander's theory of content determination, CT (short for "Causal Theory"), which combines functions and causal relations: If R is a sensory-perceptual representation produced by a system whose function it is to respond to C by producing R, then R represents C. Chapter 8 introduces the second part of Neander's theory, CDAT (short for

"Causally Driven Analogs and Teleosemantics"), which appeals to relations of second-order similarity: If R is a sensory-perceptual representation produced by an internal system that has the function of producing analogs of external items in response to those external items, then R represents the external item of which it is an analog. One purported benefit of CDAT is that it allows for "novel" contents since it allows items that did not play a role in determining a system's proper function to be represented. Chapter 9 introduces the third and final part of Neander's theory, the "distality principle," according to which if the above conditions determine more than one content, only the most causally distal content is represented.

The overall theory of content determination has an if...then...else if structure and might be summarized as follows: If R is a sensory-perceptual representation produced by an internal system that has the function of producing analogs of external items in response to those items, then R represents the most distal external item of which it is an analog. Else, if R is a sensory-perceptual representation produced by a system whose function is to respond to an item by producing R, then R represents the most distal such item.

Chapter 8 also briefly considers the representational status question. Neander suggests, roughly, that a representational system is a system that evolved to mirror the external world and that representations are the elements of a representational system such that the relations between them are supposed to mirror the relations between things in the external world in the way specified by the correct theory of content determination (pp. 178-9).

This proposal is clearest in the case of representations that are supposed to get their content by satisfying CDAT, since CDAT determines ways in which relations between representations are supposed to mirror relations between items in the external world. It is less clear how this applies to representations that are supposed to get their content by satisfying CT.

Discussion

Neander offers a novel and important view, one that should be considered by anyone interested in the project of naturalizing intentionality. In the remainder of this review, we consider some challenges for the arguments, view, and general approach.

The Methodological Argument

Neander's core argument for informational teleosemantics, the methodological argument, moves from the claim that cognitive science posits informational functions, which have "normative aboutness," to informational teleosemantics, the view that information and functions both play a role in grounding all intentionality. In order for informational teleosemantics to be true, some combination of information and functions must be necessary and sufficient for (at least actual-world instances of) original intentionality. But, even assuming that cognitive science is right in positing informational functions, the existence of such functions secures neither the necessity nor the sufficiency claim. It does not secure the sufficiency claim because it does not address the

possibility that there are the relevant informational functions but that they do not secure intentionality. It does not secure the necessity claim because, even if informational functions were sufficient for intentionality, there might be other ways for original intentionality to arise.

Challenging Cases

Neander maintains that her theory of content determination makes the right predictions in the six challenging cases she considers while many alternative theories do not. To our minds, Neander's theory plausibly handles the six cases, which lends support to the view. However, there are other cases in which it seems not to make the right predictions.

One such case is that of novel contents, which are supposed to be handled by CDAT. The problem is that CDAT does not ascribe such novel contents determinately. Suppose a system representing acceleration has five possible states, S_1... S_5, and that selection determined that the function of the system is to produce S_1 in response to acceleration of 0m/s^2, S_2 in response to acceleration of 0–1m/s^2, and S_5 in response to acceleration greater than 5m/s^2. Suppose, further, that S_3 and S_4 never occurred in any function-conferring circumstances. While CDAT fixes the contents associated with S_1, S_2, and S_5, it does not give us a unique way of assigning contents to S_3 and S_4. This is because, as Neander maintains, an analog system can exhibit distortion of the similarity distances between represented contents and representations. For example, it could be that the members of all pairs

7

of consecutive representations in the $S_1 \ldots$ S_5 series are equally similar to each other in the relevant respects, but the content of S_1 is more similar to the content of S_2 in the relevant respects than the content of S_4 is to the content of S_5. Because of the possibility of distortion, the system's function-conferring history is compatible with multiple assignments of contents to S_3 and S_4, with different assignments corresponding to different ways of varying similarity distances between contents relative to similarity distances between representations. This "interpolation problem" means that the theory does not make determinate content attributions in such cases (which, presumably, determinately represent whatever contents they represent).

Another kind of case is that of reliable misrepresentation, in which a properly functioning system produces a representation that represents one thing even though it is reliably caused by something else (see Mendelovici 2013, 2016). An example of such a case might be that of conscious perceptual color representations, which are produced by systems having the function of producing representations in response to particular surface reflectance profiles but which, arguably, represent primitive color properties. Neander's theory predicts that these color representations in fact represent surface reflectance profiles, so it cannot accommodate these kinds of cases of reliable misrepresentation. We suspect Neander would bite the bullet here and deny that such cases of reliable misrepresentation are possible. (Indeed, in a different context, Neander suggests that color representations represent "kolors," the properties that perceptual color representations have the function to carry

8

information about.) Neander might defend her theory's content attributions by arguing that they make the most sense from an information-processing perspective, appealing to the two principles mentioned earlier. However, it is not clear that they are the correct attributions from the perspective of offering a theory of intentionality in the everyday/Brentanian sense. This brings us to our central worry.

Making Contact with the Intial Target

Our central worry is that Neander's core arguments do not clearly make contact with her initial target, nonconceptual sensory-perceptual intentionality, where intentionality is understood as the everyday phenomenon that Brentano was worried about. Chapter 1 introduces intentionality by way of everyday examples like tasting a cup of coffee, recalling a white sandy beach, and imagining walking on Mars. Neander writes, "In a way, nothing could be more familiar to us than this representational power of mental states, and yet its fundamental nature remains mysterious" (1). The reader is promised an account that sheds light on this familiar yet mysterious phenomenon. However, the rest of the book focuses on offering a notion of representation fitted to an information-processing story of the unconscious subpersonal states posited by cognitive science, invoking principles and constraints that are (arguably) appropriate to this target. Unsurprisingly, this account applies relatively well to the unconscious subpersonal states posited by cognitive science, but not enough is said to show that it applies to the

nonconceptual sensory-perceptual *everyday cases* that are part of Neander's initial target—such as that of conscious color representation—which, as suggested earlier, challenge the view.

One might suggest that the material of chapter 2, which argues that the unconscious subpersonal states posited by cognitive science are intentional, can help motivate this shift in focus: Even if Neander does not say much to show how her theory can explain the everyday cases we started off with, the cases she does focus on are instances of the same phenomenon. But the argument in chapter 2 relies on a pre-theoretic test for intentionality according to which, as we understand it, any state that satisfies a loose notion of representation and is "error-permitting" qualifies as intentional. While passing this test might be necessary for intentionality in the everyday/Brentanian sense, further argument is needed to motivate the claim that it is sufficient. One reason to think it is not is that it overgenerates, counting as intentional any notion of information such that X can carry information about Y even if Y does not obtain. Indeed, it overgenerates by Neander's own lights, since many of the states described by theories competing with her own pass the test. For example, the states described by Fodor's asymmetric dependence theory can loosely be said to represent and are "error-permitting" in that they can occur in the absense of what Fodor's theory relates them to, but, if Neander is right, they are not thereby intentional.[2]

---

[2]Chapter 2 also suggests that the states posited by cognitive science are well-described by ascriptions exhibiting failure of substitutivity of co-referring terms, which supports their being intentional, though there are reasons to think that being well-described by

If all this is right, then, while Neander provides a potentially rich and fruitful discussion of the kind of representation implicit in cognitive science, more needs to be said to show that this sheds light on the phenomenon of intentionality.

Overall, *A Mark of the Mental* is an interesting and stimulating read packed with novel ideas for the naturalist's toolkit. The proposed theory is an important competitor to other theories, and the background discussions of functions, theory-independent ways of determining the contents of representations, and toad prey-capture are interesting in their own right. We recommend this book to anyone interested in intentionality, philosophy of biology, or philosophy of cognitive science.[3]

Angela Mendelovici and David Bourget
The University of Western Ontario

References

Bourget, D. (2010). Consciousness is underived intentionality. *Noûs*, 44(1):32–58.

Bourget, D. and Mendelovici, A. (2016). Phenomenal intentionality. In *Stanford Encyclopedia of Philosophy*.

Forbes, G. (2008). Intensional transitive verbs. In Zalta, E., editor, *Stanford Encyclopedia of Philosophy*.

Grice, H. P. (1957). Meaning. *Philosophical Review*, 66(3):377–388.

---

ascriptions exhibiting failure of substitutivity is not sufficient for intentionality (Larson 2002 and Forbes 2008).

[3]Many thanks to Karen Neander for very helpful feedback and discussion. Thanks also to the journal's book review editor for helpful comments.

Kriegel, U. (2011). The Sources of Intentionality. Oxford University Press.

Larson, R. (2002). The grammar of intentionality. In Peter, G. and Preyer, G., editors, *Logical Form and Language*, pages 228–62. Oxford University Press.

Mendelovici, A. (2013). Reliable misrepresentation and tracking theories of mental representation. *Philosophical Studies*, 165(2):421–443.

Mendelovici, A. (2016). Why tracking theories should allow for clean cases of reliable misrepresentation. *Disputatio*, 8(42):57–92.

Millikan, R. G. (1984). *Language, Thought and Other Biological Categories*. MIT Press.

Price, C. S. (2001). *Functions in Mind: A Theory of Intentional Content*. Oxford University Press.