Review of Mark Rowlands’ The Body in MInd (CUP, 1999)

Pierre Jacob

To cite this version:


HAL Id: ijn_00000168
https://jeannicod.ccsd.cnrs.fr/ijn_00000168

Submitted on 1 Oct 2002

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Review

The Body in Mind, Understanding Cognitive Processes
by Mark Rowland.

PIERRE JACOB

On Mark Rowland’s view, much current philosophy of mind is in the grip of the internalist picture of the mind (internalism for short). Rowland thinks of the role of this picture on the model of how Wittgenstein thought of Freud’s views of the unconscious as in the grip of a mythology (pp. 8–12). Rowland rejects internalism. But a picture or a myth is not something that is directly open either to confirmation or refutation: its propositional content is not sharp enough to be directly tested. Hence, in his book, The Body in Mind, Rowland wants to ‘subvert’ the myth (pp. 12–15). His stated purpose is not to demonstrate that it is empirically inadequate let alone logically incoherent. His goal is to show that internalism is not mandatory, i.e. that a different picture of the mind is possible. In this very stimulating book, he does present such an alternative picture which he labels environmentalism. In so doing, he makes his own significant contribution to the fast growing body of anti-internalist philosophy of cognitive science, which is currently referred to under such various labels as ‘situated cognition’, ‘the extended mind’, the ‘embedded mind’, or, as implied by the title of his book, ‘the embodied mind’.¹

Not unreasonably, Rowland ascribes two theses to internalism: a primary ontological thesis and a derivative epistemological thesis (p. 8). According to the former, mental states and processes are located exclusively inside the skin (and skull) of cognizing organisms. According to the latter, which quite naturally follows from the former, it is possible to derive knowledge of the mind by focusing only on events and processes occurring within the skin of cognizing organisms, e.g. on brain processes. Environmentalism is then defined as

¹ Clark (1997) falls squarely in this tradition.

© Blackwell Publishers Ltd. 2002, 108 Cowley Road, Oxford, OX4 1JF, UK and 350 Main Street, Malden, MA 02148, USA.
the negation of internalism: neither are mental states and processes located
exclusively inside the skin of cognizing organisms, nor are they knowable by
focusing only on what is happening there (pp. 22, 31). At first sight, environ-
mentalism looks suspiciously close to externalist views of the mind. But there
is an interesting difference between Rowlands’ environmentalism and most
versions of externalism, whether social or non-social, which have been dis-
cussed since Hilary Putnam’s (1974) seminal paper.

To see what is at issue here, consider Rowlands’ methodological distinction
between two complementary tasks: psychotectonics and psychosemantics.2
Psychotectonics deals with the engineering question: Which cognitive pro-
cesses are required to build a mind? Psychosemantics tries to account for mental
representations qua representations, i.e. to account for the fact that mental
representations are states with content. Externalism is generally put forward as
a principle of individuation of meaning or content: a person could not enter-
tain such and such a thought unless she stood in some appropriate relation to
objects, properties and relations instantiated in her environment. Because most
arguments in favor of externalism belong to psychosemantics, not to psycho-
tectonics, they are ineffective against the internalist ontological claim construed
as a claim about the location of mental states and processes. Although the
individuation of the content of an individual’s thought may depend upon
relations between the individual’s brain and items in her environment, none-
theless the thought may well be a brain state. If so, then it will be securely
located within the individual’s skull.

Rowlands’ major goal then is to make plausible the environmentalist onto-
logical claim that the location of an individual’s mind is not coextensive with
the location of her brain. His method is to shift the burden of the anti-
internalist argument from psychosemantics to psychotectonics: he argues that
‘minds are hybrid entities’ (p. 29) by providing evidence that the cognitive
processes required to build a human mind are not pure brain processes. Human
cognition involves the manipulation of external structures which carry infor-
mation about the environment. I started the book, I must confess, being an
internalist. After reading the book, I still am an internalist in Rowland’s sense.
I am not an environmentalist in his sense. I am an externalist since I believe
that the contents of many of my thoughts are extrinsic, not intrinsic, properties
of my brain: they depend on the relations between my brain and its environ-
ment. But I still believe that my thoughts are in my brain.

Although most of the book (part I, which involves seven chapters) is
devoted to psychotectonics, nonetheless part II (which involves only three
chapters) is devoted to psychosemantics. I will start with the latter. At the
beginning of Part II, Rowlands examines two naturalistic approaches to mental

---

2 ‘Psychotectonics’ was coined by Colin McGinn (1989). ‘Psychosemantics’ is of course part
of the title of Jerry Fodor’s (1987).
content: informational semantics and teleological semantics. He argues that teleological semantics has the resources to solve one major problem which informational semantics fails to solve, namely the problem of misrepresentation (pp. 212–29). However, teleological semantics, which Rowlands accepts, is widely supposed to face two major problems: the problem of indeterminacy and the problem of transparency. Thus, Rowlands’ goal in Part II is to solve them. In fact, he provides one and the same solution to both. His solution is on the whole, I think, quite successful.

Frogs visually detect flies which they catch by means of a rapid strike with their tongue. Frogs’ motor response can also be triggered by the motion of lead pellets which are not flies. The question is: What is the content of a state of the frog’s visual system? Does it represent the presence of flies or the presence of small black moving dots? From a teleological semantic standpoint, there seems to be no fact of the matter. This is the problem of indeterminacy. The property of being a fly and the property of being a small black moving dot are (and have been in the past) reliably coinstantiated. If the frog’s visual system has been selected for detecting the former, then it must have been selected for detecting the latter. This is the problem of transparency.

First, Rowlands’ solution is based upon a distinction between what he calls respectively a mechanism’s ‘organismic’ proper function and its ‘algorithmic’ proper function, where a mechanism presumably possesses the former in virtue of possessing the latter (pp. 238–44). Second, Rowlands claims that the mechanism’s algorithmic proper function and the mechanism’s organismic proper function do not underwrite ascriptions of content to one and the same thing; whereas the latter warrants attribution of content to the whole organism, the former warrants attribution of content to a sub-organismic state of the mechanism (pp. 244–48). Both the problem of indeterminacy and the problem of transparency arise from the assumption that two distinct contents attach to one and the same object. On Rowlands’ view, the algorithmic proper function of the frog’s visual system is for it to represent small black moving dots. The organismic proper function of the frog’s visual system is to enable the frog (not its visual system) to detect, not flies per se, but eatibility. Hence, both problems—indeterminacy and transparency—evaporate.3

I now turn to Rowlands’ major goal: to make plausible the ontological environmentalist thesis. In chapter 4, he argues in favor of what he calls the ‘manipulate the environment’ strategy. Suppose an organism is faced with a certain task, e.g. lift a weight (p. 93). Broadly speaking, he has the choice between two strategies, which Rowlands calls respectively ‘manipulative’ and ‘non-manipulative’ strategies. A non-manipulative strategy would consist in engaging in a program of body-building until you are able to lift the weight,

---

3 It follows from Rowlands’ account that, whatever its algorithmic proper function, the organismic proper function of the mechanism which allows a predator to detect a prey is to enable the predator to represent eatibility.
i.e. in developing one’s own inner resources to solve the task. A manipulative strategy would consist in getting someone else to lift it for you, i.e. in exploiting opportunities afforded by the environment to get the job done. The rationale for manipulative strategies is variously epitomized by variants of Occam’s razor and by what Rowlands calls ‘the barking dog principle’. The former is the injunction to ‘work smart, not hard’, or to minimize effort (p. 21). The latter says (pp. 79–81): if you keep a dog, then he will bark for you. In chapter 4, Rowlands assembles interesting and detailed evolutionary considerations (such as parasitic behavior) in favor of the view that, everything considered, manipulative strategies are generally more adaptive than non-manipulative strategies: they are more likely to enhance the organism’s overall fitness.

Each of chapters 5 to 8, then, is devoted to the task of spelling out how the ‘manipulate the environment’ strategy applies to such basic human cognitive processes as visual perception, memory, thought, language-use and language-acquisition. Human cognition, on Rowlands’ view, has exceptional opportunistic abilities: it is an engine uniquely geared towards the manipulation of environmental structures.

In chapters 7 and 8, Rowlands relies on connectionist modelling of mathematical reasoning, language-use and language-acquisition. He vigorously sides with the connectionists against the advocates of the symbolic paradigm. Whether, as argued in chapter 7 on thought, various kinds of pattern-mapping (e.g. pattern-recognition, pattern-completion, pattern-transformation, pattern-association) can indeed account for the human ability to perform logical and arithmetical operations is something very controversial and widely discussed. Consider e.g. the claim (p. 164) that an ‘embodied network’ with a pattern-recognition device capable of recognizing external symbols such as ’2’, ’x’ and ’3’ and a pattern-completion device capable of completing already recognized patterns such as ’2 × 3 =...’ can be credited with the ‘capacity to manipulate mathematical structures’. I would find suspicious the claim that such an embodied network could be said to understand the multiplication function.

In chapter 8 on language, Rowlands seems willing to concede that the properties ascribed by Fodor and Pylyshyn (1988) to thought—i.e. productivity, systematicity and inferential coherence—are exemplified by sentences of external public languages. But he denies that they are properties of thoughts or mental representations. The question naturally arises: How could an organism whose internal representations lack productivity, systematicity and inferential coherence ever acquire and use an external system of representations with these properties? How could the former represent the latter? Rowlands’ suggested answer to this question seems to me either handwaving or unintelligible. The suggestion is that such properties as productivity and systematicity are ‘effected’ in or by the external linguistic system and ‘enforced’ by the community-wide patterns of use of the external symbols (pp. 178–82). Productivity and systematicity seem to me to be properties which are instantiated
(or exemplified), not effected, by sentences of natural languages. The question
is whether they are exemplified by human thoughts and mental represen-
tations. Whether they could be ‘enforced’ by communal practices upon an
organism whose internal representations cannot exemplify them seemed a mys-
tery to Chomsky years ago. It still seems so to me.

In chapter 5, Rowlands exploits two insights from James Gibson’s ecologi-
cal approach to visual perception. The first insight is Gibson’s general emphasis
on the role of action and movement in visual perception. Gibson’s second
insight is that much of visual perception consists specifically in manipulating
information contained in what he calls ‘the optic array’. The optic array is an
objective commodity present in the environment: the former conveys infor-
mation about the latter. At bottom, Rowlands’ view is that the human visual
system is a tool for action upon, and manipulation of, the optic array. Visual
information processing consists in ‘effecting transformations’ in the optic array
in order to extract information from it.

Now, the view that visual perception is nothing but a certain kind of action
raises at least two problems one of which is straightforwardly empirical and
the other conceptual. It is an empirical question whether, as argued by Milner
and Goodale (1995), the two visual pathways of the human brain—the dorsal
stream and the ventral stream—process visual information in two fundamen-
tally different ways: a vision-for-action and a vision-for-perception. If they
are right, then visual perception cannot consist in action. The conceptual prob-
lem is this: if visual perception is constituted by the manipulation of external
information carrying structures contained in the optic array and if it in turn
requires the identification or at least the detection of the structures to be
manipulated, then the view seems plainly threatened by circularity. The culprit
is, I think, Rowlands’ relaxed use of the word ‘manipulation’ throughout
the book.

The goal of chapter 6 is to capture what Rowlands takes to be the funda-
mental trend in the evolution of modern human memory, i.e. semantic mem-
ory. On his view, the functional architecture of the modern human semantic
memory system is fundamentally different from its procedural and episodic
precursors. What is distinctive of modern human semantic memory is the
‘incorporation of external means of representation’ (p. 129), i.e. the increasing
ability to use external data structures or representations for the purpose of
storing information. Consider the task of reporting verbal military instructions.
Rowlands contrasts two kinds of transmission: whereas preliterate people must
rely heavily on their episodic memory resources to store the exact sequence
of words used, people with the ability to use visuographic representations can

---

4 On p. 2, Rowlands dismisses the problem of consciousness. His dismissal is of a piece with
his insistence that perception is action of a certain sort.

5 Early on (p. 23) Rowlands acknowledges the fact that his use of ‘manipulation’ is loose.
restrict their reliance on episodic memory resources to the learning of the
visuographic code (pp. 134–5).

Both chapters (on visual perception and memory) are supposed to lend
support to the view that the manipulation of external structures is constitutive
of some human cognitive processes, and hence to the ontological claim that
not all cognitive processes are located within an individual’s brain. Rowlands
thinks that the conclusion is to be reached roughly by means of the following
sequence of steps in reversed order (pp. 108, 122): (i) the manipulation of
physical structures in the environment is relevant to achieving some cognitive
task T (ii) We cannot assess the amount of internal information processing
required in order to achieve T until we know what relevant information is
available in the environment. (iii) The amount of internal information pro-
cessing needed in order to perform T is inversely proportional to the amount
of relevant information available in the environmental structures.

Notice that step (ii) in the reasoning is epistemological, not ontological.
Furthermore, I do not think that Rowlands should be granted step (iii) for
free. To see why not, consider again the illustration of such principles of
manipulative strategies as ‘the barking dog principle’ or the revised version of
Occam’s razor principle: it is more adaptive to get someone else to lift a weight
for you than to engage in a program of body-building. Now, only a creature
with the cognitive ability to communicate with conspecifics will be able to
choose the manipulative strategy. I take it that quite a lot of internal infor-
mation processing must take place in order to enable a creature to engage
in communication with conspecifics, such as the ability to represent mental
representations. More internal processing, not less, seems required in order to
minimize muscular exercise. Similarly, the use of visuographic representations
may alleviate the amount of information storage. But there may well be a trade-
off between storage capacity and the computational resources required to use
external representations: first of all, if a device is to use external representations,
it better be able to extract their meanings. Secondly, more computation, not
less, might be required in order to draw inferences from a thinner internal
data base.

As I see it, the major problem with Rowlands’ strategy here is that what
he requires is that the external structures be constitutive of human cognition.
Unless they are, Rowlands will not get his desired ontological conclusion.
Although I found the book very challenging, I remain unconvinced. Consider
the following analogy: microscopes contribute mightily to human knowledge
about viruses. From the fact that microscopes are powerful tools in forming
justified true beliefs about viruses, it does not follow that microscopes are
constitutive of the contents of thoughts about viruses or that they are part
of the meaning of the English word ‘virus’. Similarly, from the fact that the
manipulation of some external structure is relevant to achieving a given cogni-
tive task, it does not follow, it seems to me, that the external structure consti-
tutes human cognition.

Institut Jean Nicod
CNRS, Paris, France

© Blackwell Publishers Ltd. 2002
References