11

The Body

In a poetic but somewhat puzzling passage in the *Principles of Psychology*, William James suggests that the unity of consciousness might be grounded in 'the warm animal feeling' of bodily self-consciousness (James 1890/1950: 317). There is much to recommend James's proposal. One's own body is not just one object among many, but occupies a core place within one's phenomenal field. The 'phenomenal body'—that is, the body as experienced—is that object within which one's bodily sensations are located and around which one's perceptual states are structured. Perhaps, as James suggests, bodily self-consciousness might explain—or at least constrain—the unity of consciousness. The aim of this chapter is to take the measure of this thought.

11.1 Bodily self-consciousness

Let us begin with the ways in which one's own body is present in experience. Most obviously, one's body enters into the content of bodily sensations. Pains, aches, and other bodily sensations are experienced as occurring within particular body parts and regions. Although some bodily sensations are precisely located, others—such as nausea—can be assigned only a gross and coarse-grained location; still other bodily sensations—such as those associated with fever and fatigue—are experienced as pervading the entirety of one's body. The body is also given in proprioceptive experience—that is, the awareness of how one's limbs are arrayed in space relative to each other. Even with one's eyes closed, one can be aware of one's arms as extending out before one, or of one's feet as arranged thus-and-so. The body is also present in the phenomenology of agency. In acting one's awareness will typically be focused on those objects that one is attempting to manipulate, but this experience will often be accompanied by a recessive awareness of those body parts by means of which one is acting.

Bodily self-consciousness is not restricted to the 'inner senses' but also enters into the contents of exteroception—the so-called 'external senses'. This is perhaps most evident in touch, in which one's own body forms a template for the external world. Touch has a Janus-faced nature, for one is aware both of the object being touched and of one's own body as the means by which one is aware of the world. Vision and audition also contain a bodily element, for one's body is tacitly experienced as that object which is located at the focus of these sensory fields. But although vision and audition represent the location of one's body they do not represent it as a spatially extended physical object. Instead, it is consistent with visual and auditory experience that one is nothing more than a mere point in space.

Arguably, the forms of bodily experience just surveyed are not merely bodily in the sense that they happen to represent one's own body, but in the deeper sense that they represent one's body *as* one's own body. We might say that these experiences have *de se* content (Lewis 1979). It is, I suggest, part of the very content of bodily sensations that they represent one and the same object as that which is given in the perspectival structure of perception. One need not engage in inference in order to determine whether (say) the object in which one's pains are located is one and the same as that which forms the vanishing point of the visual field.

So, the body is well positioned to contribute to the unity of consciousness, but how exactly might it play that role? A bold answer to this question holds that conscious states are phenomenally unified with each other in virtue of the fact that their contents exhibit what we might call the 'unity of bodily self-consciousness'. By this I mean that they represent one's body as a single, integrated thing. In effect, this proposal suggests that the unity of consciousness can be thought of in terms of a kind of global 'object-binding'.

The problem with this proposal is that there are forms of conscious content into which the body does not enter. Consider conscious thought, for example. Thoughts certainly take place within the confines of one's body, but arguably this fact is not reflected in their phenomenology. Trying to remember a telephone number does not bring with it a sense of oneself as an embodied being, not even implicitly. More controversially, it is doubtful whether the body is implicated in the experiential character of moods. The experiences associated with ennui, buoyancy, nervousness, and so on are grounded in bodily states, but this fact is not reflected in what it is like to be in these states. (At least, so it seems to me.) Indeed, the body may even be missing from certain types of perceptual experience. For example, smelling freshly ground coffee does not seem to bring with it any sense of oneself as a spatially located—let alone spatially extended—object. But if some kinds of conscious states have

no bodily content then bodily self-consciousness cannot provide us with a *fully general* account of the unity of consciousness.

Nonetheless, bodily self-consciousness could still play an important role in grounding the unity of consciousness. However, that role would need to be restricted to accounting for the unity between particular types of conscious states. Perhaps bodily self-consciousness acts as a *filter* on conscious states, ensuring that those states with bodily content are phenomenally unified with each other only if they are also bound together by bodily self-consciousness. The idea, in other words, is that those conscious states that do contain implicit reference to one's own body—roughly, bodily sensations and perceptual states—must represent one's body as a single, integrated object in order to be phenomenally unified with each other. Call the claim that phenomenal unity is constrained by bodily self-consciousness in this way the *embodiment constraint*.

Although the embodiment constraint would not provide us with an account of the unity of consciousness as such, it would (if true) forge an intimate link between phenomenal unity on the one hand and a certain kind of representational unity—the unity of bodily self-consciousness—on the other. But is the embodiment constraint true? This chapter examines three challenges to it. §11.2 focuses on the worry that bodily sensations and perceptual experiences cannot be located within a single frame of reference; §11.3 examines challenges to the embodiment constraint that derive from what we know about pathologies of bodily experience; and §11.4 examines an objection from the possibility of multiple embodiment. I will argue that the embodiment constraint survives the first two challenges but succumbs to the third.

11.2 Egocentric space

In order for bodily self-consciousness to constrain phenomenal unity in the way required by the embodiment constraint it must be possible to map all forms of bodily self-consciousness onto a single frame of reference. If there were no way in which the contents of (say) visual experience could be located with respect to those of bodily sensations, then we would have no grounds for taking the object represented in bodily experience to be one and the same as that which forms the point of origin of the visual field. In this section I examine an analysis of bodily experience that puts some pressure on the claim that there is indeed such a frame of reference. The analysis in question is developed by José Bermúdez, who takes it to vindicate Merleau-Ponty's claim that the outline of one's body is 'a frontier which ordinary spatial relations do not cross' (Merleau-Ponty 1962:

85). I will suggest that although there is much of value in Bermúdez's analysis, it falls short of doing quite that.

Bermúdez begins with the plausible claim that there is no point in (or on) the body that counts as the centre of a frame of reference within which bodily sensations can be located. This fact, he suggests, illustrates an important contrast between the spatial structure of bodily experience proper ('somatic proprioception', in his terms) and that of perceptual experience. Bermúdez motivates this contrast by noting that certain questions that can be sensibly raised about perceptual experiences cannot be sensibly raised about bodily sensations. For example, one can ask which of two visually perceived objects is further away than the other, and whether or not they lie in the same direction. However,

> neither question makes any sense with respect to proprioception. One cannot ask whether this proprioceptively detected hand movement is farther away than this itch, nor whether this pain is in the same direction as that pain. What I am really asking when I ask which of two objects is further away is which of the two objects is further away from me, and a similar tacit self-understanding is included when I ask whether two objects are in the same direction. But through somatic proprioception one learns about events taking place within the confines of the body, and there is no privileged part of the body that counts as *me* for the purpose of discussing the spatial relations they bear to each other. (Bermúdez 2005: 309)

Bermúdez concludes that whereas perceptual content is structured in terms of a body-centred frame of reference, the content of bodily experience is structured in terms of body parts. In fact, he suggests that bodily sensations can be assigned two locations: A-locations and B-locations (Bermúdez 2005: 311). The A-location of a bodily sensation is given relative to the joints that demarcate the borders of the body part in which it is located. For example, a pain in one's foot is experienced as occurring at the same A-location as long as it remains at the same location in the foot. The B-location of a bodily sensation is fixed by the relations between it and the subject's body as a whole, a notion that Bermúdez unpacks by appealing to the angles of the joints that lie between it and the torso. The A-location and B-location of bodily experiences that fall within the torso will coincide.

This account of the spatial content of bodily experience undermines the embodiment constraint, for it seems to cut the 'inner space' of bodily sensation adrift from the 'outer space' of perceptual experience. It is difficult to see how the body of bodily sensations could be experienced as identical to the body of perceptual experience if the body is 'a frontier which ordinary spatial relations do not cross'. And if the experiences delivered by the 'internal' and 'external' senses cannot represent a single object (as such), then the

embodiment constraint seems to be in trouble. So, is Bermúdez's account of the structure of bodily sensations correct?

There is something to it, for it does seem plausible to suppose that the *fundamental* location of bodily sensations is given by reference to a body part. However, we can embrace that insight without also embracing the thought that the body is a frontier that 'ordinary spatial relations do not cross'. Good thing too—for there is ample reason to think that bodily sensations and perceptual experiences can be located within a single frame of reference.

One source of evidence is introspective. Suppose that you are visually aware of two objects on the table in front of you: a book on your left and a glass on your right. Let us also suppose that you are also aware of a pain in your right hand. I submit that when you pick up the glass with your right hand, you will experience the pain as being closer to the glass than it is to the book. If you should happen to put the glass down and pick up the book with your right hand, the pain will then be experienced as closer to the book than it is to the glass. The spatial relations between the pain and the objects on the table will be experienced as changing in response to changes in the experienced location of one's hand. So, introspection provides us with one reason to think that there must be *some* framework in which the objects of bodily and perceptual experience can be located.

This argument from introspection can be bolstered by an appeal to the interdependence between the spatial content of bodily sensation on the one hand and perceptual experience on the other, as illustrated by the cross-modal congruency effect (see Figure 11.1). This effect is studied by requiring subjects to hold a sponge cube in each hand. Embedded in each cube are two vibrotactile stimulators (black squares) and two visual distractors (red circles). While staring directly ahead, subjects are required to identify the elevation of a series of vibrotactile targets that are presented to the thumb or index finger (lower versus upper elevation, respectively) of either hand. A visual distractor is then presented randomly on each trial to one of the four possible locations from which a vibrotactile stimulus can be delivered. This visual distractor will be either congruent or incongruent with the vibrotactile stimulus that it is paired with. (For example, on a congruent trial an upper light will be presented with an upper touch, whereas on an 'incongruent' trial a lower light will be presented with the same upper touch.) When incongruent, visual distractors retard the speed with which subjects make tactile judgements and increase their error rates. Importantly, the size of the effect can be modulated by changing the subject's posture. When the hands are *uncrossed* visual distractors on the right hand interfere more strongly than visual distractors on the left hand for vibrotactile targets presented to the right hand, but when the hands are *crossed* visual

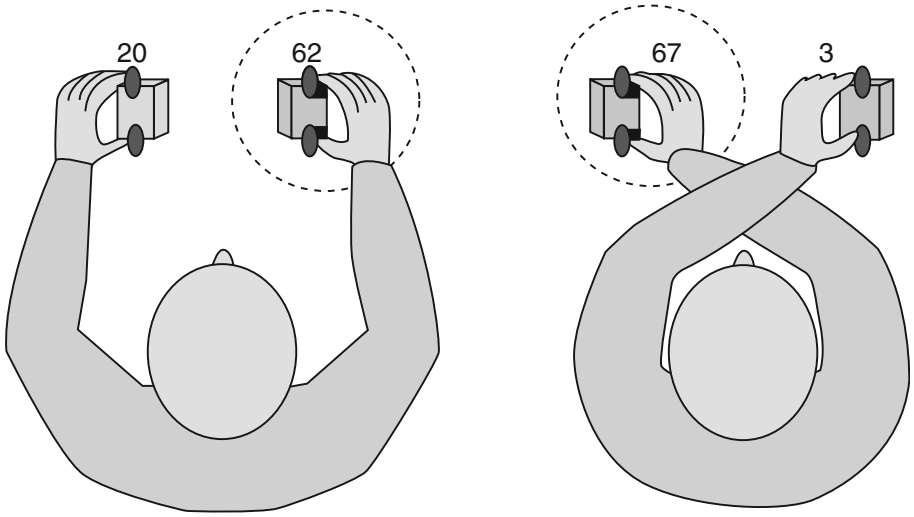

Figure 11.1 Crossed hands. Participants hold in either hand a sponge cube in which two vibrotactile stimulators (black squares) and two visual distractors (red circles) are embedded. They must then fixate a central point straight ahead while being required to discriminate the elevation of a series of vibrotactile targets presented unpredictably to the thumb or index finger (lower versus upper elevation, respectively) of either hand. A visual distractor is presented randomly on each trial together with the vibration from one of the four positions with participants instructed to ignore any visual event. The values given directly above each hand highlight the magnitude of the cross-modal congruency effect (in milliseconds) elicited by visual distractors placed on that particular cube. Note that the effect follows the right hand in space when posture is changed: visual distractors on the rightmost cube interfere more strongly if the cube is held in the right hand in an uncrossed position, but lights on the left cube interfere more when the hands are crossed and the right hand holds the leftmost cube instead

Source: Maravita et al. 2003

distractors on the leftmost cube (which is now held by the right hand) generate more interference than do visual distractors on the rightmost cube (which is held by the left hand) (Spence et al. 1998; Pavani et al. 2000; Maravita et al. 2003). In other words, the cross-modal congruency effect follows the hand when its overall location relative to the rest of the subject's body changes. Arguably, the spatial content of bodily experience can modulate that of perceptual experience and vice versa only because both forms of experience are located within a single frame of reference.[1]

[1] Illusions of various kinds also demonstrate that the spatial contents of bodily and perceptual experiences are interdependent. For example, de Vignemont and colleagues have shown that the perceived size of a touched object can be modulated by altering the perceived size of the touching finger (de Vignemont, et al. (2005b)). See also de Vignemont et al. (2005a) and de Vignemont (2007).

A final reason for thinking that body sensation and perceptual experience involve a common frame of reference appeals to the demands of agency. As Bermúdez himself notes (2005: 312), effective action requires that one integrate information about the location of perceived objects with information about the location of one's limbs, and that in turn requires that information about body parts and external objects be mapped onto a single frame of reference. Now, although there is no *a priori* requirement that this frame of reference will also be used to structure the contents of perceptual experience, it is not unreasonable to suppose that it might at least *influence* experiential content (even if the on-line control of action is also guided by frames of reference that are independent of consciousness).

The overall picture is clear: we need an account of how the spatial content of bodily experience is internally related to that of perceptual experience. Developing such an account goes well beyond the scope of this chapter, but let me provide a thumbnail sketch of what such an account might look like.

As Bermúdez suggests, it is plausible to suppose that the fundamental location of a bodily experience is given by reference to a body part (on the model of A-locations). However, one's body parts are themselves experienced as located with respect to each other within the context of one's body as an articulated whole (on the model of B-locations). The content of this bodily experience is itself structured by an egocentric frame of reference that infuses perceptual experience. It is likely that touch plays a particularly crucial role in aligning these two frames of reference, for touch informs one about the spatial properties of both one's own body parts and also those of the objects with which one is in contact. The resulting frame of reference will allow one to directly experience the spatial relations between perceptual events and bodily events—such as that the pain is now closer to the glass than it is to the book.

This is obviously a very rough sketch of what it might be for bodily experience and perceptual experience to inhabit a shared space, but despite its crudity it suffices to allay the worry that 'inner' and 'outer' experiences occur within two wholly incommensurate frames of reference. And insofar as it does that, it also removes an obstacle to the embodiment constraint. If, as I have argued, spatial relations can 'cross the frontier of the body', then it is possible that the sense of embodiment provided by the 'internal' senses (that is, bodily sensations) and the 'external senses' (that is, perceptual experience) might represent one's body as one and the same object.

11.3 The fragmented body

Although ordinary corporeal experience involves an awareness of oneself as a single, integrated physical object, there are conditions in which the unity of bodily experience appears to be compromised and perhaps even lost altogether. What happens to phenomenal unity in such cases? If the embodiment constraint is right then the fragmentation of bodily experience must bring with it a corresponding fragmentation in phenomenal unity. Is that so, or can phenomenal unity survive breakdowns in the unity of bodily awareness?

Let us approach this question indirectly by first considering pathologies of embodiment in which corporeal experience appears to retain its fundamental integrity despite being disrupted in profound ways. Perhaps the most familiar pathology of embodiment is the phantom limb experience.[2] Individuals who have 'lost' a limb due to amputation or congenital abnormality often experience the missing limb as replaced by a phantom. Such experiences are generally unwelcome, especially when unpleasant bodily sensations are located in the limb. Although the phantom typically replaces a missing body part, phantoms can be supplementary to the normal bodily form. In one case a woman experienced herself as having four phantom legs (Vuilleumier et al. 1997); in another case a man experienced himself as having six phantom arms (Sellal et al. 1996).

In the phantom limb syndrome the borders of the phenomenal body extend beyond those of the objective body. In other pathologies of bodily experience, however, the borders of the phenomenal body retreat inside those of the objective body. Patients suffering from 'asomatagnosia'—literally, agnosia for one's body—may complain that entire limbs (or parts thereof of) are 'missing'—that is, have disappeared from awareness.[3] Similarly, patients suffering from personal neglect are often unaware of one side of their body (usually the left side), although this loss of bodily awareness may itself go unnoticed by the patient.

In these disorders the borders of the phenomenal body depart in drastic ways from those of the objective body, but there is no reason to think that patients suffer from a fundamental breakdown in the *unity* of bodily awareness. Insofar as these patients experience their body parts at all they continue to experience them as the parts of a unitary object, an object that they also experience as their own

[2] Melzack (1992); Melzack et al. (1997); Ramachandran & Hirstein (1998); Wade (2009).

[3] Critchley (1953); Arzy et al. (2006); Feinberg et al. (1990). See Moro et al. (2004) for a fascinating study of two patients suffering from asomatagnosia in the context of tactile neglect. Although their neglect could be ameliorated by requiring them to move their left hand into their right visual field (and thus bringing it within their attentional focus), this had no effect on the patients' sense of embodiment. The patients were now aware when their hand was touched but they continued to deny that it was theirs.

body. These syndromes involve changes to the size and configuration of the phenomenal body, but its fundamental structure—the sense of the bodily self as a single integrated object—appears to be undisturbed.

Indeed, patients can experience *gross* alterations in bodily experience without losing the sense of bodily unity and integrity. Consider two individuals, I.W. and G.Y., who suffer from impairments to the sense of touch and muscular proprioception due to global deafferentation (Cole & Paillard 1995). I.W. has no sensations of touch or proprioception below the collar-line, while G.L. has no such sensations from below her mouth. In order to navigate, they need to visually monitor the positions of their limbs and the relationship between their bodies and their environments. One might have thought that this loss of proprioception would lead I.W. and G.Y. to experience a loss of bodily unity—that they might experience their bodily sensations as 'free-floating' events—but that does not appear to be the case. I.W., at any rate, reports that his sense of body image—'his sense of wholeness and configuration' (Cole & Paillard 1995: 261)—remains fundamentally intact.

There are, however, pathologies of embodiment that *do* challenge the embodiment constraint. One such pathology is depersonalization. Depersonalization is characterized as involving an 'alteration in the perception or experience of the self, so that one feels detached from, and as if one is an outside observer of, one's mental processes or body' (DSM-IV-TR).[4] Echoing Hume, patients will describe themselves as a 'mere bundle of thoughts'. Some patients will complain that they 'no longer have an ego, but are mechanisms, automatons, puppets; that what they do seems not done by them but happens mechanically; that they no longer feel joy or sorrow, hatred or love; that they are as though dead, not alive, not real' (Schilder 1953: 304). Other patients will say that they feel 'like a piece of furniture'—that they don't feel like a human being or an animal (Sierra et al. 2002: 531). Galen Strawson cites the experience of a friend with this condition who found that the thought 'I don't exist' kept occurring to him. 'It seemed to him that this exactly expressed his experience of himself, although he . . . knew, of course, that there had to be a locus of consciousness where the thought "I don't exist" occurred' (Strawson 1997: 418).

Individuals with depersonalization are not delusional: they know that they are embodied, and they retain an accurate conception of where the borders of their body lie. However, there is another pathology of embodiment in which

[4] See Baker et al. (2003); Cappon & Banks (1965); Sierra & Berrios (1997, 2002); Schilder (1953); Shorvon (1946).

the experience of bodily alienation of the kind that depersonalization involves does lead to delusional fixation. The pathology in question is Cotard's delusion, named after the French psychiatrist who first described it (Cotard 1880, 1882).[5] Cotard's delusion is typically said to involve the belief that one is dead, but this characterization captures only the more extreme manifestations of the delusion, and it is useful to employ a rather broader conception of the condition. Cotard himself referred to the delusion as *le delire de négation*—the 'delusion of negation'. In its milder manifestations patients express feelings of self-deprecation and despair; in its more severe forms they will deny the reality of body parts or insist that their body is a corpse. Enoch and Trethowan (1991) describe a patient who referred to himself as 'a mere point in space'. Somewhat paradoxically perhaps, patients may also assert that they are immortal, a judgement that might also manifest the loss of corporeal experience.

Depersonalization and Cotard's delusion threaten the embodiment constraint for the following reason. On the one hand patients appear to have lost the unity of bodily self-consciousness. At the same time, there is no reason to doubt that their experiences are subsumed by a single phenomenal state. Patients don't display any of the representational or access disunities that occur in (say) the hidden-observer phenomenon or the split-brain syndrome. However, before we reject the embodiment constraint we need to consider in precisely what sense these patients might be said to have lost the unity of bodily self-consciousness.

Let us start with those components of bodily experience that patients appear to *retain*. As best one can tell, patients continue to experience their bodily sensations as located in their body parts; they continue to experience their body parts as the components of a single object; and they continue to experience their own bodies as the focal point of their visual and auditory fields. None of these components of bodily self-consciousness appear to be disrupted in either depersonalization or Cotard's delusion. Instead, the loss of bodily self-consciousness that occurs in these conditions appears to be restricted to what we might call the experience of *affective identification* with one's body. Rather than experiencing themselves as being 'at one' with their body—as 'embodied' in it—patients appear to experience themselves as lodged within it 'as a sailor might be lodged within his ship', to appropriate Descartes's memorable phrase. This account is supported by both what patients say and also by the fact that both disorders are associated with extremely high levels of depression. Cotard's patients have been described as 'stranded on an island of emotional desolation'

[5] See Berrios & Luque (1995a, 1995b); Gerrans (2000); Young & Leafhead (1996).

(Ramachandran & Blakeslee 1998: 167). We might say that although these patients continue to be aware of their own bodies as integrated objects, for them bodily awareness is no longer a form of genuine *self*-consciousness.

Now that we have a better grip on the sense in which these conditions involve pathologies of bodily experience, let us return to the embodiment constraint. The key issue here is whether the link between the unity of bodily awareness and the unity of consciousness requires affective identification with one's own body. James may have had this aspect of bodily awareness in mind when he suggested that the unity of consciousness might be grounded in the 'warm animal feeling' of bodily self-consciousness, but I did not build this component into the embodiment constraint. Instead, the embodiment constraint was only meant to capture the thought that the unity of consciousness might be grounded in the role that the phenomenal body plays in structuring the content of bodily sensation and perceptual experience. Given that this component of bodily self-consciousness seems to remain largely unscathed by depersonalization and Cotard's delusion, so too does the embodiment constraint.

Where does this leave us? Our brief survey of pathologies of corporeal awareness has failed to reveal any decisive objections to the embodiment constraint. This is not because we have found that the fragmentation of bodily awareness is also accompanied by a corresponding fragmentation in the unity of consciousness, but because we have failed to find any instances in which bodily awareness fragments in a manner that might put pressure on the embodiment constraint. There are various conditions in which the borders and structure of the phenomenal body depart from those of the objective body, but in none of these conditions do patients appear to lose the sense of their body as a single integrated object in which their bodily sensations are located and around which their perceptual experiences are structured. For all that has been said thus far, the embodiment constraint might capture a deep truth about human experience.

11.4 Multiple embodiment

But perhaps we have been looking for counter-examples to the embodiment constraint in the wrong place. Rather than asking whether it is possible for the unity of consciousness to coexist with the experience of corporeal *disunity*, perhaps we should instead ask whether it might be possible for the unity of consciousness to coexist with the experience of corporeal *multiplicity*. Could a set of phenomenally unified states be structured around multiple phenomenal

bodies? If so, then the unity of bodily self-consciousness couldn't constrain phenomenal unity, and we would have to reject the embodiment constraint.

Let us begin with the question of whether multiple phenomenal embodiment is ever a feature of human experience. The strongest evidence that I know of for answering this question in the affirmative comes from the study of heautoscopy.[6] Heautoscopy is a form of autoscopy (literally 'self-seeing') in which patients feel as though they are located in two bodies, and that their spatial perspective is divided between that of their actual location and that of a 'hallucinated self'—a hallucinated person with whom they identify. Heautoscopy is to be distinguished from two other forms of autoscopy: out-of-body experiences on the one hand and autoscopic hallucinations on the other (see Figure 11.2). Patients in the grip of an out-of-body experience feel as though they have left their body and are located at some point above it, whilst those in the grip of an autoscopic hallucination are aware of a person which they experience as 'another me' (Kölmel 1985). In heautoscopy the subject experiences himself as located in both his actual body *and* in the visually presented body.

Brugger et al. (1994) describe the following case:

> Turning around, [the patient] saw himself still lying in bed. He became angry about 'this guy who I knew was myself and who would not get up and thus risked being late at work.' He tried to wake the body in the bed first by shouting at it; then by trying to shake it and then repeatedly jumping on his alter ego in the bed. The lying body showed no reaction. Only then did the patient begin to be puzzled about his double existence and become more and more scared by the fact that he could no longer tell which of the two he really was. Several times his bodily awareness switched from the one standing upright to the one still lying in bed; when in the lying in bed mode he felt quite awake but completely paralyzed and scared by the figure of himself bending over and beating him. His only intention was to become one person again and, looking out of his window (from where he could still see his body lying in bed), he suddenly decided to jump out 'in order to stop the intolerable feeling of being divided in two.' At the same time, he hoped that 'this really desperate action would frighten the one in bed and thus urge him to merge with me again.' The next thing he remembers is waking up in pain in the hospital. (Brugger et al. 1994: 839)

(The case had a happy ending, for although the patient's window was three storeys up, he landed on a large bush.) In this case, the patient's experience of double embodiment seems to have been sequential, with his spatial perspective switching from that of one body to that of the other. However, there are also cases of heautoscopy in which it is unclear whether the experience of

[6] For autoscopy more generally see Brugger (2006); Blanke et al. (2004); Blanke & Mohr (2005) and Dening & Berrios (1994).

dual embodiment is sequential or simultaneous. Blanke et al. (2004) present the following description of a patient who experienced heautoscopy after an epileptic seizure.

> [The patient] had the experience as if she were seeing herself from behind herself (seeing the back of her head and upper torso without arms). She felt as if she were 'standing at the foot of my bed and looking down at myself' and as if 'looking through a telescope.' During the same experience, [the patient also had] the impression of 'seeing' from her physical visuo-spatial perspective, which looked at the wall immediately in front of her. Asked at which of these two positions she thinks herself to be, she answered that 'I am at both positions at the same time,' without having the feeling of being out of her body. (Blanke et al. 2004: 247 f.; see also Lunn 1970)

Although the patient says that she experienced herself as located in both bodies at once, the authors of the report express some scepticism about the veracity of this claim, and suggest instead that her experience might have actually rapidly alternated between two bodily perspectives in the way in which the previous patient's experience seems to have. So, although these reports are intriguing, it is possible that true multiple embodiment—that is, *simultaneous* multiple embodiment—falls outside the limits of human experience.

But perhaps science fiction can take over where real science leaves off. Even if *we* cannot experience ourselves as multiply embodied, there doesn't seem to be anything incoherent in the idea. Consider an organism who I shall call 'Borgy'.

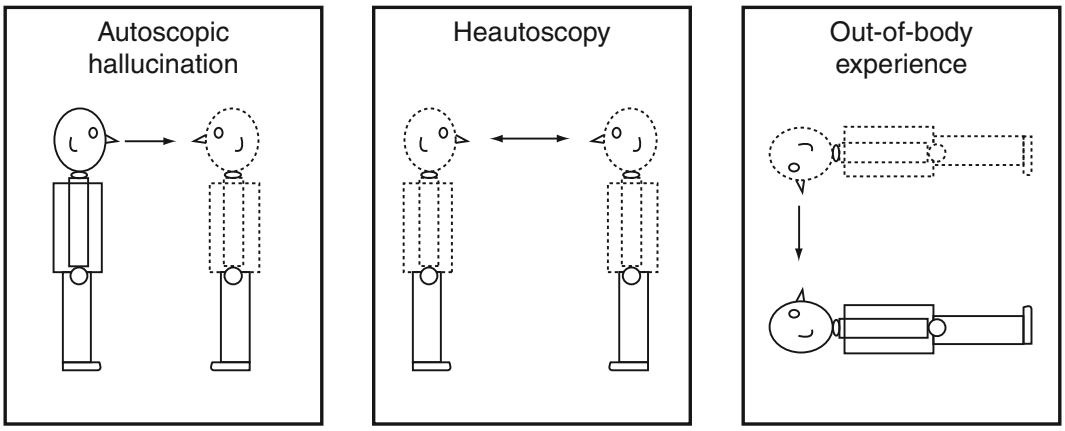

Figure 11.2 The phenomenology of autoscopic hallucination (left), heautoscopy (middle) and out-of-body experiences (right). For each form of autoscopy, the position and posture of the actual body is indicated by black lines and that of the merely experiential (or phenomenal) body by dashed lines. The arrows point away from the centre of the patient's apparent visual field, which is variously located in the actual body (autoscopic hallucination), the merely phenomenal body (out-of-body experiences), and both the actual and merely phenomenal bodies (heautoscopy)

Source: Blanke et al. 2004

Borgy is a 'scattered creature', for he has three bodies that are biologically independent of each other. (We might think of each of these bodies on the model of the human body.) However, the brains that are located in these three bodies can communicate with each other via miniature radio transmitters. In fact, Borgy's brains are functionally integrated with each other to roughly the same degree that our two neural hemispheres are. Although Borgy has three bodies, he is a single subject of thought, action, and experience. His perceptual states feed into a unitary cognitive system, and he has direct control over each of his three bodies (this, in part, is what makes the three bodies *his* bodies). He acts with his three bodies and their twelve limbs in the way that you act with your one body and its four limbs. The fact that he has three bodies allows Borgy to experience the world from the perspective of three non-contiguous locations at once. At one and the same time he might feel the sun beat down in Sydney, hear a plane flying over the Sonoran desert, and smell freshly baked croissants on the steps of Sacré Coeur.

Although Borgy's bodily and perceptual experiences will be structured around distinct bodies, I suggest that they might well be phenomenally unified. Borgy's three brains are distributed between his three bodies, but I see no reason to deny that they might jointly implement the kind of neurophysiological singularity that underlies the unity of consciousness. This 'sub-personal' integration might also have a 'personal' echo. Because Borgy's perceptual experiences feed into a single cognitive system, he will be able to experience certain relations between events that occur within his individual perceptual fields. Even though he doesn't experience the spatial relations between his three bodies, his phenomenal perspective could include a representation of (say) the relationship between the temperature in each of the locations in which he has a body. For example, he may be directly aware that it is hotter in Arizona than it is in Paris. To take another example, suppose that there is a duck in front of each of Borgy's three bodies. Borgy will not experience the three ducks as spatially related to each other, but he may be able to experience one of the ducks as bigger (or more colourful, noisier, etc.) than the others. The upshot of these considerations, I suggest, is that Borgy constitutes a counter-example to the embodiment constraint, for it is plausible to suppose that he could retain a phenomenally unified consciousness despite the fact that neither his perceptual experiences nor his bodily sensations will be be structured around a single physical object.[7]

[7] See Dainton (2006: 60–72) for a somewhat similar line of argument against the thought that the phenomenal unity of consciousness might be identified with some kind of spatial unity.

In presenting Borgy to various audiences I have discovered that he does not command universal approval. Critics generally allow that it might be possible for a single creature to experience itself as multiply embodied, but they find it implausible to suppose that such a creature could retain a unified consciousness. They are inclined to grant that Borgy could have three body-centred perceptual fields, but they baulk at the thought that his experiences could occur within a single *phenomenal* field. What might be said in support of such worries?

Those who doubt whether Borgy puts any pressure on the embodiment constraint would be ill-advised to put any weight on the fact that it is difficult to *imagine* what it might be like to be Borgy. True, the attempt to imagine what it would be like to inhabit three bodies at once seems to degenerate into imagining what it would be like to inhabit three bodies successively (which is a very different thing indeed), but these imaginative difficulties have little evidential force. As we noted in Chapter 3, we should not mistake the inability to project oneself into a certain phenomenal perspective for the inability to conceive that a certain type of phenomenal perspective is possible. (Moreover, when pressed this imaginative difficulty does not reveal a deeper worry about inconceivability in the way that the imaginative challenge posed by partial unity turned out to (see §2.4)). If we are to reject the thought that Borgy could retain a single phenomenal field we will need to do more than appeal to imaginative difficulties.

One line of argument for thinking that Borgy's experiences couldn't be phenomenally unified appeals to considerations of consistency. If one thought that phenomenally unified experiences must be consistent then one might also think that Borgy couldn't have a single phenomenal perspective on the grounds that his experiences couldn't be mutually consistent. But this objection is not convincing. Even if there were a consistency constraint on phenomenal unity—and I argued in §3.2 that there isn't—it is not at all clear that Borgy must flout it. Borgy has three bodies, and there is every reason to suppose that the representational contents of his perceptual experience would reflect this fact. In the same way that our bodily sensations are 'tagged' to body parts, so too Borgy's experiences would presumably be 'tagged' to one or other of his bodies. I might experience myself as having a pain in the big toe of my left foot, but Borgy would experience himself as having a pain in the big toe of the left foot of body A; whereas I might have a visual experience as of a monkey directly in front of me, Borgy would have a visual experience as of a monkey directly in front of body B, and so on.

But perhaps our imagined critic has been approaching matters from the wrong angle. Perhaps the problem with Borgy is that his phenomenal perspective *prevents* certain kinds of inconsistency from taking hold. The fact that our

perceptual fields are structured in terms of a single egocentric frame of reference allows that the contents of any one sensory field can come into conflict with those of another. As we saw in §10.3, our cognitive architecture ensures that most inter-modal conflicts are 'ironed out' prior to consciousness; nonetheless, there remains some scope for inter-modal conflict within our experience. But Borgy's perceptual experiences are structured around distinct frames of reference, and thus the range of perceptual conflict that he is able to enjoy will be extremely limited in scope. Hence, the objection goes, we have reason to doubt whether his perceptual experiences could be phenomenally unified with each other. Those experiences that are structured around any one of his three bodies might be so unified, but those that are structured around distinct bodies could not be.

It seems to me that this objection simply begs the question against the claim that Borgy could have a unified consciousness. Why should we suppose that perceptual experiences can be phenomenally unified with each other only if they fall within a single frame of reference? As a rough parallel, consider the relationship between perceptual states and states of imagination. The contents of these states may not be located within a single frame of reference, but it is not uncommon for perceptual experiences to be phenomenally unified with imaginative experiences. Similarly, I suggest that Borgy's various perceptual experiences and bodily sensations could also fall within a single phenomenal field despite their lack of spatial unity.

Another reason for thinking that Borgy couldn't possess a unified consciousness concerns what we might call 'joint actions'. Although the term 'joint agency' is normally reserved for actions that involve the integrated activity of multiple agents, I use it here for actions that Borgy executes by means of the integrated activity of more than one of his three bodies. For example, Borgy might use all three of his bodies to manoeuvre a piano up a flight of stairs. In order to carry out joint actions, Borgy will need some way of keeping track of the spatial relations between his three bodies and their parts. Further, if we are to model Borgy's joint actions on our own actions, then this process of keeping track will need to be non-inferential—he will need to experience the relations between his bodies in the way in which we experience the relations between our hands. But—the objection runs—Borgy will be able to enjoy non-inferential awareness of the spatial relations between his bodies only if he has a single body image that represents each of his three bodies, and he will be unable to acquire or maintain any such body image because the spatial relations between his three bodies will be constantly changing. But if Borgy cannot carry out joint actions, then his repertoire of basic actions will be limited to actions that involve only a single body. And if that were the case, then—the argument continues—it is hard

to see how he could also have a single phenomenal field. For surely part of what is entailed by the claim that Borgy has a single phenomenal field is that he would have command of each of his three bodies as a single agent—that he could realize his intentions via his several bodies in the direct manner in which we are able to realize our intentions through our several limbs.

There is much that might be said in response to this objection, but I will let the following two points suffice. First, it is far from obvious that Borgy couldn't possess a single body image that incorporates information about each of his three bodies. Remember that his three brains communicate with each other in much the way that our two hemispheres communicate with each other. And if inter-hemispheric communication is able to sustain a single body image in our case, then perhaps inter-cerebral communication is able to sustain a single body image in Borgy's case. Secondly, and more fundamentally, even if phenomenal unity brings with it some kind of conjoint availability for cognitive and behavioural control, we should not assume that it brings with it the capacity for joint agency as understood above. As I pointed out above, Borgy will be able to draw on the joint contents of his perceptual fields for various forms of theoretical reasoning. He will be able to work out whether the ducks in Paris are noisier than the ducks in Sydney, or whether it is hotter in Sydney than it is in Tucson. So, even if Borgy were unable to execute joint actions—and it is unclear whether this claim can be substantiated—this limitation must be set against the fact that the contents of his three perceptual fields will be jointly available for certain forms of cognitive consumption.

A final objection is that Borgy's experience of embodiment couldn't be *genuine*—that he would not experience any of his bodies as truly his own. The thought behind the objection is this. Each of Borgy's three bodies would be an 'external object' relative to his other two bodies. Bodies B and C would be part of the furniture of the world from the perspective of body A, and of course body A would have precisely the same status from the perspectives of bodies B and C. Might this not lead to a deep ambivalence within Borgy's corporeal experience?

It is, of course, difficult to know what Borgy's experience of embodiment would be like; as we have already noted, our ability to know what it might be like to be multiply embodied is limited at best. However, I see no reason why Borgy's experience of embodiment shouldn't be any less robust than yours or mine. Borgy would indeed have a 'third-person' perspective on each of his bodies, but we too enjoy such a perspective on our own bodies when we catch sight of ourselves in the reflecting glass of an office block or a subway train. Given that such experiences do not engender feelings of corporeal alienation in our own case I fail to see why they should do so in Borgy's case.

11.5 Conclusion

This chapter has explored some of the many links between the unity of consciousness and bodily self-consciousness. I began by considering the claim that bodily self-consciousness might ground the unity of consciousness as such. I rejected this thought on the grounds that certain modes of consciousness lack any bodily content, and focused instead on the embodiment constraint: the claim that in order to be phenomenally unified with each other those conscious states that are forms of bodily self-consciousness must represent one's own body as an integrated object.

I then examined three challenges to the embodiment constraint. The first of these challenges focused on Bermúdez's analysis of the spatial content of bodily experience. Drawing on Merleau-Ponty's claim that 'the outline of the body constitutes a border that ordinary spatial relations cannot cross', Bermúdez's analysis provided us with reason to doubt whether bodily sensations and perceptual experiences can be located within a single frame of reference. The key move in dissolving this worry, I suggested, lies in the realization that although the fundamental location of bodily sensations is given by reference to a body part, those body parts are themselves experienced as located within an egocentric frame of reference, thus allowing for spatial relations between the objects of 'inner' and 'outer' experience.

I then turned to pathologies of bodily experiences—most notably depersonalization and Cotard's delusion. These conditions appear to put pressure on the embodiment constraint, for those who suffer from them seem to have lost the normal integrity of bodily self-consciousness but do not appear to have suffered from a corresponding breakdown in the overall phenomenal unity of consciousness. However, I suggested that this pressure is more apparent than real, for the loss of bodily self-consciousness that occurs in these conditions appears to be restricted to the sense of 'affective identification' with one's body. These conditions put pressure on the proposal that the unity of consciousness is grounded in bodily self-consciousness only if that notion is understood to involve affective identification with one's body. James may have had something like that thought in mind in suggesting that the unity of consciousness is grounded in 'the warm animal feeling' of bodily self-consciousness, but this claim was not built into the embodiment constraint.

A third and final challenge to the embodiment constraint focused on the possibility of multiple embodiment—or rather, the experience of multiple embodiment. Whether or not such experiences fall within the range of those that we can enjoy—and we saw that there is tantalizing evidence to suggest that

they might—they certainly don't seem to be deeply impossible. More to the point, there doesn't seem to be any incoherence in the thought that one could experience oneself as multiply embodied whilst retaining a fully unified stream of consciousness. And if that's right then the embodiment constraint is false. The upshot of this chapter, I suggest, is that phenomenal unity is fundamentally independent of the sense of embodiment. Bodily self-consciousness does make a vital contribution to our ordinary sense of self-consciousness, but the link between the unity of consciousness on the one hand and the unity of embodiment on the other is not indissoluble.