

The New Science of the Mind: From Extended Mind to Embodied Phenomenology

Mark Rowlands

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The New Science of the Mind is a systematic and highly original defense of the claim that *external processes* “*can, in part, literally constitute [some] cognitive processes*” (p. 22, italics added). This one-line summary of the book requires a fair amount of unpacking.

- Rowlands does not define the term *process*. Still, one can surmise that for the purposes of the book, a process is that which, at least in part, manipulates, exploits, or transforms structures. But this preliminary definition only invites further questions. A particularly pressing one is, what is a structure? Rowlands provides examples: the retina, Gibson’s optic array, parts of telescopes or computers, and parts of the body. Structures are items that, for the most part, either bear or are capable of bearing information.
- A process is *external* if the structures that it manipulates, exploits, or transforms lie outside the boundaries of the brain.
- External structures *can* but do not have to be parts of cognitive processes: the latter are not *necessarily* composed of the former.
- External processes only *partly* constitute some (but not all) cognitive processes. “There is always an irreducible internal-neural and, sometimes, also wider bodily-contribution to the constitution of any mental process” (p. 59).

The resulting conception of the mind is characterized by a rejection of the claim that cognitive processes “are either identical with brain processes or exclusively realized by brain processes” (p. 2). Bodily and worldly structures can also be literal parts of cognitive processes. (Unless otherwise specified, I use the term *cognitive* broadly, so as to include perceptual processes as well.) Rowlands calls this view the non-Cartesian conception of the mind.

The New Science of the Mind consists of eight chapters. In the first two, Rowlands respectively articulates the general contours of the non-Cartesian view and argues that such a view of the mind “is motivated by empirical work in a variety of cognate disciplines” (p. 25). In chapter 3, Rowlands delineates the theses of embodied, extended, embedded, and enacted mind; makes explicit their relationship to the non-Cartesian view; and concludes that “at the heart of a non-Cartesian cognitive science, we find [only] the mind embodied and the mind extended” (p. 83). Rowlands calls the combination of these two views “*the amalgamated mind*” (ibid.). In chapter 4, Rowlands considers four influential objections to the amalgamated mind and argues that they all reduce to the objection that the extended and embodied theses are “incompatible with any plausible mark of the cognitive” (p. 86).

Rowlands offers a mark of the cognitive that purports to vindicate the extended and embodied theses in chapter 5. There, he argues that any process *P* which satisfies the following conditions is a cognitive process:

1. *P* involves *information processing*—the manipulation and transformation of information-bearing structures.
2. This information processing has the *proper function of making available* either to the subject or to subsequent processing operations information that was, prior to this processing, unavailable.

3. This information is made available by way of the production, in the subject of P , of a *representational* state.
4. P is a process that *belongs* to the *subject* of that *representational* state (pp. 110-111).

As Rowlands admits, conditions (1)–(3) are too permissive (pp. 137-138). Most of the work is done by (4). But in what sense does a process that already meets conditions (1)–(3) need to belong to a subject in order to count as cognitive? This is what Rowlands calls “the problem of ownership” (p. 136). Chapters 6–8 provide Rowlands’ solution to this problem.

Chapter 6 embodies the following dialectic. Given the distinction between personal-level and subpersonal-level cognitive processes, the problem of ownership arises for both types of cognitive processes. The ownership of the latter type of processes should be understood in terms of the idea of integration. Specifically, a subpersonal process P_{sub} belongs to a subject only if P_{sub} is “appropriately integrated into the subject” (p. 151), i.e., only if “it makes some contribution to the personal-level cognitive life of the subject” (p. 147). Thus, the ownership of subpersonal processes turns out to be “derivative upon the ownership of personal cognitive processes” (p. 151). To solve the problem of ownership for personal-level processes, Rowlands suggests that we should first think of such processes as activities that can be subsumed under a “general activity-type” and, then look for an answer to the question, in what sense can we own this sort of general activity-type (p. 152)? Rowlands argues that we own a personal-level process when we have *epistemic authority* over it. Although epistemic authority should not be taken as “a criterion of ownership of personal-level cognitive processes” (p. 157), it is a “tolerably reliable indicator” of such ownership nonetheless (p. 156).

Rowlands attempts to explicate the notion of epistemic authority via the following example (pp. 152-154). In building a house one has epistemic authority over the activity of laying the bricks insofar as one is “acquainted with the bricks in all relevant and necessary ways” and insofar as one recognizes “the characteristics of good mortar” (p. 153). But it is rather unclear to me how exactly the epistemic authority that one has over laying bricks relates to the epistemic authority that one has over personal-level cognitive processes, for example, remembering. Is it knowledge of certain characteristics of the products of such a process, i.e., memories? Or is it the ability to recreate in imagination (aspects of) my memories? Neither suffices to make memories mine. I can know plenty about the memories of someone else; I can even imaginatively recreate aspects of someone else’s memories. Or consider thinking. In the case of bricks or mortar, epistemic authority amounts to knowledge about characteristics of bricks and mortar. But in the case of thinking, knowing whether a reasoning pattern is valid or invalid, for instance, does not make that pattern of reasoning mine. Perhaps epistemic authority over the processes of remembering or thinking amounts to knowledge that either the processes themselves, or the products of such processes, are mine. This characterization of epistemic authority still does not help Rowlands. Epistemic authority over a process P_{per} cannot just be knowledge of the fact that P_{per} belongs to me, nor can it be knowledge of the fact that the products of P_{per} belong to me. The claim that a process P_{per} is mine if I know that P_{per} (or a product of P_{per}) is mine, does not solve the problem of ownership. It merely postpones it. Later on, Rowlands does say that an understanding of ownership in terms of authority is ultimately derivative of an understanding of ownership in terms of disclosure. But to say that such understanding of authority is derivative neither vitiates the previous claim that epistemic authority is a “tolerably reliable indicator” of ownership, nor does it solve the problems to which the notion of epistemic authority gives rise (p. 156).

In the last two chapters, Rowlands undertakes an intriguing examination of intentionality. His goal is to show that “the ideas that cognitive processes should be embodied and extended are utterly quotidian—practically banal implications of a proper understanding of intentionality” (p. 164). But what exactly, according to Rowlands, is this proper understanding of intentionality? Take

experiences first. “Experiences,” Rowlands tells us, “are not just items *of* which we are aware,” but “also items *in virtue* of which we are aware” (p. 169). Yet the features of experiences in virtue of which we become aware of objects cannot themselves be experienced—otherwise, we would have an infinite regress. Thus, there is more to experience than the objects of which we are aware. Rowlands shows that a structurally similar argument applies to modes of presentation: a mode of presentation can be understood both as that *of which we are aware* and as that *in virtue of which we are aware* (p. 183ff.). Out of these two ways of understanding modes of presentation, it is the latter that captures the essence of intentionality: intentionality is best understood as that in virtue of which we are made aware of objects or, in Rowlands’ Heideggerian-inspired terminology, as a type of revelation or disclosure. Insofar as experiences and cognition are intentional, they are types of revelation or disclosure; but insofar as “disclosing is, in general, indifferent to its location,” cognitive and perceptual processes are extended (p. 187).

Suppose that we grant that the transcendental conditions of cognition are not items of which we are aware. Suppose that we also identify these conditions with a form of disclosing and that we accept that theoretically and abstractly speaking, disclosing is location-independent insofar as its vehicles are location-independent. Having assumed all that, have we shown that cognition extends? Yes, but in a sense which will be granted by a good deal of opponents of the non-Cartesian view. What we have shown is the *possibility* of extended cognition. Yet, the debate surrounding the non-Cartesian conception of the mind is primarily concerned with whether cognition is *actually* extended or embodied. Thus, Rowlands needs to show something more. Specifically, he needs to show that some of the aspects of intentionality in virtue of which things are disclosed to us are located (at least, partly) outside the boundaries of the brain. Or since the kind of disclosure relevant to the vehicles of cognition is causal and not constitutive (pp. 191-196), Rowlands needs to show that the “causal disclosure of the world does not take place purely inside the head of a subject” (p. 195). Only then will the non-Cartesian view be vindicated.

Rowlands does provide examples of what he takes to be extended vehicles of cognition: the cane of a blind person (pp. 196-198), saccadic eye movements (pp. 202-203), the activities involved in the identification of sensorimotor contingencies (pp. 204-205), and the manipulation of the optic array (pp. 205-206). The aforesaid examples count as extended vehicles of cognition, Rowlands tells us, because they are external and causally disclose the world to the subject. I suspect that skeptics of the non-Cartesian view will find the notion of causal disclosure in need of further explication. If by causal disclosure, we mean *all* things that causally contribute to the disclosure of a personal-level state, then causal disclosure seems to be too permissive. If, however, we restrict causal disclosure to those things that meet a certain list of conditions, then we are back in a search for an adequate mark of the cognitive. But the crucial condition of Rowlands’ mark of the cognitive, i.e., condition (4), does not seem to be of help: either ownership is understood derivatively in terms of epistemic authority, or it is understood as a feature of disclosure (pp. 214-217). If the former, then, as I pointed out, it is unclear to what epistemic authority over personal-level processes amounts. If the latter, then the notion of ownership is unhelpful in demarcating the relevant causal contributions from the irrelevant, for ownership is itself given in terms of causal disclosure. As Rowlands himself states, “At the personal level, a cognitive process is mine when it causally discloses the world to me” (p. 216). The notion of ownership, if understood in terms of causal disclosure, cannot be used to explicate causal disclosure. Thus, neither of the two solutions to the problem of ownership that Rowlands provides seem to do the work that he needs them to do.

This review cannot do justice to the wealth of material that lies within the covers of Rowlands’ book. The critical remarks that I have raised above are simply a testament to the great extent to which I was engaged with the book. In addition to being meticulously argued, *The New Science of the Mind* shows in a refreshing and convincing manner the relevance of the history of philosophy to contemporary debates in the philosophy of mind.

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