Bodily Awareness and Bodily Action

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The body is at the centre of physical action. Even when one’s action ranges beyond the boundaries of one’s body, as it often does, one is (typically) acting with one’s body in some way. The normal situation of an agent is thus one where she is striving with her body in some way in order to achieve her aims in the circumstances she is faced with. Are there conditions on striving with one’s body? Intuitively, to act with a body part, one needs to know the state and position of that body part in order to have some sense of how one can strive with it to achieve one’s aims in a particular scenario. This sense of how one might strive with a body part may be inarticulate; it may consist in no more than the agent being able to demonstrate what she will do, which she might express with “I’ll do something like this.” But what puts the agent in a position to know is the state and position of the body parts she is acting with, so that she may even begin to have some inarticulate sense of what she can do? Is it sight, touch, or any of the familiar sense modalities? We are not always sensing the body parts we are acting with through the familiar perceptual modalities, since our attention is drawn outwards to the external objects we act on; yet we are able to strive with our body on demand. How is this possible?

What is less noticed is another set of sense experiences that are ubiquitous and yet unattended to. These experiences tend to lurk in the background, in the shadow of our experiences of the world outside. On occasion, they cry out for attention, as when one experiences an acute pain, an intense pleasure, or an urgent itch. But their typical manifestation is inconspicuous. I am referring to our experiences of our bodies and of their various parts ‘from the inside,’ experiences which we may unify under the label of bodily awareness. Bodily awareness really consists of a ragtag group of ways of sensing one’s body: familiar instances include experience of the location, movement, and temperature of parts of one’s body; awareness of whether one is fatigued or hungry, whether some part of one’s body is hurt, and whether one is upside down. Once we bring out the presence of this ‘modality,’ its importance is obvious. We have noted that the normal situation of an agent involves her striving with her body in some way to accomplish her ends. The thought, then, is that bodily awareness is always there to provide these parameters about the state and position of body parts, presenting them to the agent so that she can control her actions. Thus bodily awareness can come to seem central to the possibility of bodily action.
Despite the intuitive force of these initial thoughts, the alleged centrality of bodily awareness in bodily action is hard to articulate and, as a consequence, it is hard to evaluate. My approach in this chapter will be to sketch the orthodox account of the relation between bodily awareness and bodily action and to attempt to convey a sense of the depth and difficulty of the topic by way of exploring various problems in it.

The forms of bodily awareness are various. In connection with bodily action, that is, with acting with one’s body, the modes of bodily awareness that are most important are those that relate to sensing spatial and kinematic properties of one’s body – proprioception and kinaesthesia – and, to a lesser extent, properties like fatigue and effort.

The most natural claim concerning the relation between bodily awareness and bodily action is that bodily action is possible because of bodily awareness. This corresponds to the natural direction of explanation for how we think experience rationalizes and guides behavior (though there may be critical differences between bodily awareness and exteroceptive modalities). This line of thought is developed in the work of Brian O’Shaughnessy (1980, 1995, 2001, and 2008). O’Shaughnessy’s work is immensely rich and complex; it is the most detailed exploration of our topic in the philosophical canon. Our discussion will not be able to do justice to the richness of his discussion, but let us focus on the core of his central claim that bodily awareness is necessary for bodily action. This claim may be developed in many different ways. Three important ways are:

1. bodily awareness is a condition on bodily action in some general sense;
2. bodily awareness is required for the control of bodily action; and
3. bodily awareness is necessary for knowing what one is doing when one acts with one’s body.

Observe that, even if the latter two claims were false, the former might still be true. The most straightforward of the three theses is the second one, and it has some claim to capturing the intuitive force of the thought behind the necessity of bodily awareness for bodily action. We might make the claim more precise by stating it as follows: acting directly with a body part requires feeling that body part ‘from the inside’ at the time of acting. Call this Necessity. By ‘acting directly,’ I mean to pick up on an intuitive notion of ‘basic action’ (roughly corresponding to teleological basicness) that which I perform not by performing any distinct action. So I act directly with my left hand when I just raise it, as opposed to raising it with my right hand. We can discern three strands of argument for necessity in O’Shaughnessy’s work. The first is that acting with a body part is inconceivable without feeling that body part ‘from the inside.’ The second is that bodily awareness provides the necessary information, including feedback, for the control of the body part one acts directly with. The third is that bodily awareness provides a ‘target-object’ for the bodily will to engage with.

Support for the feedback strand comes from considering how we might correct mistakes in the direction, trajectory, and speed of movement without feedback from bodily awareness. Acting requires one to know the state of one’s limbs, and bodily awareness puts us in a position to know the state of one’s limbs. Furthermore, actions – unlike reflexes – are robust, in that agents can act to achieve the desired goal state in a very large number of ways. (For example, if you are reaching for the salt and there are bottles
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blocking a direct approach to it, you can reach around them.) Changes in one’s environment and changes in one’s bodily state thus require that one gets feedback which allows for fine-tuning, so that the agent can be sensitive to conditions affecting the performance of his task.

The image of bodily awareness providing a ‘target-object’ for the bodily will to engage with is both suggestive and obscure. The easiest way to explicate the idea is to rely on the inconceivability argument, but this does not fully reflect its plausibility. Valberg captures O'Shaughnessy’s “target-object” idea in the following passage (2007: 272):

[W]e are not talking here about numbness – the sort of thing you get, say, with local anaesthesia. [...] We are talking about the more extreme possibility of a total loss, a sheer absence, of feeling. If this happened to your arm, could you move it (in the normal way)? It is not that if you tried to move it you would fail. You could not even try to move it. Without feeling, there is, so to speak, nothing at which the will might aim. Feeling is what makes the body ‘visible’ to the will. And if something is not visible, you cannot aim at it.

Various ideas are at work in this evocative passage. The basic premise is that striving with a body part requires that one is able to ‘latch onto’ that body part in some way. It is then claimed that bodily awareness provides the necessary means of engagement, so that body parts are presented to the agent; in feeling her body ‘from the inside,’ the agent is presented with her body as a ‘target-object’ for her will. But if striving requires the provision of a ‘target-object’ and only bodily awareness can furnish it, then it is the case that, if a body part is not presented to the agent, then, a fortiori, it is not presented to the agent as a body part that he might act directly with at all. A fuller analysis of this line of thought must await another occasion; for now we will simply record a number of observations.

One question that arises is the sense in which bodily awareness is distinctive in presenting the agent with her own body. So far we have not indicated any sense in which bodily awareness is a special source of information about one’s body, except that it is constant. We have relied on the thought that we can strive with our bodies on demand and that this requires the agent to know the spatial dispositions of her body – but only bodily awareness appears to be always on hand to provide these parameters for motor control. This, in itself, does not show that there is anything distinctive about the content of bodily awareness. If the constancy claim is correct, then it may provide some support for the claim that bodily awareness is required for feedback in motor control. But the ‘target-object’ idea goes beyond this. Valberg remarks that one could not even try to move a limb which is entirely unfelt. This is a very strong claim: it excludes the possibility that other sense modalities might provide the bodily will with its ‘target-object’ and it rules out the possibility of trying to act on the basis of one’s memory of one’s limb and of how to move it. This brings out the distinctive character of bodily awareness: it is that which presents certain body parts as parts that one can strive with. Why think that bodily awareness is special in this way?

Descartes remarked in his Sixth Meditation that we are not in our bodies as pilots are in their ships: one experiences one’s body and its various parts ‘from the inside,’ and not just as one material object among others. The ‘sole object’ character of bodily
awareness – that one can only be aware of one’s own body ‘from the inside’ – contrasts with the objects that visual awareness can present. One’s body is not the only material body one can be visually aware of. When one experiences one’s body in sight, one’s body is given as one among many other possible objects of perception. In contrast, for each and every mode of bodily awareness, one can only be aware of one’s body: when one feels a limb moving, one feels that it is one’s own limb which is moving, and not anyone else’s; when one feels a pair of hands stretched out, one feels that it is one’s own hands which are stretched out and not another’s. This provides for a sense of ownership of one’s body, as one is not presented with one’s body among other bodies which one also feels, but is only aware of one’s body in this way – yet one’s body is also experienced as an element of the objective order, which also contains other bodies and objects (Martin 1995). If we couple this with the observation that one is able to act with one’s body in ways in which one is incapable of acting with other bodies or objects, we can begin to see how bodily awareness can underwrite the agent’s sense that her body is the distinctive respondent to her will.

In sum: the case for necessity comes from seeing how bodily awareness seems to provide an indispensable source of information for the control of action and how it presents the body as a ‘target-object’ for the will. Though distinct, the feedback and the ‘target-object’ strands are not unrelated. One is not simply put in some brute relation of acquaintance with one’s body, but awareness provides the spatial parameters for control of one’s action. The picture embodied in Necessity accords with our ordinary experience of agency: it is hard to conceive how even sundry everyday activities would be possible in the absence of bodily awareness; just imagine running after a bus under conditions of complete anaesthesia.

It does seem compelling that, in agency as we know it, bodily awareness has an intimate connection with bodily action. Despite its intuitive plausibility, there are immediate challenges to Necessity. There are ‘deafferented’ agents, who retain a capacity to act with parts of their body that they no longer have sensation in. (This is not to say that bodily action is possible in the complete absence of bodily awareness – a definitive answer to that question would require further empirical investigation than has previously been carried out.) There is the much discussed case of IW, who is able to dress himself, walk, write, and even drive, despite being deafferented from the neck down (Cole and Paillard 1995). Thus bodily action is possible even if one’s bodily awareness is drastically reduced. Since IW can act directly with limbs in which he has no sense of position, movement, or touch, bodily awareness is not required in order to provide a ‘target-object’ for his bodily will, and he can control his limbs without feedback from bodily awareness. The case also refutes the inconceivability claims.

There is no doubt that what it is like for IW to act is radically different from the phenomenology of agency of normal human beings. But that is not our question. Unless one shows that IW cannot be understood as capable of bodily agency at all with those parts of his body he doesn’t have sensation in, this constitutes a counterexample to Necessity. There are no grounds for denying that IW is capable of bodily action because he lacks proprioception and kinaesthesia in those parts; IW clearly is able to do various things with parts of his body. IW was only able to perform many mundane tasks, such as walking and even sitting, by painstakingly relearning them; for now he has to be able to perform them without the benefit of bodily awareness. He compensates
for this by paying close visual attention to the state of his body and he needs to anticipate his next moves constantly, so as to deal with the environmental obstacles that turn up.

One response to this case is to say that Necessity concerns the normal or non-pathological cases of physical agency (where by ‘normal’ we mean the conceptually paradigmatic cases, as opposed to whatever is statistically predominant); and we have not shown that Necessity fails there. However, such a move already represents a significant retreat from the initial position offered; it is now unclear what the modal force of the alleged necessity comes to. O’Shaughnessy is willing to concede that, even in the repertoire of normal agents, there may be extreme cases which require an alternative treatment; but, he stresses, “the normal acts of reaching are scarcely on a par with sudden high-speed duckings from what shows as a mere blur in one’s visual field!” (1995: 201). Unfortunately, O’Shaughnessy’s contention is false. There is overwhelming empirical evidence that, even if we restrict ourselves to central cases of ordinary bodily action, (1) in most instances, these are accomplished automatically and without constant bodily awareness, and (2) even when movement involves bodily awareness, the online control involved in fine-tuning actions is mostly non-conscious. This, unsurprisingly, is due to the workings of various sub-personal mechanisms, which monitor the state of our body and underwrite our ability to act.

The first claim can be established by comparing the various execution times of actions with the time required for sensory feedback to arrive from the periphery. Lashley (1951) observed that the frequency at which finger alternations take place while a subject is playing a fast musical passage can reach up to sixteen strokes per second. The speed of finger movements during these passages precludes the possibility of any sensory feedback influencing the command system. (Other examples of fast actions are speed typing and various movements in sporting activities.) This example also bears on our second claim, concerning the role of sensory feedback for online fine-tuning of many ordinary bodily actions, which are often very quick and accurate: sensory feedback is delayed. Proprioceptive information is delayed because of the time it takes for neural signals to propagate from the limbs to the brain. Therefore, if motor control relied on sensory feedback for online control of fast actions, the reafferent information would be inevitably out of date and would lead to instability (Miall et al. 1993; Haggard 2001).

Fast actions also generate problems for the ‘target-object’ line of thought, since events of awareness of body parts have to precede, or at least be simultaneous with, acting with them, otherwise there will be no ‘target-object’ for the will. However, the neural circuits responsible for conscious awareness of motor performance appear to be far slower than the circuits involved in the online fine-tuning of actions (Castiello et al. 1991, Jeannerod 2006, ch. 3). If so, then, for ordinary actions which are fast, conscious bodily awareness cannot be temporally prior in a way that the priority is what the will exploits to know what to latch on to and how to control it. Since these fast actions form a large and important part of an agent’s repertoire, Necessity cannot hold even for the normal acts of normal agents.

Recent empirical evidence for dissociations between perception and action present further problems. Marcel’s (2003) experiments exploiting vibro-tactile illusions are a case in point. Subjects experience illusions of arm position and movement when a muscle tendon at the joint of the arm is vibrated and the resulting reflex movement
inhibited. The illusion is particularly pronounced when subjects cannot see their arm. The task is to move one’s concealed arm to the position of a target light. When subjects are under the vibro-tactile illusion, their judgments tend to reflect the illusion, both before and after the experiment; yet their performance is unaffected. They are consistently successful, even in situations where they have to move their arm in a direction opposite to what would be expected on the basis of their illusory experience. There is room to quibble about the exact ramifications of results like these, but Marcel’s results suggest that the parameters for the initial position of the arm and motor specification for movement cannot be derived in this case from bodily awareness. Insofar as the movement requires feedback, this cannot be provided by parameters from bodily awareness either, since these would specify the opposite direction of movement.

The upshot of these points is that feeling a body part ‘from the inside’ at the time of acting cannot be necessary for striving with it. This leads us to a wrinkle in the debate with O’Shaughnessy, which is to do with his two notions of body image. Theorists of the body image have typically distinguished between (at least) two senses of body image (where the relevant kind of body image is that which is exploited in direct action control): a long-term and a short-term (or here-and-now) body image (see O’Shaughnessy 1980: 241–248; Lackner 1988).

The long-term body image is, roughly, a settled picture of one’s own physical dimensions, which may change (slowly) depending on the development of the body (grafts, amputations, growth). This describes the structure of one’s body – how it is shaped, sized, and hinged – and thus what possibilities of movement are open to one. It tells us what basic actions the body can afford. However, the long-term body image only tells us what range of actions are possible for one, given the structure of one’s body. It tells us nothing about the current state of one’s body, including its current position and spatial dispositions. One’s long-term body image remains the same whether one is upside down or downside up, whether one is cooking or skiing. What we need, then, is a body image which gives us a sense of the range of actions which are currently possible for one. And this requires an image that describes one’s current posture and dispositions of body parts. This is what O’Shaughnessy calls the “short-term body image.” It is

given by the description or drawing or model one would assemble in order to say how the body seems to one at a certain instant. For example: torso straight, right cylindrical arm stretched out from body, crooked at right angles, etc. (O’Shaughnessy 1980: 241)

The debate regarding Necessity is concerned only with the short-term body image as these images are the occurrent, but usually recessive experiences of the body that are claimed to be essential to bodily action. However, why not retreat to the claim that all we need is the long-term body image, which contains information about possible sites of sensation, bodily structure and bodily dispositions, but is not a form of occurrent experience of one’s body? Conceding this much is already to concede that Necessity is false as it stands. This indicates that the connection between bodily awareness and agency is more complicated than the model embodied in Necessity suggests, and may involve different factors contributing in complex ways. But this is not to say that there
is no intimate connection between bodily awareness and bodily action, for bodily awareness may have a role at a remove from online control.

At the beginning, we noted that the claim that bodily awareness is necessary for bodily action may be developed in other ways: it might still be that bodily awareness is a condition on bodily action in some general sense, or that bodily awareness is necessary for knowing what one is doing. There is no space to consider these other claims here; but we will conclude by briefly remarking on them, in reverse order. The points we have marshalled against Necessity suggest that certain versions of the knowledge claim are problematic as well: in the case of fast actions, it appears that one knows what one is doing before proprioception and kinaesthesia return a verdict. It may be, however, that even though awareness of position and movement ‘from the inside’ is not required for knowing that one is striving, the capacity for knowing what one is doing requires, in the case of normal agents, that one is able to feel one’s body ‘from the inside.’ (And even if the mooted suggestion is feasible, the question may arise as to whether perception of one’s body through these channels is a constitutive of or simply an enabling condition on knowledge of action: Moran 2004.) Similar strategies may be pursued with respect to a general claim, which is not necessarily connected to knowledge of action. One proposal would be to chart out a connection between bodily awareness and action through the long-term body image. If, in acting intentionally with one’s body, one acts with some sense of how one can strive with it to achieve one’s aims in a particular scenario, then the long-term body image would seem to be required for action, since it is what underwrites one’s sense of what actions are possible for one. The question would then be whether bodily awareness has an essential role in the construction of the long-term body image for normal agents. There are also other ways a connection between bodily awareness and agency might be pursued. One obvious option is the opposite direction of explanation: bodily action might be thought to be a condition on bodily awareness (Brewer 1995 and Hurley 1998). Whatever the attractions of this view, it faces a serious difficulty with paralyzed subjects. Paralysis removes the possibility of striving with certain body parts, but leaves intact the ability to feel these parts ‘from the inside’ intact. If the response is that the condition can be satisfied by the possession of behavioral dispositions even when these are merely dispositional (Evans 1982: 161), then the question is what notion of disposition is in play and whether this strategy remains explanatory, especially since the neural structures underlying motor control may be damaged.

Though there are at present no definitive accounts of the relation between bodily awareness and agency, there remains a powerful sense in which bodily awareness appears to be implicated in bodily actions as we know them. Another way to put this is that our conception of ourselves as agents is already as embodied agents; our relation to our bodies both in action and in perception, is not as a pilot to his ship. So we are obliged to understand the intimate connection between bodily awareness and agency. Part of the excitement of our topic is that we have more questions to ask than answers to give.

See also: bodily movements (4); the explanatory role of consciousness (24); agents’ knowledge (30); descartes (59).
References


Further reading

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