

12 Perspectival Structure and Agentive Self-Location

Adrian J. T. Alsmith

1 Introduction

Perceptual experience is perspectivally structured. Perceptual experience is self-locating. Failure to distinguish these claims masks a significant issue dividing accounts of spatial self-consciousness. Perceptual experience is perspectivally structured, in the sense relevant here, when that which is perceived is experienced from somewhere. If perceptual experience can have this kind of structure without being self-locating, then one must go beyond the structure of perceptual experience itself in giving an account of how we are able to think of ourselves as part of the world we perceive. Conversely, if it cannot be perspectivally structured without being self-locating, then one need not go beyond the structure of perceptual experience to give such an account.

Accounts of the former kind have in common the idea that “experience alone is powerless to place its subject with respect to its objects” (Brewer, 1992, p. 26). But there is room for variation in what provides the missing ingredient. Here we can paint a broad-strokes distinction between intellectual accounts and agentive accounts of spatial self-consciousness. Intellectual accounts, such as those held by Campbell (1994) and Evans (1982), hold that thoughts about one’s location require an appropriate conception of oneself as a spatiotemporal being. Agentive accounts, such as those proposed by Brewer (1992) and Schellenberg (2007), appeal to the idea that one acts upon objects from one’s location in explanation of how an experience can represent oneself as located.¹

My aim here is to show the merits of an agentive account by developing its resources further than has been previously achieved. I will not do so by discussing intellectual accounts in much detail. Rather, the main contrast will be with views that hold that perceptual experience itself *is* sufficient to

place its subject with respect to its objects. In a generalized form we may call it the perspectival self-location thesis (PST).

PST: If an experience is perspectival, then it represents its subject's location.

Against this, I will defend what I will call the agentive self-location thesis (AST).

AST: If an experience represents an object as the focus of its subject's possible action, then it represents its subject's location.

Some remarks are in order to give context to these two theses. Each provides a basis for an account of how perceptual experience can represent its subject's location. On the assumption that all perceptual experience is perspectival, then PST straightforwardly undermines any motivation for AST. For if PST were true, then the perspectival structure of perceptual experience alone would be sufficient for a subject to have thoughts about her location. Any appeal to one's agency to account for the latter would then be redundant.

Note also that neither is concerned with what is minimally necessary for a subject to represent her location. Indeed, it may be plausible to think that the conditional in PST only holds for subjects already independently capable of self-representation of some kind. This restriction is certainly built into AST, where the antecedent involves experience representing an object as the focus of *its subject's* possible action. Perhaps a less restrictive thesis could be formulated and defended. However, my interest here is not to provide an account of how subjects come to represent themselves in the most fundamental respect, whatever that might be, but rather with how they come to represent themselves in relation to the world that they perceive. The idea that the relationship between perception and action is essential to the most basic emergence of self-consciousness is one that I find attractive, but it is not one that I will defend here.²

The rest of the discussion proceeds as follows.

Section 2 groups and discusses two ways in which perceptual experiences are often described as perspectival. Section 3 introduces the general idea of a perceptual experience having self-locating content. It also provides an interpretation of PST according to which perceptual experiences are self-locating in virtue of representing the location of a perspective as the location of the subject.

The next two sections build a case against PST. Section 4 provides arguments from the cases of film experience and visualization, to show that experiences can be structured around the location of a perspective without

requiring that location to be represented as the subject's. Further consideration of these cases in section 5 reveals that there are various ways in which we can individuate perspectives independently of the subject's location. It is then argued that even if being perspectivally structured were sufficient for an experience to represent the location of a perspective within the subject's body, this would not be sufficient for representing the subject's location.

The final two sections respectively aim to develop AST as an alternative to PST and show its capacity to accommodate relevant aspects of the unity of perceptual experience. Section 6 presents the basic commitments of AST, shows why it requires an account of the unity of the body in action, and provides such an account. Finally, section 7 argues that AST is better placed than PST to capture a sense in which we are conscious of ourselves as singly located, precisely because of its central appeal to the notion of a unified body.

2 Perspectival Structure

Experiences are perspectival when they instantiate certain kinds of structure. There are two kinds of perspectival structure commonly recognized to obtain in perceptual experience. The first is what I will label a *limitation structure*. The second is what I will label an *egocentric structure*.

Limitation structure is characterized by certain sensory limitations.³ One of these is that things are only perceptible if they are within a certain bounded region at a time. Thus the visual field or field of view is horizontally and vertically limited such that one can only see objects within those limits. Another limitation is that an object falling within the bounds of the visual field may not be seen, or some of its parts may not be seen, due to the fact that opaque surfaces occlude one another. Occlusion is a limitation characterizing the visibility of objects experienced as three-dimensional.⁴ This is in slight tension with a historically popular view, according to which the appearance of objects in the visual field is limited to a two-dimensional structure that gives only the impression of depth.⁵ According to this characterization, strictly speaking, the objects of perceptual experience appear in graphical perspective. Their size and shape are as of a two-dimensional projection, in which the lines of projection run through an image plane to a single point. Tensions aside, we can recognize the kernel of truth common among these descriptions, which is that each putative limitation is such relative to a particular location. This is variously called the origin, point of observation, point of view, or more simply the perspective of the experience in question.

The other kind of structure, egocentric structure, concerns the systematic organization of the experienced locations of objects within an egocentric frame of reference. Locations in an egocentric frame of reference are assigned relative to a single point. This point is typically at the intersection of three orthogonal axes, each of which may be labeled according to canonical egocentric directions such as leftward, upward, forward, and so on.⁶ The general structure admits of static and dynamic species. Sometimes, one might need to only specify the synchronic spatial organization of a subject's experience: some things are experienced as nearby, others far away, some of these seem straight ahead, others to the left or to the right, and so on. But for other cases, a diachronic specification of the subject's experience is required, such as when things are seen as coming closer, moving leftward, and so on. When the content of experience is described as egocentric, or egocentrically organized, what is typically meant is that it is structured in one of these two ways.

If an experience has either a limitation structure or an egocentric structure, or both (as is usually the case), then it is perspectival in the sense relevant here. Vision is the paradigm for perspectively structured perceptual experience, so naturally this form of perceptual experience will be our principal focus. But the same structures might be thought to obtain in experiences in other sensory modalities, or indeed, as I will suggest in a later section, in sensory imagery. What I will assume, in any case, is that any form of experience that instantiates either form of structure described above is then a form of perspectival experience.

3 Perspectival Self-Location

It is fairly common to think that an ordinary episode of human visual experience will be sufficient for its subject to form a judgment about her location.⁷ Glibly put, you can judge where you are just by looking at something. This fact (as I will assume it is) admits of a variety of explanations. For instance, one might hold that in order to judge that, for example, I am in front of a door, "something more than the *sheer* [perceptual] awareness is called for: the perceptual state must occur in the context of other kinds of knowledge and understanding [involved in conceiving herself as] a persisting subject of experience" (Evans, 1982, p. 232). Christopher Peacocke expresses a somewhat contrasting set of intuitions as follows:

Consider . . . the everyday case in which a person forms a belief with the content 'I am in front of a door', and does so for the reason that he sees a door ahead of him. His visual experience represents him as bearing a certain spatial relation to

the door . . . taking his experience at face value, he would judge that he is in front of a door. (Peacocke, 2001, pp. 215–216)

An experience represents its subject's location when its content includes a spatial relation between the subject and the object of the experience. It includes a relation of the kind aRx , where a refers to the object of experience, x to the subject of the experience, and R to the spatial relation between them. In representing R , the content specifies the relative location of each relatum as represented by the experience. One of these, the subject, is picked out by x in a manner distinctive of first-personal contents, in that it cannot fail to refer to the subject (Shoemaker, 1968). If visual experiences have such contents, then they suffice for a certain class of first-person thoughts, namely thoughts about one's location.

Recall the perspectival self-location thesis (PST).

PST: If an experience is perspectival, then it represents its subject's location.

PST is a thesis about the conditions under which an experience can have self-locating content. It is most plausible as a thesis about perceptual experience, holding that the perspectival structure of perceptual experience is sufficient for it to represent one's location. A natural explanation then follows for the sufficiency of perceptual experience in forming thoughts about one's location. One might come to think that one is somewhere just by looking at something, just because one sees that thing from somewhere—somewhere which one represents as one's own location.

Now, as noted in the introduction, the idea that perceptual experience is self-locating is rarely distinguished from the idea that perceptual experience is perspectivally structured.⁸ In some cases this may be due to an error of conflation, or the distinction lacking relative importance; in other cases, such a verdict seems less plausible, for example:

Simply in virtue of its perspectival character, visual experience can include the location of the perceiver among its face value contents. (Schwenkler, 2014, p. 139)

Perceptual content. . . can vary along a *perspectival* dimension, in regard to how things *look* (or appear) from the vantage point of the perceiver. . . This corresponds to the fact that perception is, at once, a way of keeping track of how things are, and also of our relation to the world. Perception is thus world-directed and self-directed. (Noë, 2004, p. 168)

[In] egocentric spatial perception the objects of perception are experienced as standing in spatial relations to the perceiver. . . Egocentric spatial perception can therefore be described as self-locating. (Cassam, 1997, pp. 52–53)

Plausibly, remarks like these are not mere conflation, rather they involve a suppressed assumption that the perspectival structure of an experience implies that it has self-locating content; in short, PST. We can most readily make sense of this if we characterize perspectivally structured experiences as representing relations between objects and the locations of subjects. Perspectival structures, on this gloss, involve a relation between an object and the perspective from which the object is experienced, where the location of the latter is represented as the location of the subject. Call this claim *perspectival identity*: for a perceptually represented object a , a spatial relation R , a subject x at location l_x and a perspective p at location l_p , a perceptual experience represents aRx just because it represents aRp and l_p is represented as l_x .

Two comments on this claim are in order before moving on. First, not everyone agrees with the characterization of perspectival structure involved here: Campbell (1994, p. 119) affirms that visual experience is perspectivally structured, but denies that it must then include relations such as R ; Perry (1986, pp. 137–138) denies that visual experience requires “any idea or representation” of oneself.⁹ But note that we can grant that perspectival structures are relational, without then accepting perspectival identity. So, *pace* Campbell and Perry, let us say that any instance of limitation-structured or egocentric-structured content in perceptual experience specifies aRp . For even if we grant this, it is an open question whether the experience represents aRx .

Second, it is sometimes argued that if the location of the perspective, l_p , is represented in the experience, it is not itself perceived. That is, it is not represented in just the same way as other objects, rather it is represented by means of representing those objects within a perspectival structure.

[The perspectival aspect of] how things are presented as being does not turn up in experience as a point of view being an explicit element of how things are presented as being, with the relations of the objects perceived being marked relative to it. . . . Rather, the point of view from which one perceives is marked in one’s visual experience through it being the point to which the objects perceived are presented—if one can fix the location of those objects, one [can] thereby determine the location of the point of view. (Martin, 2002, pp. 409–410)

In these remarks, I think, is the basic truth that if objects and their parts are consistently represented in a perspectival structure there will be a single location relative to which they are arranged in that structure. Hence, the structure itself is sufficient to determine l_p . The views attributed to Campbell and Perry above amount to a simple denial that from the fact that the

l_p can be determined in this way one can infer that the experience implicitly represents it, let alone l_x . But others have taken just the opposite lesson: that although l_p does not figure in the explicit content of the experience, it figures implicitly just in so far as the experience presents objects in a manner that is perspectivally structured.¹⁰ This dispute is interesting and important, but for a separate occasion. For the sake of the present discussion, I will assume that the content of perspectivally structured experience is relational, such that it represents objects in relation to an implicitly represented particular location, l_p . The question that concerns us is whether, if one represents objects in this way, one then represents l_x .

4 The View from Elsewhere

A central difficulty in entertaining the thought that PST is false is that there may be some inherent difficulty in extricating the idea that experience can be perspectival from the idea that an experience can represent its subject's location. The aim of this section is to provide the basis for this conceptual distinction. I will raise two cases in which, I argue, it is plausible to think that a subject can be aware of the fact that they are experiencing a scene from elsewhere, that is, from somewhere that they are not. Consideration of these cases thus removes a certain motivation for PST. For it reveals the sheer fact that a subject's experience of something is from somewhere is not itself sufficient for the subject to represent that location as their location.¹¹

For the first case, consider Campbell's observations on "the position of someone watching a film" (Campbell, 1994, p. 120). Call our film-watcher Johanna. Johanna may "watch as the camera pans and swoops and tracks" without being forced "at any level, to use the first person in responding to the film" (Campbell, 1994, p. 120). Here is what I take to be just right about this. Film is a medium for the presentation of perspectival images of scenes. Film images can and typically do have both *limitation structure* and *egocentric structure*. Johanna's film experience, her experience of a filmed scene through film images, will also be structured in these ways. Unless one is involved in the creation of the film, the filmed scene will typically not be anywhere in one's whereabouts. Hence, Johanna can experience a filmed scene that is not itself in her locale and be aware of this fact. And given that she is aware of this fact, ex hypothesi we then have no reason to think that Johanna would represent the perspective from which she experiences the filmed scene as where she herself is located. Film experience thus seems to be a candidate case in which one can experience something from elsewhere, without representing oneself as being in that location.

For the second, consider Bernardo, who sits at home visualizing a bottle floating in outer space. He imagines it rotating end over end along its sagittal plane. The occlusion and exposure of the bottle's visible surfaces are characterized by a *limitation structure*, as perhaps is the appearance of its size and shape; the positions and directions of parts of the bottle are characterized by an *egocentric structure*. Accordingly, his experience of the imagined bottle is perspectival. Yet he does not imagine where the bottle is located relative to where he is sitting. In supposing the bottle to be located somewhere in outer space, he merely supposes it to be in that kind of environment, rather than anywhere in particular. Bernardo's experience of the bottle seems then to be another case in which someone can experience something from somewhere that they are not, without representing themselves as being in that location.

A defender of PST might insist that in such cases we must think that the subject would misrepresent or imaginatively represent their location as the location of the perspective in question. But that seems to be more than is required for the experience to be structured around a perspective. Certainly there are cinematographic devices that do facilitate the viewer's identification of the perspective of the camera with their own perspective, such as, for instance, the "point of view shot" But this, I take it, is the exception rather than the rule. The vast majority of film images, despite being perspectivally structured, can present a filmed scene as such without the subject locating themselves anywhere in relation to it, or indeed anywhere in particular.

Similarly, the perspectival structure of a visualization need not intrinsically involve the subject representing herself as located relative to the visualized object. Bernardo might experience the very same imagery when he supposes that his nemesis, Giorgio, is floating in space, looking at a bottle rotating in front of him. Bernardo would then imagine how the bottle would look from where he imagines Giorgio to be located.¹² Indeed, even if there must be a subject to the imagined experience, this does not itself require that it be anyone in particular. All it requires is someone, some nameless entity for all that Bernardo cares, being in the right kind of relation to the imagined object. If that is right, then this subject does not play any role significantly different from the perspective according to which the visualization is structured. Whatever the entity required, we have no motivation for the view that we must think that Bernardo represents himself as located where it is.

Neither of these cases constitute knockdown arguments against PST, in part because neither of these cases is straightforwardly a case of perceptual

experience. But they do serve to illustrate the core conceptual distinction between perspectivally structured experience and the subject's representation of her location. For what they describe is a case in which the location of a perspective around which an experience may be structured and the subject's representation of their own location can conceivably come apart.

5 Locating Perspectives and Locating Subjects

Another kind of motivation for PST might be that it is difficult to think of how we might individuate the location of a perspective independently of a subject experiencing something from that perspective. However, my treatment of the above cases suggests that we ought to be able to do this. In this section, I will draw out some principles for how we can individuate the locations of perspectives and subjects independently. This will both remove a further motivation for PST and reveal certain difficulties a proponent of that thesis would face in providing an account of how they are connected.

Let me first set aside one common respect in which location of the perspective itself might be individuated in both of the two cases discussed in the previous section. Common to both cases is that the subject experiences an image; thus the structure of the experienced image itself might provide an individuating condition. The principle here, briefly discussed at the end of section 3 in the context of some quoted remarks made by Martin, is that the experienced image being perspectivally structured implies a perspective according to which it is structured. Though this perspective is not perceived, it plays a discernible structural role that can be traced through the organization of the image. If this is right, then we can individuate the perspective from which Johanna experiences a scene and Bernardo experiences the bottle merely by appealing to the structure of the image in each case.

Although I take this to be correct, it is also not of much further interest than that it bolsters the arguments of the previous section. Indeed, one might have doubts about how useful such a principle would be in any treatment of ordinary perceptual experience, in which the structure of the experience is inextricably linked to the subject's bodily nature. However, in the film case there is the additional possibility that we might appeal to the ways in which the perspectivally structured image is causally related to a spatiotemporal object, namely the camera, in order to individuate the location of the perspective in question. The camera is distinct from the perspective structuring the image it produces, just as the human body is distinct from the perspective structuring the experience of the subject. But, in each case, the perspective and the object in question are not merely coincident

but systematically causally related, in a manner according to principles that I will now articulate.

Consider first a principle that I will call *anchoring*. Anchoring is nicely illustrated in Christopher Peacocke's discussion of how the orientations of a particular object, oneself as a body, can affect one's experience:

Looking straight ahead at Buckingham Palace is one experience. It is another to look at the palace with one's face still toward it but with one's body turned toward a point on the right. In this second case the palace is experienced as being off to one side from the direction of straight ahead, even if the view remains exactly the same as in the first case. (Peacocke, 1992, p. 62)

In this example, the left–right axis is systematically causally related to the torso, such that changing its spatial properties (e.g., its orientation) affects one's perspectival experience. *Anchoring* is a term we can use to capture this kind of relation: a perspectival structure, or some part of a perspectival structure, is *anchored* to an object when variations in perspectivally structured content are systematically caused by variations in the anchoring object's spatial properties. In the scenario Peacocke describes, a part of an egocentric structure, its left–right axis, is anchored to the torso, causing systematic changes in the way in which objects are experienced.¹³

However, anchoring does not quite give us enough to capture the sense in which the perspective from which one experiences something is connected to a particular spatiotemporal object. For that we need the further idea that a perspective may exist at a particular location, in virtue of an object being at that location. To capture this, we can use the term *embedding*: a perspective is *embedded* within an object when it is located within an object to which its structure (or some part of its structure) is anchored. Embedding, as stated, requires anchoring. For a perspective to be embedded within an object it is not sufficient that it merely occupies the same location as that object. It needs to be causally connected to that object such that an anchoring relation obtains.

These principles provide a means by which we can individuate perspectives as distinct from but related to spatiotemporal objects. This is very straightforward in the film case. The perspective structuring a film can be individuated by its embedding within the camera (and not merely its colocation with it) as variations in its perspectivally structured content are systematically caused by variations in the camera's position and orientation. In this way, we can individuate the perspective from which Johanna experiences a filmed scene without appeal to Johanna representing her location, or indeed that of any subject within the narrative. The principles

also straightforwardly apply to human perceptual experience, though, perhaps unsurprisingly, the overall situation is more complex. One of the main sources of complexity is in the fact that, in higher mammals at least, perceptual systems represent space surrounding the body according to multiple distinct egocentric frames of reference structured around the body's distinct individually mobile body parts.¹⁴ If, for each of these egocentric structures, there is a corresponding perspective embedded within a distinct body part, then perceptual experience is complex, in so far as it is structured according to multiple distinct perspectives.

If this is correct, it would follow from PST that the subject would be located in multiple places within itself. To put the point more fully, recall the interpretative claim that we called *perspectival identity*: for a perceptually represented object a , a spatial relation R , a subject x at location l_x and a perspective p at location l_p , a perceptual experience represents aRx just because it represents aRp and l_p is represented as l_x . According to the preceding, a perspectivally structured experience might represent l_{p1-3} , which poses the question: Which of these is supposed to be represented as l_x ?

One might think this puzzle could be easily resolved by the suggestion that perceptual processing in these body-part-specific spatial frameworks is ultimately translated into a single unified framework, such that a subject's experience is unified according to a single perspective. But there seems to be equally good motivation for this single perspective to be located within the head as within the torso. The head houses a great number of sensory organs that are particularly significant for spatial representation, namely the eyes, ears, and the vestibular labyrinth.¹⁵ Yet, in the morphological structure of the body, the torso is the stable continent relative to which other parts are mere peninsulas and hence the most likely point of reference for the construction of a consistent egocentric representation.¹⁶

That there seem to be two equally viable options here presents something of a dilemma for any defender of PST, as it is not clear how the choice between these options would be resolved.¹⁷ Yet, its defendant might want to grab the bull by the horns, so to speak, and run it to ground by claiming that the basic issue is no issue at all. For surely, the thought continues, as long as it follows that the subject's experience represents objects in relation to *some* location within the body, this is sufficient for locating the subject. But this only reveals a more fundamental issue. Now that we have on the table a robust conceptual distinction between the two entities, we can appreciate that the two locations in question have different extensity: l_p , qua perspective structuring the experience may be no more than a minimally extended point in space; l_x , qua bodily subject of experience

is no less than a voluminous region. According to perspectival identity, it seems to follow from PST that the subject's location is not the location of the object that she is, it is a location within the object that she is.

Of course, this would not be an issue if we had the resources to make the step from representing something in relation to a location within a particular body part, to representing something in relation to ourselves as the fully extended bodies that we are. This would be to appeal to the notion of partial identity, that is, the sense in which a part is identical to any whole of which it is a part. By representing something in relation to a particular part of the body, one would represent it in relation to something partially identical with oneself. But PST is too bare a thesis to provide for even such a basic step as this. What would allow for such a step would be an account of the unity of the body, an account of how the parts of the subject's body are unified such that each is partially identical with the subject as a whole. The bare notion of perspectivally structured experience simply does not warrant such an addition. By contrast, the bare notion of bodily action does warrant such an addition. Thus it is an integral part of the account of spatial self-consciousness that I favor, as I will now argue.

6 Agentive Self-Location

Here is the central idea of an agentive account of spatial self-consciousness, as expressed by Brewer:

perceptual contents are self-locating in virtue of their contribution to the subject's capacity for basic purposive action in the world. This mutually shaping psychological relation places the subject in the perceived world by bringing its objects into his environment as the focus of his perceptually controlled behavior (Brewer, 1992, p. 26)

From this, we may extract the agentive self-location thesis (AST).

AST: If an experience represents an object as the focus of its subject's possible action, then it represents its subject's location.¹⁸

On the face of things, AST could use some further motivation. If perspectival structure alone cannot serve to pick out the subject herself, why should representing the objects of perceptual experience as the focus of the subject's possible action be sufficient? The answer is that representing the subject's location as *both* the location from which she perceives *and* the location from which she would act, is necessary for representing an object of perceptual experience as the focus of the subject's possible action.

Accordingly, if a subject represents objects in this way it is a sufficient condition for her to represent her location. As Brewer puts it: "The interrelation between perception and action constitutes a kind of triangulation of the subject's location in the single world of each" (Brewer, 1992, p. 27).

In a great many cases, this single world of perception and action will be the actual world in which the subject is located. But it need not be. In some cases, the subject may represent an object as the focus of her possible action even if the object is not as it seems to be, or is nonexistent, merely virtual or imaginary. In each of these cases, it may be impossible to act on the object in the way it might seem to the subject that she can. Nevertheless, to the extent that her experience interfaces with her practical capacities, and in a manner that is equivalent to those cases in which the genuine article is present, the object is represented as the focus of possible action. Moreover, the intentions driving the actions in question directly concern that which is experienced. Whether the intention is to reach for or avoid the falling object, it is that object (whatever its nature) that would form the focus of the subject's action, were she to act upon what she perceives.¹⁹

It is significant here that the relevant class of action is bodily action, which I will take to consist of intentional actions that centrally involve movement of the body. Such actions are spatiotemporally constrained by the nature of the body itself as a unity of parts. Movement of any part of one's body will take as long as it does, and involve what physical displacements it does, precisely because that part is a part of the body as a whole. This relationship is made intelligible by conceiving of bodily structure in a way that highlights the constraints it imposes on bodily movement. For although there are various ways of conceiving of the bodily structure of creatures like us, the structure of interest here is that of a whole composed of interlocked parts, where interlocked parts constrain bodily movement due to the nature of their causal interaction.

A useful first attempt at giving such an account of bodily structure is José Luis Bermúdez's hinge analysis:

The intuitive idea that I want to capture with this term is the idea of a body part that allows one to move a further body part. Examples of hinges are the neck, the jaw socket, the shoulders, the elbows, the wrists, the knuckles, the finger joints, the leg sockets, the knees, and the ankles. The distinction between moveable and immovable body parts, together with the concept of a hinge, creates the following picture of how the human body is segmented. A relatively immovable torso is linked by hinges to five moveable limbs (the head, two legs, and two arms), each of which is further segmented by means of further hinges. (Bermúdez, 1998, p. 155)

According to the hinge analysis, the body is segmented into major divisions by hinges: parts of the body whose role is to enable the movement of other parts. Notably, hinges are the only functionally salient parts (barring perhaps the torso) in the hinge analysis. The parts bounded by hinges correspond, roughly, to conventional body part names (with the exception of noses, ears and the like).

As useful as the hinge analysis may be for its original purpose, it has several shortcomings for an account of how bodily movement is constrained by the nature of the body itself.²⁰ A first shortcoming of the hinge analysis in this respect is that it fails to highlight the causal properties of other kinds of body parts than a hinge. For example, the rigidity of a body part, or even its length, might be causally efficacious in enabling a bodily movement. A second shortcoming is that the relevant causal interactions are limited to those between hinges and other parts. Barring reason to think otherwise, we ought to allow for causal interactions of various kinds: causal interactions between parts, and not only those due to the properties of hinges; as well as interactions between parts and the entire body, in virtue of the distinctive properties of each. A third shortcoming of the hinge analysis is that it fails to capture the crucial sense in which the unity of the body constrains actions performed with its parts. There is a sense in which parts of the body mutually affect one another to collectively constrain movement possibilities, and we would want an analysis of bodily structure to reflect this.

Using the hinge analysis as a foil, we can provide the following analysis of bodily structure. We can label the elements of a particular bodily movement as parts $\pi_1 - \pi_n$ and the whole that they comprise as ω . Call Π the relation of part-part causal interaction and Ω the relation of part-whole causal interaction. The structure of a body then consists of relations Π and Ω governing ω and $\pi_1 - \pi_n$.

Here is a little more detail to contrast with other possible analyses of bodily structure and to shed light on how the analysis deals with limit cases. One reason for the abstract labeling of parts $\pi_1 - \pi_n$ is to emphasize that these need not correspond to conventional body part names in English or other linguistic partonomies.²¹ Rather they correspond to the causally efficacious elements of a particular bodily movement. In the limit case, the parts merely form a mereological sum ω_m , with no significant unity. Such a case is far from the normal case of bodily movement in which parts mutually affect one another in what Andy Clark (1997, chapter 8) calls "continuous reciprocal causation." Mike Wheeler usefully describes the core features as follows:

This is causation that involves multiple simultaneous interactions and complex dynamic feedback loops, such that (i) the causal contribution of each systemic component partially determines, and is partially determined by, the causal contributions of large numbers of other systemic components, and, moreover, (ii) those contributions may change radically over time. (Wheeler, 2005, p. 260)

Considering the contrast from the limit case, we can say that a whole is unified to the extent that its parts are in continuous reciprocal causal interaction. The central case of a unified whole, w_u , corresponds to the interlocked structure of an animal body, in which parts can exert physical force in virtue of common boundaries. Tensegrity structures form a useful model of the ideal case in which an internally constrained system is formed by a set of continuous tension elements (e.g., muscles and connective tissue) balancing a set of discontinuous compression elements (e.g., bones).²² But nothing conceptually precludes w_u consisting of partially discrete elements, such as hand-wielded tools and similar artifacts, or even fully discrete elements. Again, though, the extent to which such wholes are unified is determined by the extent to which they would be in continuous reciprocal causal interaction during the execution of a bodily action.

With the account of the unity of the body in action on the table, we can now discern its relevance for AST. And we can do so by returning to the final issue raised against PST at the end of the last section. That issue was that it does not seem sufficient for an experience to represent its subject's location by representing the location of a perspective within a part of the subject. Given that the subject and the perspective are distinct, the two may differ in extensity, and no account is offered as to how the object within which the perspective is embedded is related to the subject as a whole, PST seems to fall short of locating the subject *per se*. Now, on the face of things, AST might be confronted with its own version of this problem. Consider Schellenberg's expression of the idea that representing an object as the focus of possible action involves a kind of triangulation:

One represents one's location in a dual mode: the point of origin of perception presents itself as the point of origin for bodily movement. One occupies one position from which one *both* perceives and would act were one to act. (Schellenberg, 2007, p. 621)

But say that a subject's visual experience represents an object from a perspective within her head. Her experience also represents the object as graspable, and the position from which she would act upon the object in grasping it is the current position of her hand, about a meter from her head. It is not clear, then, in what sense one does occupy a single position;

or better: it is not clear in what sense one represents oneself as occupying a single position.

However, the issue is easily resolved by properly appreciating the significance of the fact that the object is represented as the focus of the subject's possible action. To represent an object in this way is not to represent it in relation to a single position from which one perceives and acts. Rather it is to represent it in relation to a single, unified thing from which one perceives and with which one acts.²³ So, the basic account of spatial self-consciousness is this: Perceptual experience can be structured around a perspective, or multiple perspectives, embedded within one or more parts of the perceiver. If an experience represents an object as the focus of possible action, from a perspective that is embedded within a part of her, to the extent that the parts of her body form a unified whole, the experience represents her location, and will be sufficient for thoughts about her location.

7 Being Multiply or Singly Located

This penultimate section will bring out an important theme in the foregoing sections. Observing a distinction between perspectives and subjects reveals the possibility that perceptual experience is complex, in so far as it is structured according to multiple distinct perspectives. According to AST, if perspectively structured perceptual experience is complex in this way, it is nevertheless unified in a certain respect: one represents oneself as singly located despite there being multiple locations within oneself from which one experiences the world. By contrast, according to PST, if perceptual experience is complex in this way, then it is not unified in that respect: one represents oneself as multiply located, in virtue of there being multiple locations within oneself from which one experiences the world. I take this to be a mark in favor of AST and against PST. What I will attempt to show is how this intuition aligns with a corresponding intuition that there is a contrast between the experience of a subject who experiences the world from multiple, spatially distant bodies and the experience of a subject who experiences the world from a single, spatially unified body. Assuming that there is such a contrast, my aim is to show that AST captures it for the very same reason it captures the intuition that, in the normal case, we represent ourselves as singly located; whereas PST does not capture either intuition, and for the very same reason in each case.

To demonstrate this, let me introduce a pair of imaginary scenarios which share the idea that a single subject might experience the world from multiple displaced objects simultaneously.²⁴ The first, described by Barry

Dainton (2000, pp. 66–87), involves an imagined subject, call him Barry, who experiences the world audiovisually from an artificial head and tactually from a body (the head of which has been anaesthetized), floating around in a distant sea. Tim Bayne (2010, pp. 262–266) raises a similar scenario that involves imagining a network mind, “Borgy,” realized by three individually embodied brains in “wireless” cerebral communication.

Both of these scenarios involve the assumption that a single subject’s experience can be structured around perspectives embedded in spatially distant bodies. And both PST and AST will provide similar answers to the question of where Barry and Borgy would represent themselves to be located, but for different reasons. From PST it would follow that Barry and Borgy would represent themselves as multiply located, because they experience the world from distinct perspectives with distinct locations. From AST it would also follow that Barry and Borgy would represent themselves as multiply located. But this would be because, in the cases so described, the multiple bodies of each subject do not causally influence one another such that they might be conceived as an integrated whole. Accordingly, if either Barry or Borgy were to represent objects from each of their distinct perspectives as the focus of possible action, their experience would represent those objects in relation to themselves as multiply located.

I should note that both of these scenarios are described by their authors as cases in which a single subject’s *experience* may be unified, despite being structured around distinct bodies. Dainton claims that, in such a scenario, one’s experience of the beautiful audiovisual scene at the mountaintop could be unified with a tugging sensation felt on the ankle of the underwater body (Dainton, 2000, pp. 69–70). That is, even though there are “no experienced spatial relations between your bodily experiences and your audio-visual experiences” it could be that “both sets of experiences are nonetheless co-conscious,” that is, parts of one unified consciousness (Dainton, 2000, p. 71). Similarly, Bayne claims that despite his unusual constitution, Borgy’s visual experience could still be unified. That is, he claims “it is plausible to suppose that [Borgy] could retain phenomenally unified consciousness despite the fact that neither his perceptual experiences nor his bodily sensations will be structured around a single physical object” (Bayne, 2010, p. 263). If you find this convincing, then your conception of unified perceptual experience is such that you can conceive of experiences being unified despite the fact that they are structured around distinct bodies. Nothing I have to say requires this, however. All that is required is the thought that Barry’s and Borgy’s experience contrasts with that of a subject

who experiences the world from perspectives embedded in parts of a single, unified body.

Thus consider Barry United, a subject who experiences the world audio-visually from a head which is part of the same integrated whole as the hands from which he experiences the world tactually. Given that Barry United perceptually experiences the world in various modalities from a single body, it follows from AST that if his auditory, visual, or tactual experience represents an object as the focus of possible action, the experience will represent that object in relation to the single thing that he is. His experience would represent him as singly located in a way that Barry's experience, with his multiple, disunified bodies, would not. PST does not have the means to capture this very contrast, for all that PST can appeal to in an account of the self-locating content of Barry United's experience is its perspectival structure. As Barry United visually inspects a glass that he feels in his hand, he might experience the glass both from a visual perspective embedded within his head and from a tactual perspective embedded within his hand. Just as the perspectival structure of Barry's experience is structured around distinct bodies, the perspectival structure of Barry United's experience involves perspectives embedded in multiple parts of a single body. PST does not then give us any reason to think that Barry United's representation of his location, in virtue of his perceptual experience alone, would be significantly different from Barry's.

A corresponding modification to the Borgy scenario produces similar results. Borgy United is a subject who experiences the world visually from both the head and the chest of a body that forms an integrated whole. It follows from AST that his experience might nevertheless represent him as singly located in a way that Borgy, with his multiple disunified bodies, would not. Borgy United may visually experience the world from two places within himself, but if he represents what he sees as the focus of possible action, then he represents what he sees in relation to himself as a single thing. Once again, though, PST is unable to deliver the conclusion that Borgy United's experience would represent his location as singular in just the sense that Borgy's would not. When Borgy United looks at Buckingham Palace with his torso twisted away from it, it looks to be off to the side from one perspective and straight ahead from another. Just as the perspectival structure of Borgy's experience is structured around distinct bodies, the perspectival structure of Borgy United's experience involves perspectives embedded in the head and the torso of a single body. PST does not then give us any reason to think that Borgy United's representation of his location, in virtue of his perceptual experience alone, would be significantly different from Borgy's. It fails to provide an account of why an experience

would represent a single location for a single subject who experiences the world from a single body.

8 Conclusion

Perceptual experience is perspectivally structured, in at least two respects. It has characteristic sensory limitations relative to a given location (limitation structure) and it presents objects as spatially related to a given location (egocentric structure). Perceptual experience is also self-locating, in the sense that an episode of perceptual experience may be sufficient for thoughts about one's location. But not all experience that is perspectivally structured has self-locating content. Moreover, we can individuate the location of a perspective independently of any subject who experiences the world from that perspective. Firmly distinguishing between perspectives and subjects in this way allows us to better to understand their connection in ordinary perceptual experience. Furthermore, it allows us to appreciate that the perspectival structure of perceptual experience is potentially complex, such that one might experience the world from multiple distinct perspectives embedded within one or more parts of oneself. On this basis, I have argued that any account of spatial self-consciousness based upon a simple inference from the perspectival structure of perceptual experience faces serious difficulties.

If this is correct, then we need to look beyond the perspectival structure of perceptual experience in order to account for its self-locating content. The agential self-location thesis, as developed here, suggests that we look to the relationship between perceptual experience and bodily action, and to the unity of the body in mediating that relationship. This has the virtue of being compatible with the perspectival structure of perceptual experience, in however complex a form it may take. It also has the virtue of showing why we experience ourselves as singly located, despite the possibility that we experience the world from multiple perspectives, embedded within one or more parts of ourselves (or more fancifully, embedded within one or more bodies). In experiencing the world perspectivally, we can experience ourselves as singly located, because we experience the world as something we can potentially engage with as a dynamic unity.

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Notes

1. Agentive and intellectual accounts are distinguishable in so far as proponents of the former hold that it is possible to represent the objects one perceives as objects of one's actions without applying any concept of oneself. Though this commitment on the part of an agentive account is, strictly speaking, optional, this is clearly Brewer's (1992) view.
2. The presumed possibility of what Peacocke (2014) calls "degree 0 cases" illustrate some of the difficulties to be faced here. In such a case, there would be a subject capable of perception and action, and thus intentional action on perceived objects, that would not represent itself at all. For a proposal concerning the joint role that representations of actions, the body and its spatiotemporal properties must play in order that a subject may come to represent itself, see Peacocke (this volume). For a somewhat different treatment of the connection between agency and self-representation that instead appeals to a distinctive kind of experience involved in control of one's actions, see O'Brien (2007).
3. See Austen Clark (1996), Martin (1992), and Richardson (2010).
4. See Gibson, Kaplan, Reynolds, and Wheeler (1969).
5. Classic statements are found in Locke (1997, pp. 143–144) and Hume (1960, p. 56), but neither reached the extreme denial of visual experience of the third-dimension tout court associated with Berkeley (see, e.g., Berkeley, 2008, p. 21).
6. See, e.g., Gregory (2013, pp. 33–36) and Peacocke (1992, p. 62).
7. See, e.g., Evans (1982, p. 222), Brewer (1992, p. 17), Cassam (1997, pp. 44–55), Bermúdez (1998, pp. 103–129; 2002), Schellenberg (2007, pp. 619–621), and Peacocke (2001, pp. 215–216; 2008, pp. 101–103).
8. For a selection of cases in which the idea that an experience is perspectively structured is often bound up with (i.e., not distinguished from) the idea that its content is self-locating, see, for example, Brewer (1992, p. 17), Cassam (1997, pp. 52–53), Zahavi (1999, pp. 92–93), Smith (2002, p. 145), Thompson (2005, p. 411), Schellenberg (2007, p. 619), Noë (2004, pp. 168–169), Gallagher and Zahavi (2008, pp. 141–142), and Bris-

coe (2009, pp. 424–426). I do not take it that all of these authors are committed to PST (for example, Brewer clearly is not), though some of their remarks might suggest it. For cases in which the relevant distinction is entertained, see Peacocke (2001, pp. 219–220; 2008, pp. 101–102; 2014, p. 31), Siegel (2006, p. 358), Gregory (2013, chap. 2), and Schwenkler (2014, pp. 138–140). The distinction is also required to highlight instances of what Peacocke (this volume) calls “the problem of avoiding redundancy” with respect to the transition from “*here*”-thoughts to thoughts genuinely involving the first-person.

9. Schwenkler (2014) responds that certain experiences with a dynamic egocentric structure can only be explained by assuming that their content includes the subject as a relatum. But if the arguments below are sound, then even if perspectival experience has a relational structure, it does not seem to be sufficient for self-locating content.

10. See, e.g., Schellenberg (2007, pp. 620–621).

11. Much of the discussion of these two cases is indebted to Williams (1976).

12. As Williams notes, it is deeply problematic to think that in doing so, Bernardo would be imagining that he himself is Giorgio (Williams, 1976, pp. 44–45). In any case, there is no reason why he would need to do so, for all that is required is that the imagined experience has a subject. Giorgio fulfills that role; there is no reason for Bernardo to do so. In Velleman’s (1996) terms, Giorgio is the notional subject of the imagined experience, while Bernardo is the actual subject of the imagining.

13. Note that this is somewhat different to Peacocke’s use of the term “anchoring” in his discussion of, e.g., relational spatial concepts being “anchored in subjects.” See Peacocke (2014, p. 198).

14. See, e.g., Graziano, Yap, and Gross (1994), and Spence, Pavani, Maravita, and Holmes (2004).

15. Cf. Sherrington (1907, p. 480) on the primacy of the vestibular apparatus in a hierarchical ordering of “proprioceptors,” in his original terminology. See also Wong (this volume).

16. Cf. Grush (2000, pp. 67–69) on coordinated egocentric spatial representations ultimately being stabilized with respect to the torso. My thanks to Matt Longo for the wonderful continent–peninsula analogy.

17. Empirical research on spatial representation suggests independent motivation for the head (e.g., Avillac, Denève, Olivier, Pouget, & Duhamel, 2005) and the torso (e.g., Grubb & Reed, 2002; Karnath, Schenkel, & Fischer, 1991). Moreover, systematic measures of intuitions suggest that our conception of ourselves as bodily subjects is vague with respect to bodily location at this level of granularity, picking out either the head or the torso merely as a matter of which is paid attention to first (Alsmith & Longo, 2014).

18. To claim that a subject represents an object of perceptual experience as the focus of her possible action is not to claim that her experience is constituted by her understanding of how what she experiences depends upon what she does (e.g., Noë, 2004). Rather, the implied relationship is somewhat the reverse: certain actions seem possible on the basis of what is perceived. For a nice discussion of the differences here, see Ward, Roberts, and Clark (2010).

19. Naturally, there would typically be a great many such foci. But for ease of discussion I will stick to the idealized case of a single object, rather than full-blown scenes with all the complications of convolved structures, and so on.

20. The original purpose of the hinge analysis was to provide a way of thinking about the relative position of bodily locations in giving an account of the spatial content of bodily experience. For further discussion, see Bermúdez (1998, pp. 154–161) and his contribution to this volume.

21. See, e.g., Brown (1976).

22. For a nice discussion of the kind of tensegrity structure that may be instantiated by the body and its parts, see Turvey and Fonseca (2014).

23. I should further clarify that I am assuming that the subject's experience involves a direct connection between perception and action. I do not mean to imply that the subject represents objects as the focus of her possible action, in virtue of also representing relations Π and Ω governing ω and $\pi_i - \pi_n$. My thanks to Thomas Sattig for pressing me on this point.

24. Both of these cases owe a debt to the ingenious and thought provoking fictional autobiography of a disembodied brain (or a disembraind body?), recounted in Dennett (1981).

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