

The Bounded Body.

On the Sense of Bodily Ownership and the Experience of Space

Carlota Serrahima
(Universitat de Barcelona)

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Abstract. Bodily sensations are mental states typically suitable to be reported in judgments in which a first-person indexical is used to qualify the felt body. In other words, subjects typically have a sense of bodily ownership for the body that they feel in bodily sensations. This paper puts forward, firstly, three desiderata that theories on the sense of bodily ownership should meet. Secondly, it assesses two views that account for the sense of bodily ownership in terms of the spatial content of bodily sensations, appealing to a notion of a sense of boundedness, and argues that they do not meet the goals defined.

Keywords. Sense of bodily ownership, bodily sensations, spatial content, sense of boundedness

1. The Sense of Bodily Ownership: Defining Desiderata

If I now close my eyes and pay attention to my body, I would say my legs are crossed and my hands are resting on the keyboard in front of me. I would also report, if asked to, some mild, intermittent twinges in the right side of my lower back. I would thus be reporting some of my current bodily experiences.

Upon scrutiny, it is clear that by entertaining judgments such as “I can feel that my legs are crossed” I am taking myself to be the subject of a mental state, but also the subject of the body to which I am ascribing certain properties. Evidence of this are the two first-person pronouns in the statement mentioned. Indeed, eyes closed, not only do I realise that it is me who feels some legs being crossed, or an aching back, but also that these crossed legs and aching back are mine. This paper revolves around the latter fact: bodily sensations¹ are mental states typically suitable to be reported in judgments that are *de se* in that subjects endowed with a conceptual system or language typically express them by qualifying the felt body with a first-person indexical. I do not simply report feeling *a* back when in pain; I also report feeling that the painful back is *mine*.

Let us call the judgments in which bodily sensations are reported “judgments of somatosensation”. And let us grant that, when one sincerely asserts judgments of somatosensation that are first-personal in this sense, one expresses awareness of the body one feels to be one’s own. The notion of a *sense of bodily ownership* (SBO) captures this fact:

¹ Bodily sensations include proprioception (experiences of bodily movement and posture), sensations related to balance, touch, feelings of bodily temperature, pain and interoception. I will use “somatosensation” and its derivatives, as well as “bodily experiences”, to refer generally to all bodily sensations.

[SBO]: For one to have a sense of bodily ownership is for one to be aware of the body one feels in bodily sensations as being one's own.²

At this point, a question emerges that provides the backbone of the debate in which this essay takes part: what is the specific character of this awareness? One could defend that subjects are aware of the body they feel in bodily sensations as being their own only if they *judge* that that body is their own (Alsmith, 2015). This would seem to assume that the SBO consists, maybe only partly but crucially, of judgments involving a relative of the I-concept. This view is thus compatible with the idea that bodily experiences themselves involve no specific component that stands for the first-person figuring in judgment – hence being, so to speak, selfless. Let us label accounts along these lines *Cognitive Accounts*.³ Cognitive Accounts are compatible with there being some phenomenology specifically attached to the SBO, perhaps cognitive phenomenology. However, while such phenomenology could then be said to be part of what the SBO consists of, it would not be part of the epistemic basis for judgments of ownership, but rather some byproduct of them.

However, the foregoing question can plausibly be answered in the opposite sense. One can defend that there are *experiences* of bodily ownership that are independent of cognitive acts of bodily self-attribution (id., 883). Let us call the accounts within this trend *Phenomenal Accounts*. According to Phenomenal Accounts, there is some component of bodily sensations themselves that stands for the first-person that eventually figures in judgment. On these views, the SBO consists of a certain aspect of what it is like to undergo bodily sensations, and therefore the epistemic basis for judgments of somatosensation that are *de se* in the way indicated will involve a genuinely first-person element.

Given the phenomenal richness of bodily experiences, this element could be specified in several ways. As the discussion has been set, it seems natural to say that bodily experiences are mental states that convey something to the experiencing subject. In particular, by undergoing them, subjects are typically aware of the state and condition of a body: in this minimal sense, bodily experiences are mental states with content. This content can be spelled out at least in terms of properties or qualities (position, painfulness, and the like) that seemingly qualify the body or some of its parts. On these grounds, this content is generally said to have both a qualitative and a spatial dimension.⁴

² I am using “awareness” non-factively in [SBO]. For instance, the SBO is present in cases in which one takes a felt, inexistent body (part) to be one's own, as is usually the case for phantom limbs.

³ The labels “Cognitive” and “Phenomenal” for the accounts sketched are due to Alsmith (2015).

⁴ Ordinarily, we might say of *sensations*, rather than of the *properties* they convey, that they are localised. This might reveal something about the nature of these properties (see e.g. Brewer, 1995). But I must leave this discussion aside. Here I will talk interchangeably about bodily sensations and bodily properties as localised, not meaning to entail that the former *qua* mental states are physically located, nor experienced as such.

Phenomenal Accounts divide according to the role they assign to these dimensions in accounting for the SBO. For one thing, a distinction has been traced between *deflationary* and *inflationary* views (Bermúdez, 2011; Bermúdez, 2013). Deflationism defends that the component of bodily sensations that constitutes the SBO is not “a positive quality over and above the felt quality of sensation and the location” (Martin, 1995, 270). The sense that the felt body is one’s own is then spelled out in terms of how space is represented in bodily experiences (Martin, 1995; de Vignemont, 2007; Bermúdez, 2017); or of the kind of qualities one feels as instantiated when undergoing them (Dokic, 2003). This trend crucially distances itself from inflationism. Bodily sensations – inflationism would maintain – do involve a dedicated mineness *quale*, irreducible to any of their other aspects (de Vignemont, 2013;⁵ Billon, 2017). From this perspective, the awareness involved in bodily experiences that the felt body is one’s own consists of this specific *quale*. Somewhere between these two strands, some authors enrich the phenomenology of bodily experiences and specify the SBO in terms of their affective character (de Vignemont, 2018; this volume); or of an intrinsic, pre-reflective self-consciousness involved in all such components (Gallagher, 2017).

This paper pursues two aims. On the one hand, it critically assesses a kind of deflationist approach. In particular, I engage with two related proposals that analyse the SBO in terms of the spatial content of bodily sensations by spelling it out as a sense of boundedness. The first was put forward by Mike Martin (especially Martin, 1995; but also Martin, 1992 and Martin, 1993); the second by Frédérique de Vignemont (2007), allegedly in continuity with the former. The discussion of these views is built around what will be defined as basic desiderata for any account of the SBO. It is indeed surprising how little attention has been devoted to specifically stating what an account of this phenomenon has to explain. Offering a proposal in this respect is thus the second aim of this paper. In what follows I put forward its core components.

Surely, the outline of views just presented is to be framed within the context of acknowledging that there is such a thing as being aware of the body one feels as being one’s own. On this assumption, we wonder about the nature of this awareness. Any proper answer to this question will arguably imply a picture of bodily sensations, namely a specification of what their content is and what it is like to undergo them. The foregoing debate-framing already suggests a basic desideratum that we should impose on this picture: it must offer, or allow for, an explanation of the first-personal character of all judgments aimed at reporting bodily sensations that are *de se* in the sense indicated. Our inquiry thus pursues the following *Judgment Formation Goal*:

⁵ De Vignemont’s view has evolved very significantly from 2007. In this paper I will address her 2007 view as representative of a spatial account with the aim of shedding light on what seem to me compelling reasons to go beyond it.

[*Judgment Formation Goal*]: any account of the SBO must explain the fact that we self-attribute the felt body for all judgments of somatosensation in which we do so.⁶

With this first aim in view, the second desideratum that, I contend, all accounts of the SBO must meet relies on a central feature of the relation between bodily sensations and judgments of somatosensation. This feature illuminates a contrast between bodily sensations and external perception, when it comes to the types of judgments we ordinarily conceive of them as possibly yielding. To illustrate this, recall that Ernst Mach (1914) once got on an omnibus and had a visual perception of what seemed to him a shabby pedagogue at the other end. He then realised that he was actually looking in a mirror, subsequently thinking “I am a shabby pedagogue!”. After the revelation, but not before, he was aware that the body he visually perceived was his own.

Surprising as revelations of this kind are in ordinary life, they seem in order. More generally put, several of our experiences beyond bodily sensations involve bodies as part of their content – for instance, visual experiences. Yet, this being the case, it does not seem especially problematic for a visual experience to occur in which a body is represented but is not taken by the perceiver to be her own.⁷ This happens ordinarily when we perceive the bodies of others, and situations in which the relevant experience does indeed represent our own body, such as Mach’s, are also relatively common.

The case seems remarkably different for bodily sensations. In fact, in the philosophical literature on bodily awareness it has been pointed out that, whenever bodily experiences occur, they necessarily come with their subject’s awareness that the body experienced is her own (e.g. O’Shaughnessy, 1998; Martin, 1995; Dokic, 2003). This points in the direction of claiming something for which we now have empirical evidence to be impossible, or at least inconceivable. After lesions in their right parietal lobe, somatoparaphrenic patients have delusional beliefs about the contralesional side of their bodies according to which this side, or parts of it, do not belong to them (Vallar & Ronchi, 2009; Invernizzi et al., 2013). Some such patients, however, are able to feel sensations in their “disowned” limbs. These patients undergo bodily experiences that have a body as their content, but they are not aware of the body they feel as their own. These cases argue strongly for a nuanced formulation of

⁶ This goal should be acceptable by so-called *de se* skeptics, for whom strictly speaking bodily self-attributions are not grounded on anything in the content of bodily experiences (Cappelen and Dever, 2013; Magidor, 2015). Likewise, cognitivists in the abovementioned divide should also be committed to it. Notice that the goal allows a refinement of that divide: the difference between Phenomenal and Cognitive Accounts mainly lies in that the former pick up a specific aspect of the phenomenology of bodily experiences to stand for the SBO, thus not focusing only on facts about the relevant cognitive acts. However, we now see that Cognitive Accounts should also be able to specify the grounds for the relevant judgments.

⁷ An exception to this might be the awareness of bodily location based on the position of the apex of the visual field. This is not problematic for my point. At most it suggests, plausibly, that awareness of bodily location on the mentioned grounds involves complications similar to the ones discussed in the SBO debate.

the previous observation: there is a *seemingly necessary* link between the occurrence of bodily sensations and the involvement of the first-person in the content position in the experiencing subject's reports of them.

It might be said that even this formulation is too concessive. After all, once somatoparaphrenia has become common knowledge in the literature, there is a sense of seeming in which it is no longer true that it *seems* to us that this necessary link exists.⁸ I contend that there is still a sense in which this intuition of necessity is relevant, despite the challenge from somatoparaphrenia. In fact, it seems to lie at the heart of the specific philosophical interest that the SBO raises. Notice that another context in which a similar tension arises is the discussion on the relation between being phenomenally conscious and self-attributing the states of which one is conscious in this way. The apparent compellingness of this connection, undoubtedly lying behind its philosophical import, also informs the work on the phenomenon of thought-insertion, which arguably challenges it.⁹ In parallel, bodily sensations are relevant to discussions on self-consciousness in a way that other mental states are not. Maybe on the grounds of what is normally the case, bodily sensations, unlike exteroceptive perception in general, seem to us to be about ourselves in a specially compelling way.¹⁰

This prescribes a second objective for theories about the SBO. On the assumption that we want them to fulfil the *Judgment Formation Goal*, it is crucial that they also account for what arguably is a central feature of the relation between bodily experiences and judgments of somatosensation: whatever it is about bodily experiences that explains the awareness that they are about *me*, it will need to be sufficiently distinctive of them *vis à vis* external perception. Straightforwardly put, we are pursuing the following *Intuitive Goal*.

[*Intuitive Goal*]: any account of the SBO must specify the SBO in terms that explain the seemingly necessary link that bodily experiences, but not exteroceptive experiences, have with the awareness of the experienced body as one's own.

That somatoparaphrenia, as well as other empirical cases, imposes constraints on views on the SBO is acknowledged in our third and last goal, which demands of any such view that it be extensionally adequate:

⁸ I am thankful to an anonymous referee for pressing me on this point.

⁹ See, e.g., Frith (1992); Campbell (2002); Gallagher (2015). As a matter of fact, this is the other theoretical context in which the expression "sense of ownership" has been successful.

¹⁰ Some illusions of ownership such as the rubber hand illusion (Botvinik and Cohen, 1998), in which the self-attribution might be found compelling in the way indicated, are usually described as exteroceptively induced. Arguably, the success of the rubber hand illusion depends also on proprioceptive feedback, as well as on matters of perspective. In any case, I am appealing here to a general intuition of contrast between external perception and bodily experiences that may have exceptions in both directions.

[*Empirical Goal*]: any account of the SBO must leave room for the specific, sometimes abnormal relations between bodily sensations and the awareness of the felt body as one's own we seem to have evidence for in some pathological and experimental cases.

The views dealt with in this paper will be assessed in the light of the *Judgment Formation* and *Intuitive* goals. From the next section on, I aim to present a set of points, mainly of a conceptual kind, to the effect that the analysis of the spatial content of bodily sensations in terms of what I shall call the *Boundedness Thesis* fails to meet these goals. This will invite, in the concluding section, a reflection on the close connection between these two objectives.

2. The Bounded Body

The focus of this section will be what I shall call the *Boundedness Thesis*:

Boundedness Thesis (BT): the SBO consists of the fact that, when having bodily sensations, the body is felt as having certain boundaries.¹¹

In line with the idea that bodily experiences involve awareness of bodily space, in that they involve being aware of qualities instantiated somewhere in the body, BT points to the relation that seems to hold between experiencing qualities as instantiated in a body and singling out this body in the experience. Let us assume that, in sensory experiences, the latter means tracing, or being able to trace, the limits of the relevant body with respect to other physical objects or to its surroundings. BT says that the SBO consists of this awareness of the bodily boundaries.

In this section I address two views that embody the defence of BT under two different versions. The first focuses on the following phenomenological datum: it is the localisation of felt bodily properties that entails a sense of the boundaries of the body. Each of the points in space where the properties are felt to be located contribute to the delineation of a figure, and such figure is that of the body for which one has a sense of ownership. Crucially, as BT proposes, we have this sense in virtue of being aware of the delineation. Here is a specific formulation of this thesis:

¹¹ Bermúdez (2018, 211-214) presents a similar notion of *Boundedness* (“Bodily events are experienced within the experienced body (a circumscribed body-shaped volume whose boundaries define the limits of the self”) as a feature of bodily experiences. Yet, he argues for the need to supplement it with *Connectedness* (“The spatial location of a bodily event is experienced relative to the disposition of the body as a whole”) for both to jointly ground the SBO. Since in this paper I argue against the sufficiency of the first item, I do not engage with Bermúdez’s (2018) view.

BT-First version: The SBO consists of the awareness of the body as bounded. This awareness is entailed by the experienced location of the qualities felt in bodily sensations.

The second view also acknowledges the phenomenological point that feeling bodily properties as located involves a sense of the boundaries of the body. Yet, it indicates that the phenomenally conscious location is ultimately explained by the subject's possession of a representation of the body: one has a map of one's own body and, when having bodily sensations, pinpoints different spots in it. This allegedly makes the boundaries of the represented body, namely one's own, phenomenally salient: by being felt as located, sensations convey a sense of the limits of what the map represents. Straightforwardly put, in terms of BT:

BT-Second version: The SBO consists of the awareness of the body as bounded. This awareness is entailed by the experienced location of the qualities felt in bodily sensations. These qualities are experienced as located in virtue of the subject's possession of a representation of her own body.

BT-Second version adds to *BT-First version* the appeal to a body representation. As a Phenomenal Account in the spirit of BT, it assumes that the sense of boundedness involved in bodily sensations stands for the first-person figuring in proprioceptive judgments. Yet, it claims that the relevant body representation will carry out further explanatory work by accounting for the fact that bodily properties can be felt as localised, and in particular as localised within what is felt as one's own body. Without further ado, I shall now address each of these views in turn.

2.1. On the Felt Bodily Boundaries

In order to spell out *BT-First version* we need to start by substantiating the idea that the experience of, for example, a prick in the toe or a tickle in the nape of the neck entails awareness of the body as bounded. Mike Martin¹² develops this point thoroughly. A natural way to present it is to start from the description of the peculiarities of the phenomenology of haptic touch, and then eventually to notice that its core feature – the awareness of boundaries – shows up in all bodily experiences, at least to some degree. This is how I shall proceed.

In haptic perception, one perceives objects through touch by directly exploring them in an active and controlled way. Haptic touch typically unfolds over time and

¹² I read Martin's view as aimed at the explanatory project described in section 1, and so seem to do de Vignemont (2007, 2013) and Gallagher (2017). It seems to me that there is textual evidence supporting this reading – see, e.g. Martin (1995, 269 and 273), and compare Bermúdez's (2011, 163) formulation of deflationism with Martin (1995, 270). For a different interpretation, however, see Bermúdez (2018).

involves a range of bodily movements, the experience finally comprising cutaneous stimulation along with motor feedback (Fulkerson, 2014, 6). Feeling the irregularities of the edge of a table by caressing it with the fingertips, for instance, is a case of haptic touch. Even if haptic experiences are mainly object-directed, in that one engages in them to perceive the properties of objects other than the body, their content is typically said to be dual: it involves awareness both of external objects and of the body. When touching the surface of my worktable, not only do I feel the roughness of the wood but also I am aware of a certain pressure on my fingers.

The nature of the relation between exteroceptive perception and bodily awareness in touch is not uncontroversial.¹³ We can however leave this discussion aside and notice, in what seems a neutral enough claim, that the tactually accessed properties we are aware of in haptic experiences will be attributed, in judgments about these experiences, to two different entities: the touched object – the *rough* table – and the body – fingers *being depressed* against the table. Reporting the experience in one way or the other involves an attentional shift: either one attends to the object, as seems more natural in exploratory touch, or one makes an attentional effort and focuses on the body felt while touching.¹⁴ Pursuing this attentional effort, a description of the phenomenology of bodily awareness in haptic touch will surely include the following: “[o]ne measures the properties of objects in the world around one *against one’s body*” (Martin, 1992, 203. My emphasis). Haptic perception crucially involves the experience of contact between body and objects: the bodily awareness involved in it is the awareness of the limits of the body in correlation with the pressure of objects against them. In this sense, touch is a clear case of a bodily experience in which the awareness of bodily boundaries is phenomenally salient. Feeling pressure *on* the fingertips in exploring the surface of the table implies becoming aware of their silhouette.

This invites a reflection on the role of a notion of sense field in touch in contrast with the function that the sense field has in sight. As Martin puts it, “[n]ormal visual experience is essentially experience of objects as they fall within the visual field; tactual experience is essentially experience of objects as they press from the outside onto the limits of a felt sensory field” (ibid., 210). While the sense field in sight is the visually perceived area within which objects are distributed, the objects of touch appear in virtue of our awareness of certain bodily regions that, exactly matching the shape of perceived objects, actually constitute the field. To the extent that the sensory field is identified with the dimension of bodily awareness of the experience, the perception of objects involved in it will properly be described as that of something that falls outside of the field.

¹³ See Fulkerson (2014), Chapter 4, for a careful review of different views in this respect.

¹⁴ In Martin’s (1992) analysis, exteroceptive awareness in touch is a result of attending to bodily awareness in a certain way. For comments on Martin’s view, see Fulkerson (2014) and Scott (2001). See also Husserl (1989) and Katz (1989) for related claims about the role of attention in unfolding the duality of touch.

Indeed, notice that tactile experience typically involves awareness that the touched object *is not* the body. More generally, "...the cutaneous sense field is only a tactual field containing objects of touch in as much as it is embedded within a *space* which extends beyond any such field" (ibid., 209. My emphasis). Touch *qua* bodily sensation involves the awareness of bodily boundaries, which in turn equates to the awareness of such boundaries standing out against a wider space. This turns out to be, on Martin's account, a common feature of all bodily sensations.

It is rather straightforward to see how these considerations generalise to other bodily sensations. Consider the situation in which you raise your hands above your head and are kinaesthetically aware of their relative position (1995, 271; 1993, 212). You feel your hands by having kinaesthetic sensations from them, which means that they seem to extend to at least the point in space where you feel sensation (1993, 210). This awareness thus consists of an awareness of how the hands are placed within a space that goes beyond that in which you actually feel them – since it implies feeling the hands as outlined. By appealing to the awareness of boundaries, the idea of the dual content posited for tactile experiences is generalised *mutatis mutandis*. Arguably, to the extent that all somatosensorily perceived qualities are grasped as located somewhere in the body, they count as signalling the points to which the body extends, namely where its limits are and where the space in which it is inscribed begins. An acute prick in the toe indicates a particular point beyond which there might be a thorn; a tickle in the nape of the neck conveys a sense of there being an immediately contiguous area in which the air is moving in an unusual way.

Up to this point we have clarified part of *BT-First version* by spelling out the claim that experiencing the body through localised bodily sensations entails an awareness of it as bounded. Let us assume that this description of the experience of bodily space is accurate. I shall now discuss the central claim of this version of BT, namely that the SBO *consists of* the awareness of the body as bounded.

The view under consideration states, more specifically, that "wherever a sensation feels to be located, *one's body appears* to extend to at least that point in space" (1993, 210. My emphasis). The boundaries are the limit between what one feels as the own body and what is felt as other. When, exploring my worktable, I switch the focus of attention from the texture of the wood to the pressure on the fingers, what I am actually doing is switching attention from what is going on beyond one of my boundaries to what goes on beneath it (1995, 270). This is how *BT-First Version* is finally defined: the experienced location of the qualities felt in bodily sensations entails an awareness of boundaries that is awareness of *my* body as bounded.

The view certainly conveys a descriptive analysis of the bodily experience of space, appealing to a notion of sense field that involves awareness of properties within it and of objects outside of it. In close connection with this, it specifies the Cartesian intuition that I am not present in my body as a sailor in a ship (1996, 81): contrary to how the sailor presumably experiences the properties of the ship she is in,

the spatial distribution of somatosensorily felt properties is such that they fall within what I feel as *my own* space. However, the claim that we experience certain qualified regions of space will not be particularly explanatory unless it is further substantiated in a way that, conceptually, is sufficiently independent from the very notion of ownership. The notion of a boundary the relevance of which stems from the fact that it appears as the limit between what is felt as one's own and what is felt as other seems unsatisfactory in this respect. For, we could still ask: on what grounds does the subject take the body on one of the sides of the boundary – the body Being Depressed in the worktable example – to be her own in the relevant sense, while taking the object on the other side – instantiating Roughness – not to be hers? Why should either side of the perceived boundary have the special import it has?¹⁵

It might be replied that this misses the point about what deflationary views are supposed to be. The SBO *just is* the sense that one's own body extends up to certain boundaries: “for me to feel as if some part of my body occupies a region of space... is for it to seem to me as if that region falls within one of the boundaries of my body” (Martin, 1995, 270). This certainly deflates the SBO, and the demand for conceptual independence – the reply goes – is misplaced.

As far as I see, the reply itself involves a misunderstanding regarding what is essential to deflationism. Insofar as we are dealing with Phenomenal Accounts, the phenomenological analysis of sensations must be sufficient to explain why, given a bodily sensation, we typically use a first-person pronoun to qualify its content; and deflationism is supposed to do so without appealing to a specific mineness component. In particular, in the view at stake it must be the representation of space, independently described, which explains its manifesting itself first-personally in judgment. The fact that we experience properties on what is felt as *our own* side of a boundary does not meet the independence constraint.

The way to defend *BT-First version* would be to show that the bare description of bodily sensations in terms of properties that delimit boundaries can do the expected grounding work. This is what I want to question in what follows. I contend that this description does not make it intelligible why we tend to report the relevant experiences in first-personal terms. This is clear if we observe that the notion of a sense of boundedness is plausibly involved as well in episodes of visual perception whose contents we do not self-attribute. Besides, what indeed seems to be a crucial difference between the two types of experiences won't be accounted for just by appealing to boundedness.

According to *BT-First version*, what is most special about bodily sensations with respect to visual perception has to do with the notion of a sense field. We are aware of

¹⁵ Considerations along the lines that bodily sensations only involve the body that is *in fact* our own – which play a crucial role in Martin's definition of them as genuinely perceptual – are tangential to this question, which addresses specifically the phenomenal grounds for the salience of the felt body. I will elaborate on this a bit more in the next section. Pointing out, alternatively, that the relevant side of the boundary is felt in a special way, e.g. “from the inside”, just stresses the need to search for something qualitatively distinctive of this experiential mode, beyond its spatial content.

the objects of touch, for instance, as something we do not feel in the same way as we feel the body. On this view, this is so because of our awareness of the boundary of the field. But upon further scrutiny, vision and bodily sensations may not be so radically distinct in this particular respect. Husserl noted that, in visual experience, at every moment we are aware that the world extends beyond what is actually falling within our visual field at that moment (1983, §27).¹⁶ An anticipation of subsequent perceptions seems to be built into the content of each particular perception: the visual field is experienced as related to other regions of space of which we are aware in a different way, and to which we might or might not eventually turn our attention – such as, for example, the region behind our bodies. Hence, it doesn't seem far-fetched to claim that objects with properties are distributed within the visual field to fill it up to its boundaries, which delimit it with respect to other non-actually-perceived regions of space. This questions the sufficiency of such a description of spatial experience to explain what it is that makes us typically judge that the body in bodily sensations constitutes *our own* region of space, in opposition to what occurs with the space and objects falling within the visual field.

There is, however, a compelling disanalogy between the sense fields of sight and proprioception. In the visual case, “I can let my attention wander away from the writing table which was just now seen and noticed... to all the Objects I directly ‘know of’ as being there and here in the surroundings of which there is also consciousness...” (id., 51-52). While in vision I am aware of an environment standing beyond the currently perceived visual field which is in principle visually accessible as a function of my bodily movement and shifts of attention, in bodily sensations “the sense of falling within a boundary may be no more than the sense that the location in question is within a space that seems to extend into regions that one *could not* currently be aware of *in this way*” (Martin, 1995, 271. My emphasis). One might want to insist that the distinctive aspect of bodily sensations is that a contrast between what the subject is somatosensorily aware of and what she could not be aware of in this specific way is part of their content. In contrast, visual perception involves awareness of the fact that one could be aware of what stands on the other side of the boundary in the same way as one is aware of what falls within the visual field.¹⁷ The peculiar nature of the subject's awareness of one of the sides of the boundary in contrast with the other could then ground the SBO.

This line of argument is promising. But at this point we need to evaluate how much work the notion of boundedness would be doing in such a view. The proposal would appeal to *ways of being aware* of regions of space: maybe to correlations between regions and types of properties we are aware of as instantiated in them; or between regions and the types of cognitive faculties by which we are aware they can

¹⁶ Dokic (2003, 326) also appeals to this idea through Merleau-Ponty to discuss Martin's view. However, his point is different from the one I make here.

¹⁷ Interestingly, for Husserl this is correlated with the subject's kinaesthetic awareness, which indicates her possibilities for action (1997, Section IV; 1989, Section I, Ch. 3). The Gibsonian notion of affordance also stresses this point. On the connections between the Husserlian and the Gibsonian analyses of visual perception, see Zahavi (2002).

be grasped. But even if these regions would be demarcated by perceived boundaries, such boundedness would seem subsidiary in the context of an explanation of the fact that some regions, or the bodies in them, are taken to be *ours*.

In sum, my point in this section is that *BT-First version* fails at meeting, on the one hand, the *Intuitive Goal*: there doesn't *seem* to be a necessary link between having visual experiences and self-attributing their contents, even if arguably a sense of boundedness is part of their phenomenology. Hence, *BT-First version*'s specification of the SBO doesn't pick up a distinctive enough element of bodily experiences *vis à vis* exteroception to account for the compelling involvement of the first person in the former. On the other hand, by the same token, the view falls short of the *Judgment Formation Goal*. The notion of a sense of boundedness doesn't suffice to explain why bodily sensations are expressed first-personally, since a sense of boundedness is generally involved in visual experiences which do not yield judgments in which we self-attribute visual contents.¹⁸

Notice, however, that none of the points made in this section question the prospects of deflationist accounts in general; nor do they in principle rule out the possibility that a more sophisticated account of spatial representation in bodily sensations can meet the goals satisfactorily. Informed by empirical evidence that disputes the adequacy of a view based only on the phenomenology of bodily sensations, *BT-Second version* adds a further element to the picture. Let us now move on to evaluating whether it offsets the shortages of the view examined.

2.2. The Role of the Body Schema

De Vignemont (2007, 436) points out that Martin “reduces the sense of ownership to the sense of the boundaries of one’s own body” but he “does not go into detail about the delineation of the boundaries of one’s own body”. She then proceeds to investigate “the nature of the spatial representation of the body that underlies the sense of ownership”, submitting an account that intends to supplement Martin’s in the pursuit of a common aim. I take de Vignemont (2007) to defend *BT-Second version*:

BT-Second version: The SBO consists of the awareness of the body as bounded. This awareness is entailed by the experienced location of the qualities felt in bodily sensations. These qualities are experienced as located in virtue of the subject’s possession of a representation of her own body.

On this view, the SBO still consists of a sense of boundedness identical to a sense of one’s own boundaries. I just discussed the limitations of an appeal to this brute

¹⁸ A consequence of *BT-First version* is that, necessarily, if a subject has a located sensation she will feel the body part where it is located as her own. Somatoparaphrenia constitutes a powerful counterargument to this (de Vignemont, 2013). Hence, it is also doubtful that *BT-First version* meets the *Empirical Goal*.

phenomenological fact alone as a deflationist strategy on how self-attribution of the felt body is possible. *BT-Second version* offers a further explanatory tool: what ultimately grounds the subject's awareness of the felt boundaries as her own is that the properties felt in bodily sensations are pinpointed within a representation of what is in fact the subject's own body. The relevant representation thus explains why the awareness of boundaries that follows from the location of sensation involves a phenomenology of ownership. On the face of it, the resulting "feeling of ownership" would seem to allow the view to meet the *Judgment Formation Goal*. Besides, since it is typical and exclusive of bodily experiences that they gain their spatial content by reference to the relevant body representation, the *Intuitive Goal* would also be met.

My aim in this section is to question that the appeal to body representations as it stands in *BT-Second version* grants that bodily experiences involve a phenomenology of ownership – and so, in particular, a sense of *our own boundaries*. I thus question that this supplemented version of BT can satisfactorily account for the SBO.

It is generally accepted in debates on bodily awareness that embodied subjects deal with different representations of their bodies – representations cashed out here minimally as mental resources that track the state of the body and encode it: the content of bodily experiences relies on representations of the body that are multimodal, resulting from the integration of visual, proprioceptive, and vestibular information (de Vignemont, 2014). In de Vignemont (2007), the type of body representation proposed as relevant for this discussion is the body schema, a sensorimotor map of the body based on information that can be constantly updated on the basis of afferent and efferent processes, including the posture and relative position of body parts, the size and strength of the limbs, or the degree of freedom of the joints.¹⁹ From a functional point of view, the body schema enables and constrains movement and the maintenance of posture, being the kind of representation involved in the control of action. The relevance of the body schema in the discussion on the SBO is inferred from empirical evidence showing correlations between variations in ownership rating and functions typically associated with this body map. Bodily sensations, among other sensory inputs, are essential for the emergence of the schema, although they subsequently become weaker or disappear in the constitution of a bodily representation that is most of the time unconscious.

In my view, there is a threat to the general strategy of resorting to bodily representations for Phenomenal Accounts. By positing representations as grounds of the SBO, the difficulty of explaining how bodily experiences yield *de se* judgments carries over to the representations. In other words, if we posit a bodily map as a tool to explain how I manage to locate bodily properties within what I am aware of as my body, then it seems that the relevant map would have to be a representation of my body *as mine*, at the risk of the relevant sensations just being felt to delimit *a* body.²⁰ I

¹⁹ For reviews of the numerous terminological and conceptual confusions involved in this notion, in particular its conflation with the notion of body image, see Tiemersma (1989) and Gallagher (2005, Chapter 1).

²⁰ Peacocke (2015) makes a connected point, focusing on the idea that this representation would assume, rather than explain, ownership.

might have a very detailed map of my body, but having “a sense” that the body represented in it is mine is a different and crucial issue. Yet, it is not obvious what it means for a map to (unconsciously) represent a body as one’s own – beyond the fact that the relevant body representation elicits the behaviour typically taken to show that one recognises a certain body as one’s own – such as making assertions in which one uses “my” to talk about the felt body–, or the phenomenally conscious mental states that would cause this behaviour.

This strategy ultimately leaves us with a sort of explanatory gap between an unconscious representation and the phenomenology of ownership allegedly involved in those states whose content is to be spelled out by reference to it. This gap doesn’t seem to be bridged by appealing to the fact that the relevant representation just represents the one and only object that counts as our own body. Dokic (2003) traces a useful distinction between the sense of ownership and what he calls the “fact of ownership”. The fact of ownership is that any property (veridically) perceived somatosensorily is a property of one’s own body. Using the terms that occupy us here, the fact is that any property (veridically) perceived somatosensorily is felt to be at a location that falls within a map that *actually* represents one’s own body.

Indeed, it is the case that, at least in normal circumstances, the body that we feel somatosensorily is our own. This fact grants the following: *if* there is anything like a phenomenology of ownership attached to the contents of experiences at all, then it makes sense that it is attached to the contents of bodily experiences, since in normal circumstances this awareness as of the felt body as one’s own will be veridical. A similar line of thought is this: if there is anything like a phenomenology of mental state ownership at all, then it makes sense that we have it with respect to those mental states we access phenomenally, since, as it turns out, we typically only have access to our own mental states this way.

Yet, what is at stake here is precisely the defence that there is such a phenomenology. One might doubt that the fact that I notice my own mental states, but not those of others, phenomenally, fully explains, or indeed entails, that I feel them phenomenally *as my own*.²¹ In the same way, one might doubt that the fact of ownership fully explains, or indeed entails, that there is a phenomenology of ownership for the body felt in bodily sensations – in particular, that we feel its boundaries *as our own*. The gap I am pointing to arises precisely because we are dealing with a Phenomenal Account: that the boundaries made salient by the location of bodily sensations be those of the subject’s actual body is not equivalent to them *being felt* as such, and it is not clear why an (unconscious) bodily representation should contribute to an explanation of why the latter is the case, or indeed entail that it is. And importantly, as previously argued, the plain location of sensations within certain boundaries falls short of accounting for the SBO.²²

Admittedly, de Vignemont (2007, 443) indicates a solution to this difficulty. She suggests that the first-personal component of the body schema is *gained* by the fact

²¹ And indeed many doubt this. See, e.g. ... in this volume.

²² This elaborates what I stated in footnote 15.

that it is the map of the body with which we act: we feel as our own the one and only body with which we can act directly, and the body schema is the representation tracking this body.

This paves the way for a suggestive account of the SBO in which agency plays a crucial role. *BT-Second* version might have to be specified thus: ultimately, a bodily sensation involves what we feel as our own body if it presents the relevant properties as located within (the map of) the body that we can use directly for action. On this view, the sense of boundedness *qua* phenomenology of ownership would then be grounded on the phenomenology of agency. As far as I can see, this is tantamount to acknowledging the limitations of the notion of boundedness as grounds for the SBO. In fact, the considerations in this section suggest that a straightforwardly agentic view might actually be preferable: for, how independent can the self-attribution of the body with which one acts be of the fact that one perceives this body via the bodily sensations involved in one's engagement in action?²³ The agentic view that follows naturally is one in which bodily sensations, provided with a spatial content, delimit the body with which we can act directly; and this, in turn, gives rise to a specific bodily map attached to action, as well as to a sense of bodily ownership. Interesting as it sounds, the view departs from – in fact, it would seem to deny – the claim that a sense of boundedness be sufficient as grounds for the SBO.²⁴

To sum up, *BT-Second version* intended to overcome the shortages of *BT-First version* by appealing to a bodily representation. Given our *Intuitive Goal*, the appeal to the body schema seemed initially appealing. I have argued, however, that it is not clear how the relevant representation qualifies as a representation of my body as my own, or in general as one that provides bodily sensations with a phenomenology of ownership. Besides, a natural attempt to specify the view in agentic terms seems to depart from the notion of boundedness. All in all, the appeal to bodily representations in the framework of BT does not represent much of a step forward for explaining why bodily sensations are typically expressed first-personally – that is, in the direction of meeting the *Judgment Formation Goal*.

3. Conclusion

In this paper I have focused on two particular Phenomenal Accounts that ground the SBO on the notion of a sense of boundedness. Other views within this trend have been offered after these, some by their very proponents (de Vignemont, 2018; this

²³ This does not need to entail that bodily sensations are necessary for *any* subject to possess a body representation that plays the functional role typically associated with the body schema. Patients with deafferentation, for example, compensate their proprioceptive deficits with visual tracking of the body (Cole & Paillard, 1995). This suggests that the various sensory modalities typically involved in building the relevant body representation can compensate each other in cases of deficit. In fact, deafferentation has been interpreted as a pathology in which motor deficits are compensated by mechanisms closer to the body image than the body schema (e.g. Gallagher & Cole, 1995; Wong, 2009).

²⁴ I am thankful to one of the referees for helping me shape these remarks on agency.

volume), and some going beyond related notions of boundedness (Bermúdez, 2017). But I take the reflections in this paper to have relevant programmatic upshots.

On the one hand, meeting the *Intuitive Goal* involves meeting the *Judgment Formation Goal*. The *Intuitive Goal* simply calls our attention to the fact that whatever it is that explains *de se* judgments of somatosensation should be involved in bodily sensations in a way that makes sense of the apparent compellingness of their first-personal expression.

On the other hand, and importantly, meeting the *Judgment Formation Goal* will have a direct bearing on the *Intuitive Goal*. The former asks to specify the trait that explains why we self-attribute the felt body in judgments of somatosensation. A proper account of the SBO will arguably be one in which the selected trait be generally and typically involved in bodily experiences – since it is part of what we are assuming that these experiences generally and typically yield judgments of this sort. In other words, it will immediately be one capable of meeting the *Intuitive Goal*.

Hence it makes sense, as a strategy to show the limitations of a view regarding the *Judgment Formation Goal*, to stress that it specifies the SBO in terms of an element involved in other experiences that do not yield first-person judgments. While showing that the selected trait is not sufficient to explain that we form these judgments, this just amounts to pointing out a view's limitations regarding the *Intuitive Goal*. This is the strategy I followed in assessing *BT-First version*.

Finally, the fact that the body schema, appealed to as specifically involved in bodily sensations, fails to accomplish the grounding task in *BT-Second Version* reveals something essential. The specificity of a given trait doesn't straightforwardly make it a good candidate to ground the SBO. We undergo many experiences that involve type-specific traits and yet do not yield judgments that are *de se* in the sense relevant here. It seems there must be something about the selected specific trait that makes it suitably first-personal. This, I think, is the major difficulty for Phenomenal Accounts of a deflationist sort: what is it that makes a phenomenal component "suitably first-personal"? This worry is also what might make the inflationary notion of a specific mineness *quale* appear as an ultimately useful and simple explanatory tool (de Vignemont, 2013, 650): the first-person might just have the status of a primitive. In any case, the phenomenal richness of bodily experiences suggests a long way to go before we can renounce the idea that a notion of ourselves as ourselves is intrinsic to them.

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References

- Alsmith, A.J.T. (2015). Mental Activity & The Sense of Ownership. *Review of Philosophy and Psychology*, 6, 4, 881-896.
- Bermúdez, J.L. (2011). Bodily Awareness and Self-Consciousness. In: S. Gallagher, ed., *The Oxford Handbook of the Self*. New York: Oxford University Press, 157-179.
- Bermúdez, J.L. (2015). Bodily Ownership, Bodily Awareness and Knowledge without Observation. *Analysis*, 75, 1, 37-45.
- Bermúdez, J.L. (2018). Ownership and the Space of the Body. In: J.L. Bermúdez, *The Bodily Self. Selected Essays*. Cambridge, MA: MIT Press.
- Billon, A. (2017). Mineness first: Three Challenges to the Recent Theories of the Sense of Bodily Ownership. In: A. Alsmith and F. de Vignemont (eds.), *The Subject's Matter: Self-Consciousness and the Body*. Cambridge (Mass.): MIT Press.
- Botvinik, M. and Cohen, J. (1998). Rubber Hands 'Feel' Touch that Eyes See. *Nature*, 391, 756.
- Brewer, B. (1995). *Bodily Awareness and the Self*. In: J.L. Bermúdez, T. Marcel, N. Eilan, eds., *The Body and the Self*. Cambridge (Mass.): MIT Press, 291-310.
- Campbell, J. (2002). The Ownership of Thoughts. *Philosophy, Psychiatry, & Psychology*, 9, 1, 35-39.
- Cappelen, H. and Dever, J. (2013). *The Inessential Indexical. On the Philosophical Insignificance of Perspective and the First Person*. Oxford: Oxford University Press.
- Cole, J. and Paillard, J. (1995). Living without Touch and Peripheral Information about Body Position and Movement: Studies with Deafferented Subjects. In: J.L. Bermúdez, T. Marcel, N. Eilan, eds., *The Body and the Self*. Cambridge (Mass.): MIT Press, 245-266.
- Descartes, R. (1996). *Meditations on First Philosophy. With Selections from the Objections and Replies*. J. Cottingham, transl. and ed. Cambridge: Cambridge University Press.
- Dokic, J. (2003). The Sense of Ownership: An Analogy between Sensation and Action. In: J. Roessler and N. Eilan, eds., *Agency and Self-Awareness: Issues in Philosophy and Psychology*. New York: Oxford University Press, 320-344.
- Frith, C. D. (1992). *The Cognitive Neuropsychology of Schizophrenia*. Hove, Sussex: Erlbaum.
- Fulkerson, M. (2014). *The First Sense. A Philosophical Study of Human Touch*. Cambridge (Mass.): MIT Press.
- Gallagher, S. (2005). *How the Body Shapes the Mind*. New York: Oxford University Press.
- Gallagher, S. (2015). Relations between Agency and Ownership in the case of Schizophrenic Thought Insertion. *Review of Philosophy and Psychology*, 6, 4, 865-879.
- Gallagher, S. (2017). Enhancing the Deflationary Account of the Sense of Ownership. In F. de Vignemont and A.J.T. Alsmith, eds., *The Subject's Matter: Self-Consciousness and the Body*. Cambridge (Mass.): MIT Press.
- Gallagher, S. and Cole, J. (1995). Body Schema and Body Image in a Deafferented Subject. *Journal of Mind & Behaviour*, 12, 360-390.
- Gallagher, S. and Zahavi, D. (2008). *The Phenomenological Mind. An Introduction to Philosophy of Mind and Cognitive Science*. New York: Routledge.

- Gurwitsch, A. (1964). *The Field of Consciousness*. Pittsburg (Pa.): Duquesne University Press.
- Husserl, E. (1983). *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. First Book*. F. Kersten, transl. Dordrecht: Kluwer Academic Publishers.
- Husserl, E. (1989). *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. Second Book*. R. Rojcewicz and A. Schuwer, transl. Dordrecht: Kluwer Academic Publishers.
- Husserl, E. (1997). *Thing and Space. Lectures of 1907*. R. Rojcewicz, transl. Dordrecht: Kluwer Academic Publishers.
- Invernizzi, P., Gandola, M., Romano, D., Zapparoli, L., Bottini, G. and Paulesu, E. (2013). What is Mine? Behavioral and Anatomical Dissociations between Somatoparaphrenia and Anosognosia for Hemiplegia. *Behavioural Neurology*, 26, 139-150.
- Katz, D. (1989). *The World of Touch*. L.E. Krueger, transl. and ed. New Jersey: Lawrence Erlbaum Associates, Publishers.
- Mach, E. (1914). *The Analysis of Sensations, and the Relation of the Physical to the Psychological*. London: The Open Court Publishing Company.
- Magidor, O. (2015). The Myth of the De Se. *Philosophical Perspectives*, 29, 1, 249-283.
- Martin, M.G.F. (1992). Sight and Touch. In: T. Crane, ed., *The Content of Experience*. Cambridge: Cambridge University Press, 199-201.
- Martin, M.G.F. (1993). Sense Modalities and Spatial Properties. In: N. Eilan, R. McCarty and B. Brewer, eds., *Spatial Representations*. Cambridge (Mass.): Basil Blackwell Ltd., 206-218.
- Martin, M.G.F. (1995). Bodily Awareness: A Sense of Ownership. In: J.L. Bermúdez, T. Marcel, N. Eilan, eds., *The Body and the Self*. Cambridge (Mass.): MIT Press, 268-289.
- O'Shaughnessy, B. (1980). *The Will. A Dual Aspect Theory*, 2 vols. Cambridge: Cambridge University Press.
- Peacocke, C. (2015). Perception and the First Person. In M. Mathen, ed., *Oxford Handbook of the Philosophy of Perception*. Oxford: Oxford University Press, 168-180.
- Scott, M. (2001). Tactual Perception. *Australasian Journal of Philosophy*, 79, 2, 149-160.
- Tiemersma, D. (1989). *Body Schema and Body Image. An Interdisciplinary and Philosophical Study*. Amsterdam: Swets & Zeitlinger.
- Vallar, G. and Ronchi, R. (2009). Somatoparaphrenia: A Body Delusion. A Review of the Neuropsychological literature. *Experimental Brain Research*, 192, 533-551.
- de Vignemont, F. (2007). Habeas Corpus: The Sense of Ownership of One's Own Body. *Mind & Language*, 22, 4, 427-449.
- de Vignemont, F. (2013). The Mark of Bodily Ownership. *Analysis*, 73, 4, 643-651.
- de Vignemont, F. (2014). A Multimodal Conception of Bodily Awareness. *Mind*, 123, 492, 989-1020.
- de Vignemont, F. (2018). *Mind the Body*. New York: Oxford University Press.
- de Vignemont, F. (2018). The Phenomenology of Bodily Ownership. In: M. García-Carpintero and M. Guillot (eds.), *The Sense of Mineness*, Oxford: Oxford University Press.
- Wong, H.Y. (2009). On the Necessity of Bodily Awareness for Bodily Action. *Psyche*, 15, 1.
- Zahavi, D. (2002). First-person Thoughts and Embodied Self-Awareness: Some Reflections on the Relation between Recent Analytical Philosophy and Phenomenology. *Phenomenology and the Cognitive Sciences*, 1, 7-26.