Sense, Space, and Self

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Declaration I, Huei-Ying (Tony) Cheng, confirm that the work presented in this dissertation is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract Object cognition is a basic capacity shared by many creatures in the animal kingdom. Self-consciousness or self-awareness, by contrast, seems to be a rather advanced capacity that is enjoyed only by relatively fewer beings. It might thereby be assumed that many creatures can have the capacity for object cognition without any interesting capacity for self-awareness. In this essay, I argue that a certain capacity for object cognition – cognition with the engaged stance – *requires* the capacity for awareness of oneself as a physical object in an objective world. I further argue that some animals in the actual world do have the kind of capacity for object cognition in question. These two theses together yield the conclusion that those animals – such as human infants and some other non-linguistic mammals – actually have the capacity for awareness of oneself as a physical object in an objective world, contrary to appearance. I call this two-premiss argument the Object Cognition Argument, mirroring Quassim Cassam's Objectivity Argument (1997). Chapter 1 "Objectives" lays out the philosophical background and aims. Chapter 2 "Objects" discusses two capacities that underlie object cognition: object permanence, the understanding that things can persist when being occluded; and the constraint of solidity, the understanding that solid objects do not collocate in space at the same time. Chapter 3 "Objectivity" starts with object permanence and argues that it requires allocentric spatial representations, which further require awareness of oneself as a denizen of an objective world. Chapter 4 "Objecthood" starts with the constraint of solidity and argues that it requires representations of primary qualities that further require awareness of oneself as a physical object. Chapter 5 "Objections" modifies the Object Cognition Argument in light of three prominent objections: the Body Blindness, the *Qua* Subject, and the Missing Self Problems.

Keywords Object cognition; Self-consciousness/awareness; Spatial representation; Engagement; Acquaintance

Impact Statement This dissertation explores the connections between two psychological capacities: object cognition and self-awareness. The former concerns subjects' capacity for cognising external objects and phenomena, while the latter concerns their capacity for cognising oneself as an object. Normally, these capacities are studied separately: in both the humanities and the natural sciences, the prevailing wind encourages specialisation, and these two capacities are deemed to be too far apart to be investigated together. The main academic contribution of the present research is that it supplies a potential roadmap for further research on human and animal cognition. While in most cases external and internal cognitions are studied separately, new insights might be gained by considering them in a more integral way. A subsidiary academic benefit is to help us see how *a priori* and empirically informed philosophy can work together: in many if not most cases, philosophers choose either the *a priori* or the empirical method. This work marks an attempt to combine these two, rather different philosophical traditions.

There are also non-academic benefits that stem from this dissertation, mainly in the educational field. There are many unsettled issues concerning the cognitive capacities of human infants and children, including both external and internal cognitions. To further understand these capacities is crucial for education. For example, children in kindergartens and in primary schools are at different developmental stages, and there are always issues about how to design classes for children at various stages. It is true that normally these concerns are covered by developmental psychology and neuroscience, but it has proven to be extremely beneficial to study these phenomena in interdisciplinary settings. This research seeks to show that philosophy also has a place in these areas. In particular, philosophy can step back and reflect on connections between phenomena that are usually studied separately. The major conclusion here is that the capacity for object cognition requires the capacity for self-awareness. This implies that young infants would be aware of themselves significantly more than is usually expected. Therefore in designing educational programmes we might need to take this into account. Exactly how this should work will depend on collaborations with experts in the educational field.

Relatedly, this research might also have implications in relation to law and policymaking. In those domains, the scope under consideration is *persons*. This is a difficult topic and agreement has never been reached. Although the primary concern here is self-consciousness or awareness, these issues are in the orbit of conceptions of personhood and personal identity. The conclusion that self-awareness is more widespread could have consequences for the legal/ethical status of children and animals.

Table of Contents

Analytical Content

The essay is entitled *Sense, Space, and Self*. Sense, because object cognition involves perception of objects. For our purposes I primarily focus on sight and touch, but briefly discuss others in due course. Space, because in order to bridge the capacity for object cognition and the capacity for self-awareness, two kinds of spatial representation will be invoked: namely allocentric space, which is more to do with sight; and the primary quality representations, which is more to do with touch. Self, not only because a kind of self-awareness is at stake, but also because the materials developed in the essay might have some significant implications concerning the nature of the self and personal identity.

Here is a rough guide of reading the chapters. The dissertation consists in a transcendental argument. This major argument, which has two premisses, is laid out in 2.4. Premiss 2 is defended in Chapter 2 based on the developmental psychology and the animal cognition literatures. Readers may skip over some details in 2.2/2.3 and refer back when needed. One half of Premiss 1 is defended in Chapter 3, while the other half is defended in Chapter 4. Three objections and the revised major argument are discussed in Chapter 5. The preface contains some clues of the intellectual developments.

Chapter 1 Objectives

1.1 Anti-Elusiveness

The Elusiveness Thesis has it that one cannot be aware of oneself as an object, physical or not (Shoemaker 1984; also cf. Hume 1738; Kant 1781/1787; Merleau-Ponty 1945). The negative objective of this essay is to argue against the alleged elusiveness of the self.

1.2 Naturalised Strawsonianism

The key line in this research starts out from exteroceptive experience, moving through certain kinds of spatial representation, and finally toward self-awareness as a physical object in an objective world. This is broadly Strawsonian (Strawson 1959, 1966; Evans 1980, 1982) and transcendental (Cassam 1999), but it is also naturalistic in the sense that I will invoke empirical research as resources whenever suitable.

1.3 Gibsonian Precursors

One similar line of thought is J. J. Gibson's ecological optics (1979). The basic thought is that from perceptual invariants, visual kinesthesis, and affordances, the

perceiver can gain self-specifying information concerning self-location and locomotion. Here I will explain why this Gibsonian line, though useful to some extent, cannot establish our goal in any direct way.

1.4 Self-Acquaintance

The positive objective of this project is to explore the possibility of awareness or consciousness of oneself as a physical object in an objective world. This will be cashed out with a notion of "self-acquaintance," which can be traced back to Frege (1918-19) and Russell (1912). What is distinctive about the current project is that unlike many predecessors in philosophy, we will focus on subjects who have no linguistic or even conceptual ability.

Chapter 2 Objects

2.1 Objects in the Weighty Sense

"Object" is a term of art in philosophy. According to Strawson (1966), there is a sense in which "object" has the connotation of *objectivity*. It will be argued that what we need are two notions from developmental psychology to pin it down, which will be explained below. This is one key place in which the current project deserves the name of *Naturalised* Strawsonianism.

2.2 Object Permanence

Object permanence is "the *understanding* that objects continue to exist when they are out of sight" (Berk 2012, p. 229, my emphasis). This has been studied extensively since Piaget's time (1951). Experimental paradigms for testing this notion will be discussed in this section.

2.3 Intuitive Physics

Intuitive physics is "the physical principles we employ in our everyday perception, thought and action" (Eilan, McCarthy, and Brewer 1993). Together with object permanence, the substantial content of *object cognition* is fixed. I will also discuss experimental paradigms in this regard, with a specific focus on the constraint of solidity.

2.4 The Object Cognition Argument

The first-pass version of the major argument is laid out here: for one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world (P1). Some pre-linguistic creatures are capable of object cognition (P2). *Ergo*, those pre-linguistic must be

able to be acquainted with themselves as physical objects that are located in an objective world (C). The key premiss contains two claims – one about objectivity and the other about objecthood – that are independent of each other. The two claims will be sustained in Chapters 3 and 4 respectively.

Chapter 3 Objectivity

3.1 Varieties of Objectivity

Various notions of objectivity will be briefly surveyed in this section (e.g., Nagel 1986; Burge 2010). This is to acknowledge that there are many significant notions other than Strawson's, and to learn from these other notions. Possible tensions with Quine (1960) and Davidson (1984) will also be discussed.

3.2 Engaged Allocentricity

Within an allocentric space, "the position of an object within that environment could be derived from reference to at least two other landmarks," which do *not* include a self-referenced (egocentric) one (Ekstrom, Arnold, and Laria 2014). Egocentric space, by contrast, is obtained when the self-referenced landmark is involved. This pair of notions will be crucial in the argument in the next section. Crucially, contra Campbell (1994) and O'Keefe (1993), it will be argued that *engaged* allocentricity is a coherent notion. The notion of "engagement" – a practical mode of presentation – is borrowed from the Dreyfus-McDowell debate (e.g., 2007), and will also be discussed.

3.3 The Permanence Argument

The argument has it that the capacity for object permanence requires the capacity for representing space allocentrically (SAP1). And the capacity for representing space allocentrically requires one to be able to be acquainted with oneself as located in an objective world (SAP2). *Ergo*, the capacity for object permanence requires one to be able to be acquainted with oneself as located in an objective world (SAC1). In defending SAP1, the *idealist space* thought experiment is introduced. SAP2 is defended through the above notion of engagement. SAC1 has a potential counterexample from Bálint's syndrome; this worry will be addressed too.

3.4 Objective Self-Acquaintance

Here we reach the interim conclusion that for those who have the capacity for object permanence, they are able to be acquainted with themselves as located in

an objective world. This by itself is unsatisfying, since it does not rule out a mere-point-of-view possibility, i.e., that one is aware of oneself but not as something substantial in the world. Therefore we turn to Chapter 4 for the second half of the picture.

Chapter 4 Objecthood

4.1 Primary Qualities and the Tactile Field

Primary qualities such as shape, location, and solidity are defining features of physical objecthood (Locke 1690). Here I argue that amongst those qualities, solidity is the most fundamental one in the sense that being solid entails being shaped and located (cf. Campbell 1994, 1997). The argument here has a closer connection to the sense of touch, so we will bring in the discussion of the tactile field, which was also initiated by Strawson (1959) and gained its empirical bite in Patrick Haggard's recent work (e.g., 2011; Cheng and Haggard 2018).

4.2 The Solidity Argument

The argument has it that the capacity for solidity representation requires the capacity for representing primary quality in general (SAP3). And the capacity for representing primary quality in general requires one to be able to be acquainted with oneself as a physical object (SAP4). *Ergo*, the capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object (SAC2). SAP3 is defended with the materials in the previous section, and SAP4 is defended with the *alien creature* thought experiment.

4.3 Agency, Causation, and Time

The notion of engagement is where this project comes closest to agency. However, as defined here engagement is less than full-fledged agency. This makes the present picture at odds with the view that "our most basic awareness of ourselves is as performers of actions, mental and physical" (O'Brien 2007; also Brewer 2002). This section attempts to respond to this different perspective and, relatedly, considerations about causation and time (Baldwin 2000; Campbell 1994).

4.4 Object Self-Acquaintance

If the above argument is in general correct, we reach the second half of the picture: namely that for those who have the capacity for primary qualities representation, they can be acquainted with oneself as a physical object. Together

with the first half, and some minimal auxiliary assumptions, the final conclusion is reached.

Chapter 5 Objections

5.1 Epistemological Objectivism

We started out with a reactionary move against the background of the Elusiveness Thesis. Now with the positive argumentation above, we are in a position to state the conclusion in more positive terms, i.e., "epistemological objectivism" (cf. Sluga 1996). The following three sections deal with immediate potential problems for this view.

5.2 The Engaged Stance

In Aquila (1979), the body blindness thought experiment has it that it is conceivable that a subject can see/cognise external phenomena and happenings, but are *body blind* since by hypothesis it has no bodily awareness. This threatens the key premiss of the major argument. It will be argued that my notion of engagement pre-empts this worry (cf. Campbell on "film subject"). A real life clinical case of depersonalisation is also considered.

5.3 Subjective Object and Objective Subject

This objection says that the conditions for awareness "*qua* subject" and the conditions for awareness "*qua* object" are incompatible. There are two versions of the objection: the non-linguistic version involves a notion of tracking, while the linguistic version involves the putative phenomenon "immunity to error through misidentification." Given the nature of the present project, what we need to answer is the former. In answering this objection, I will explain why creatures with the capacity for object cognition are at the same time aware of themselves as subjective objects and objective subjects. Here I also consider insights from the phenomenological tradition, e.g., Husserl (1913) and Merleau-Ponty (1945). It is argued that we have resources to capture what Merleau-Ponty means by "Subject-Object."

5.4 Bodily Self-Awareness

Can bodily awareness be bodily *self*-awareness? One concern about the entire argumentation above is that no matter how plausible it is, bodily *self*-awareness is not established, and in principle cannot be. This section deals with this line of worry from Martin (1997) and Smith (2006). It also provides positive reasons for

bodily self-awareness, mainly from Ayers (1991) on material unity. After answering these objections, the updated version of the Object Cognition Argument is formulated.

Conclusion Objectuality

In the conclusion, I briefly explain how this project might have relevance to social skills and morality. I do not summarise the project in the conclusion, as I find it more useful for readers to refer back to the abstract and this analytical content.

PREFACE

Origins

This inquiry began its life through reading around in late 2014, just after I had finished the MPhil thesis. It took me a while to find the project for the PhD; I have very broad interests in philosophy, mostly within language, epistemology, mind, and metaphysics ("lemmings" as some people call them nowadays). Amongst them, I am particularly interested in mind. But even within this sub-field – philosophy of mind – I am still drawn to too many things, including perception, the senses, attention, self-awareness, spatio-temporal representation, cognitive development, and animal minds, to name just some of them. How was I to develop a coherent and manageable project that would allow me to explore some of these topics? For both the MA thesis at the CUNY Graduate Center and the MPhil thesis at UCL, I studied the relations between visual consciousness and visual attention. I am still interested in that topic, and do not think I have said enough about it. Still, it seemed to be a good idea to broaden the horizon.

I then took my time to read around in autumn 2014. I have always liked the works of an old friend, John Schwenkler, and so I began with his. I read "Does Visual Spatial Awareness Require the Visual Awareness of Space?" (2012), "Do Things Look the Way They Feel?" (2013), and "Vision, Self-Location, and the Phenomenology of the 'Point of View'" (2014). I have learned a lot from these works, and developed my own views on those matters. Still, it was not clear to me how to weave together my relevant ideas so as to form a dissertation project. I then continued to read things that I had always liked, but did not have sufficient time for them in the past. This includes the two volumes that emerged from the Spatial Representation Project at the King's College Research Centre, Cambridge, *Spatial Representation* (1993) and *The Body and the Self* (1995). I did not go through all the papers in them, but reading the general introductions and

some papers of the two volumes carefully gave me a clear sense of what I would like to work on in the following years.

Around the same time, I picked up Quassim Cassam's *Self and World* (1997) again, and that set up the path for me clearly. I had bought the book in the early 2000s, when I was writing my first MA thesis in Taiwan, on John McDowell's views on meaning, mind, and knowledge. Back then I mainly focused on *Mind and World* (1996) and other writings by McDowell. *Self and World* seemed to be particularly relevant, not just in terms of its title but also in that it is very Kantian. However, back then I could not go into it too much; I found the details hard to follow, and was unable to invest any additional time and energy on it. I did find it very relevant to my interest in self-consciousness, which is also discussed in *Mind and World*, lecture V. When I came back to Cassam's work in 2014, I had much more free time and mental space for it, and found it extremely fascinating. I then decided to come up with a project out of these materials: Schwenkler's three papers, the two volumes from the Spatial Representation Project, and Cassam's first authored book.

Another thinker, whose work has had a strong influence on me, though in a slightly different way, is John Campbell. Much of his work tackles the same themes as that of Cassam, but they often disagree. It is difficult for a junior thinker like me to think independently in engaging with their ingenious works, but in any case, when I follow my heart I tend to go with Cassam, albeit with my own inventions here and there. It then becomes urgent for me to think through Campbell's positions, because often if he were to be proved right, then I would be wrong. I then try to cope with his insights along the way, often in passing or in footnotes. I hope to engage with his works more fully in the future. But I do believe that overall, at a very abstract level, Campbell and I are in agreement. In the general introduction to *Spatial Representation*, Eilan, McCarthy, and Brewer write: "if O'Keefe's model does give an exhaustive account of what is involved in allocentric mapping of the environment, we would have everything we need for map-likeness or allocentricity without any hint of a connection with *objectivity* and *self-consciousness*" (1993, p. 11, my emphasis). They then go on to say: "Campbell thinks the challenge of saving the Kantian intuition to the effect that there is an important connection between a form of thinking about the spatial world, and objectivity and the capacity for self-consciousness, can be met" (ibid.; for a similar view, by way of Molyneux's Question, see Eilan 1993). To be sure, his way of meeting this challenge is quite different from mine, but at least we seem to agree that this challenge from O'Keefe

can be met. In this regard, another thinker I would like to engage more in the future is James Stazicker. Unlike me, he tends to be more convinced by Campbell's line. This will need to wait until I have completed the PhD. My forthcoming paper in *Inquiry*, "Post-Perceptual Confidence and Supervaluative Matching Profile," does draw resources from his paper on attention and perceptual discrimination. This topic, though, is not part of the present essay.

Of course, I also read other works around that time, both from the above authors and from others, but the above materials are the main sources for the research contained herein. After I had a very rough draft around the summer of 2017, I revisited the introduction to *Spatial Representation*, and realised how much I have been influenced by it. The four leading questions of the entire volume are:

1) Physicality: "What makes spatial thought about the physical world?" (p. 2)
2) Objectivity: "[W]hat precisely is the connection between allocentric representations of places and their relations on the one hand, and the idea of a detached or objective representation of the world, on the other?" (p. 2)
3) Located-ness: "Is there a characterization [of egocentric frames of reference] that captures this engaged way of representing the world?" (p. 2)
4) *De se* object: How does all this relate to "the capacity to think of itself, from the outside as it were, as an object among others in the space represented, as one does when watching a film of oneself"? (p. 3)[1]

In this dissertation, I do not answer these questions directly. I do not focus on *thought*, unlike question 1. I reject the idea that we should group allocentricity and detachment together on the one hand, and egocentricity and engagement on the other, unlike questions 2 and 3.[2] And instead of self-*representation*, I focus on self-*awareness* or *consciousness*, unlike question 4. Still, physicality, objectivity, located-ness, and *de se* object – assuming these labels make minimal sense at this early stage – constitute the central thread of the project. I set out to argue that the capacity for object cognition, which has

[1] I add these names for the questions so that it is easier to hold them in mind; also in the introduction they tend to introduce a *set* of questions at one time, while here I quote only one question at each point to make things simpler.

[2] Some have argued that "all spatial representations may in fact be dependent on egocentric reference frames" (Filimon 2015). This is a minor and extreme view in the literature with which I do not engage here.

physicality and objectivity as crucial elements, requires the capacity for awareness of one's bodily self as a physical object amongst other physical objects, and as located in an objective space. This is where the second phase of the Spatial Representation Project – *The Body and the Self* – comes in.

In early 2015, I started several joint projects with Patrick Haggard's Action and Body Lab at the Institute of Cognitive Neuroscience, UCL. There I mainly explored several tactile/thermal illusions, notably thermal grill illusion. Later I picked up a thread in Patrick's research that has profound philosophical implications: the idea that there is a useful and significant sense of the *tactile field*. I was – and remain – very excited about this project, and initially sought to build the dissertation around it. However, this turned out to be too ambitious for various reasons, so the tactile field line becomes a fruitful side project: three papers have been published, with perhaps more to come. But working on the tactile field has reaffirmed my commitment to following the Spatial Representation Project at Cambridge in the '90s: at the end of 2015, Patrick was invited to a workshop on "The Body and the Self, Revisited," in preparation for a sequel to the original volume. Patrick was very kind to invite me to be a co-author. This volume has been published as *The Subject's Matter: Self-Consciousness and the Body*, edited by Frédérique de Vignemont and Adrian Alsmith (2017). In 2016, I organised my own event "Sense and Space," and it struck me that I should edit a sequel volume for *Spatial Representation*. So I invited Ophelia Deroy and Charles Spence to help me with this ambitious plan. In 2017, we finally obtained a contract from Routledge for our volume *Spatial Senses: Philosophy of Perception in an Age of Science*. This should come out sometime in 2019. Along the way I have learned so much, and the dissertation has certainly benefited from these experiences.

I heard, from M. G. F. Martin, that the Spatial Representation Project was originally called "Molyneux's Question." They later replaced it with the broader name. To me, this is no coincidence at all. Another topic that interests me is Molyneux's Question, on which I have also published. Like the tactile field, the Molyneux does not make its way into the dissertation directly. But to me, all these ideas – physicality, objectivity, located-ness, *de se* object, the tactile field, and Molyneux's Question – all hang together, and I think through these issues at the same time. I look forward to spending even more time on them in future years.

Here are some details of the supervision history. In autumn 2014, I was at University of California Berkeley, primarily working with John Campbell, but also having useful discussions with Geoffrey Lee, M. G. F. Martin, and Alva Noë, on perception,

space, and Molyneux's Question. I worked with Mark Kalderon in the spring and autumn of 2015, on objectivity, touch, and related topics. In summer 2015, I worked with Christopher Peacocke, also on those themes, as well as some work on body ownership. Throughout 2015, I also worked with Patrick Haggard for the cross-disciplinary training, which covered crucial notions such as space, solidity, and the bodily self. In spring 2016, I worked with both Rory Madden and Lucy O'Brien, and started to think more about the above themes in relation to self-awareness. In summer and autumn 2016, I worked with Rory, and we went through many key notions in the dissertation, such as intuitive physics, object cognition, and acquaintance. In spring and summer 2017, I worked with Lucy, and we went through the drafts of Chapter 1 through to Chapter 5. I also had helpful discussions with Mike and Paul Snowdon respectively on one of my writing samples, "Object Cognition and the Non-Elusiveness of the Self," which summarises the backbone of the dissertation. In autumn 2017, I once again worked with both Rory and Lucy, on my revised drafts and that writing sample. Throughout 2018 I worked with Rory and wrapped things up. In the final term I also visited University of Oxford under the guidance of Anil Gomes, and had useful conversations with Dan Zahavi.

UCL's philosophy department is very historically oriented, in an illuminating way. In particular I have learned a lot from Lucy about Anscombe, from Rory about Russell, from Mike about Hume, Moore, Strawson, and Evans, from Mark about Aristotle, Bergson, and Geach, from José Zalabardo about early Wittgenstein, and from Paul about late Wittgenstein. I also learned from the continental side, though due to personal limitations I mainly focused on the analytic camp. These all have had a profound impact on my thinking, whether explicitly or otherwise.

There are too many things to learn. I started to write, and finished this dissertation before learning most of the knowledge I would like to have in this area. But this is life. One has to go forward before one is ready. I look forward to spending my career deepening my investigations in this territory. It is now time to thank people:

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And finally, Mike Martin and Mark Kalderon, for being my two other mentors at UCL. This preface ends with two quotes from them.

"I think philosophers of perception should know psychology but that won't answer our question." – Mark Eli Kalderon, 6 February 2014, Twitter.

"We should not be ignorant of science – that would be stupid. But that is not to say that our questions are exhausted by science. They should be informed by it, but to work out how they should be informed is a difficult thing. And most philosophical responses to recent empirical work are nugatory. Philosophers should know as much about psychology as they can know. But it is difficult for researchers in the senses to know all that is going on, let alone untrained philosophers keeping up with it too – and let alone working out how this additional material bears on the questions the philosophers were first asking. But on the whole I wish philosophers had a better sense of what psychologists were up to." – M. G. F. Martin, 17 November 2013, "The Sophisticated Naïve".

CHAPTER 1

Objectives

1.1 Anti-Elusiveness

"Does perception do any work in an understanding of the first person?" This is an interesting though underspecified question posed by John Campbell (2012a). There are many ways of making this question more precise, one of which is the following: "Is perception in any way sufficient for self-consciousness?"[3] To this I shall answer, "Yes, at least in this way: the capacity for object cognition, which has perception as its essential component, requires the capacity for consciousness of oneself as a physical object in an objective world." That is, certain kind of self-consciousness or awareness is a necessary condition for the capacity for object cognition. This complicated answer needs to be unpacked. In this chapter I explain the kind of *self-consciousness* or awareness that is at stake here. The rest of this section sets out the dialectic by identifying the critical target. Section 1.2 introduces the philosophical framework within which I am working. Section 1.3 discusses some relevant resources and explains why they are of no help in this instance, despite appearances to the contrary. Section 1.4 introduces a key notion with which I will formulate the key thesis. The other crucial idea in my answer above, *object cognition* – the capacity for understanding that objects can persist when unperceived, and the capacity for representing solidity – will be the main topic of the next chapter. The

[3] Campbell's own line runs thus: "it is only through the use of perception that one can plot one's route through the world. And…this capacity to plot one's route through the world is constitutive of a grasp of the first person" (p. 102). The "route" metaphor is *spatial* which is congenial to the current project. However, Campbell here is concerned with not only self-consciousness but also the first person *pronoun*, which is a linguistic device. As will become clear presently, the current project is primarily concerned with the *non-linguistic* level, which is more primitive than the capacity Campbell has in mind.

general aim of this essay is to explore the relations between the capacity for cognising objects, on the one hand, and the capacity for cognising *oneself* as an object, on the other.[4]

When it comes to self-consciousness or awareness, it is natural to begin with the following idea from Hume: "when I enter most intimately into what I call myself, I always stumble on some particular perception or other…I can never catch myself without a perception, and can never observe anything but the perception" (1738). Hume is not alone in arguing that the self is *elusive* from the first-personal point of view.[5] Kant, with his distinction between concept and intuition, appears to argue that the self cannot be given in intuition (1781/1787). In particular, in the Transcendental Deduction of the Pure Concepts of Understanding in Transcendental Analytic, he writes that, "through the 'I,' as simple representation, nothing manifold is given [B135]…I am given to myself beyond that which is given in intuition [B155]." Also, "this identity of the subject, of which I can become conscious in every representation, does not concern the intuition of it, through which it is given as object [B408]".[6] In our time, we have Sydney Shoemaker arguing that "when one is *introspectively* aware of one's thoughts, feelings, beliefs and desires, one is not presented to oneself as a flesh and blood person, and does not seem to be presented to oneself as an *object* at all" (1984, p. 102; emphases rearranged). These philosophers all hold somewhat different theses for perhaps very different reasons, but what unites them seems to be the idea that the self is, in one way or another, elusive:

The Elusiveness Thesis

[4] This formulation is inspired by conversations with Wayne Wu and Geoffrey Lee. Later in 1.4, I will introduce the Russellian notion of acquaintance to make explicit what I mean by "self-awareness" here. This also explains why I use "cognition" in this formulation: for Russell, acquaintance is a *cognitive* relation. For a succinct summary of Russell's theory of judgement and acquaintance, see Geach (1954), section 12. Note that since the view defended below pertains to the connection between two *capacities*, it is crucially distinct from Heidegger's view, namely that "the aim is to understand this character of self-acquaintance that belongs to experience as such" (1910-11/1988, p. 157). For Heidegger, self-acquaintance is within every experience. By contrast, my view utilises the weaker claim that a certain capacity for experiencing requires the capacity for self-acquaintance.

[5] This characterisation is from Ryle (1994) and is picked up by Cassam (1997a). The initial formulation provided in this paragraph is not final, since it does not rule out uninteresting cases such as seeing oneself in a mirror. I will have more to say on this point in 1.4.

[6] Similar ideas can be found in early Wittgenstein (1921/2001) and Peacocke (2016). Other parts of the *First Critique*, such as the transcendental unity of apperception, and the Paralogisms, might also contain useful, if different, clues (e.g., A107 on the fixed and abiding self).

One cannot be aware of oneself as an object.

It can be dangerous to group together these philosophers' views. For example, Hume's idea seems to be that one's self is not in any way encounter-able in introspection, or at least one's self is not in fact encountered. As a result of his position, the further point with regard to encountering oneself "as an object" simply does not arise. As will become clear, the "as an object" qualification is crucial to the current project. I will return to this at the beginning of Chapter 2 when the two senses of "object" are distinguished. However, here I will continue to group them together, for if my major thesis is correct, then both Hume's challenge and Shoemaker's challenge – though distinct – can be answered.[7]

In what follows I seek to counter the Elusiveness Thesis. It is, to be sure, not a new idea that this thesis can be and should be resisted. A prominent contemporary example is Quassim Cassam's *Self and World* (1997a). The current project takes up elements of his basic framework, but proposes a different path to anti-Elusiveness. Here is a concise summary of Cassam's project.[8]

In *Self and World*, Cassam's overall claim is that "introspective awareness of one's thinking, experiencing self as a physical object among physical objects, is a *necessary* condition of self-consciousness" (ibid., p. 3). He argues that this is sufficient for repelling the Humean Elusiveness Thesis that we can never be aware of ourselves as objects, physical or otherwise. In order to establish his claim, Cassam offers two main lines of argumentation: one is the Unity Argument plus the Objectivity Argument; and the other is the Identity Argument. The Unity Argument holds that for one to be self-conscious, one must be capable of self-ascribing various experiences at different times, which in turn requires the unity of consciousness and subsequently the objectivity condition, i.e., one capacity for being "in a position to conceptualize one's perceptions as perceptions of

[7] The "as object/as subject" distinction can be traced back to the *First Critique* too (A346/B404; A402/B422). For a scholarly discussion of these matters, see Longuenesse (2006), who suggests that in the Third Analogy of Experience, Kant comes close to endorsing Cassam's view, but it is unclear how to make this part cohere with other remarks by Kant concerning either transcendental or empirical self-consciousness (p. 305). Some philosophers have gone further to criticise Kant's distinction between "as subject" and "as object" and his relevant views; see, for example, Heidegger (1927/2010), Merleau-Ponty (1945/2013), Strawson (1966), Evans (1982), McDowell (1996), and Cassam (1997a).

[8] Duncan (forthcoming) also argues for a version of the anti-Elusiveness thesis, but for him the "as an object" qualification is not part of the agenda.

objects in the weighty sense." The Objectivity Argument has it that the objectivity condition requires "awareness of oneself, *qua* subject of experience, as a physical object" (ibid., p. 28; "the materialist conception"). The Unity Argument plus the Objectivity Argument form a long train of thoughts from self-consciousness to the materialist conception. After his extensive and intricate discussions of versions of the Unity Argument and the Objectivity Argument, Cassam concludes that the line of argumentation has not adequately established the intended conclusion. Therefore, he moves to the Identity Argument, and specifically argues that, ultimately, only the *intuition* version of this argument works: "Consciousness of one's own identity as the subject of different representations requires intuitive awareness of oneself as a physical object" (ibid., p. 118). And this is required by self-consciousness. Thus, Cassam concludes that the intuition version of the Identity Argument is successful in repelling the Humean Elusiveness Thesis.[9]

Now, the current project only covers the territory of the Objectivity Argument, i.e., the inference from the objectivity condition to the materialist conception. This is because, in my view, to give up on the objectivity condition, which is prominent in that argument, is premature, since there is a plausible version of the condition that has not been considered, i.e., the condition of *object cognition* that will be developed in what follows. A fuller comparison with Cassam's project will be set out in greater detail towards the end of 2.4. As a foretaste, the current project is more in line with the *intuition* version of the Objectivity Argument. In *Self and World*, Cassam offers his best concept version of this argument and concludes that it ultimately fails, and as such we have to turn to the intuition version (pp. 28-51; the "concept version" of the argument states that for one to be in a position to think of or conceptualise one's perceptions as perceptions of objects in the weighty sense, one must *conceive* of oneself as a physical object). I want to remain neutral on this point for the time being, and simply emphasise the reasons why I choose to pursue the intuition version: given that the current project is about *pre-* or *non-linguistic* creatures' self-consciousness/awareness, it makes more sense to focus on

[9] This outline is extremely sketchy since it is not my intention here to offer a scholarly summary of the book. For richer summaries, see various book reviews of it, especially Dokic (1998). As Beatrice Longuenesse points out, the Objectivity Argument is structurally parallel to Kant's Transcendental Deduction, though Kant's conclusion is about the categories. Here I also follow Longuenesse in understanding "qua" as *mode of access* (2006, p. 297). Campbell (2004a) seems to argue against this kind of view without explicitly mentioning Cassam: "I want to argue that our knowledge of our own psychological lives leaves it open what kinds of things we are" (p. 475). I shall come back to this issue in 5.4.

their *representations* of space, in which representations can be understood as something weaker than ideas or concepts. In the next section, I will explain why the current project deserves the name of "Naturalised Strawsonianism," which is the framework I will be working with throughout.[10]

1.2 Naturalised Strawsonianism

It is instructive at this early stage to compare the current project with its Strawsonian ancestry. I shall consider works by P. F. Strawson and Gareth Evans together. In "Things without the Mind" (1980), Evans presents his critical reading of Chapter 2 of Strawson's *Individuals* (1959) by examining "the Kantian thesis that space is a necessary condition for objective experience" (p. 250). There are two possible readings of this claim. One is that the *existence* of space is necessary; while the other is that the *idea* of space is necessary (Cassam 2005, p. 260; Evans 1980, p. 249, my emphasis: "What is the connection between the *idea* of an objective world and the *idea* of a spatial world?"). The latter seems to be a more interesting thesis, since the former might be taken as close to the truism that there must be space so that objective experience can take place. Hence we will focus on the second reading. It can be formulated like this:

> Spatiality Thesis: Objective experience (or the idea of objectivity) requires the idea of space.[11]

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[10] As much as I am interested in the history of philosophy, especially Kant, this essay is not intended as a historical work. Some examples of the relevant aspects of Kant's philosophy include: on embodiment, Nuzzo (2008) and Svare (2006); on intuition, Falkenstein (1995); on self-consciousness, Keller (1998); on possible connections to neuroscience, Northoff (2012) and Longuenesse (2012). See also early Husserl, for instance where he claims that one is "unable to find this ego" (1900-01/2001, Vol. 2, p. 92). He does go on to argue for a less sceptical conclusion than Hume's, but I cannot go into his positive view here, for it would compromise the focus here. Later (1913/1998) Husserl goes further along a more Kantian line: "all mental processes…as belonging to the *one* stream of mental processes which is mine, *must* admit of becoming converted into actional cogitations. In Kant's words, *'The "I think" must be capable of accompanying all my presentations'*" (pp. 132-3). For contemporary developments of this line, see Zahavi (2005), who argues that the self is not an object, but a dimension of experience.

[11] The term "spatiality thesis" is from Cassam (2005). He discusses various versions of the thesis, tracing their roots to Evans, Strawson, and Kant. "Things without the Mind" (punning on "outside the mind" and "absence of the mind") should be read alongside "Molyneux's Question," in the same collection of papers. The latter can be read as a sequel to the former. Evans's basic line of thought is that the idea of objectivity requires the idea of re-identifiable particulars, which further requires spatial or at least quasi-spatial

In Chapter 7 of *The Varieties of Reference*, which is built on Strawson's reading of the Paralogisms of the *First Critique*, Evans can be interpreted as arguing for the following view:

> Objective-Self Thesis: The idea of space requires the "I" to be in an objective world.[12]

Drawing the two theses together, the Strawson-Evans line has it that objective experience (or the idea of objectivity) requires the "I" to be in an objective world.[13] The Object Cognition Argument developed later will pursue one version of this argumentative line: it will argue that the capacity for object *cognition* requires the capacity for *awareness* of oneself as a physical object in an objective world. Cassam's Objectivity Argument also follows this line:

> For one to be in a position to conceptualize one's perceptions as perceptions of objects in the weighty sense, one must be intuitively aware of oneself as a physical object. (1997a, p. 31)

The antecedent of this conditional is similar to the Strawson-Evans line: it is the *conceptual capacities* that are responsible for objectivity. The consequent is significantly different from the Strawson-Evans line, since Cassam's thesis is about a physical object, while the Strawson-Evans line – at least in the above context – is about the place of the first

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ordering (pp. 252-3). This is where his notion of a "travel-based conception of space" comes in (pp. 254-5). Also consider a slightly different question, which constitutes the main theme of the *Spatial Representation* volume: "What is the connection between the capacity for spatial thought and grasp of the idea of a world out there, an external world we inhibit" (Eilan, McCarthy, and Brewer 1999, p. 1).

[12] The line is extrapolated by McDowell (1996, pp. 99-104; see also Burge 2010, p. 206), though it might be a stretch to trace this back to Evans, who is mainly concerned with immunity to error through identification and identification-freedom (1982, pp. 179-91, pp. 236-7). These two theses can be linked to form one *concept* version of the Objectivity Argument, since it relies heavily on the *idea* of space. Very few attempts have been made to draw possible connections between the works of Evans and McDowell on the one hand, and naturalistic neuroscientific works on the other. For one such attempt, see Northoff (in preparation).

[13] For a discussion that questions Evans's reading of Strawson, see Snowdon (forthcoming).

person in an objective world. But structurally they are quite similar, since Cassam also invokes certain premisses about space as an intermediary step in supporting his thesis (ibid., p. 40). More abstractly, the Strawsonian (and Kantian) project investigates the *necessary* structure of experience (Cassam 2017). With a more relaxed mindset, one could even say that this is a *phenomenological* project, if that tradition were to be understood "as the purely descriptive study of structural features of the varieties of experience" (Smith 2016, p. 7). This is so because while Strawson sets out engaging *descriptive* metaphysics, his project is actually *transcendental* in essence, i.e., finding the "make-possible" condition for certain capacity. How to make these two elements cohere is a difficult and subtle matter; one way to proceed is to regard the project as *describing the necessary conditions* of the target of investigation. This potential tension can also be seen in Husserl, especially when we consider his adoption of Brentano's "descriptive psychology" (1889/1973): how can a descriptive psychology be part of a transcendental project? With these materials in place, we are now in a position to compare the current project with its Strawsonian ancestry.[14]

First of all, the current project is a *naturalised* version within this family. Both the Strawson-Evans line and Cassam rely solely on thought experiments and conceptual analysis to reach their conclusions; this is not a problem in itself. However, it is worth pointing out that the current project marks an attempt to establish a sensible picture following that line but with more direct empirical friction, derived primarily from developmental psychology and secondly from animal studies. Secondly, the present project constitutes an *ambitious* version within this family. As discussed above, both the Strawson-Evans line and Cassam start from premisses about conceptual capacities or even beliefs, while my project attempts to set out from a weaker premiss that only requires object cognition. It is more ambitious because weaker premiss tends to carry fewer conceptual resources. To be sure, there is nothing wrong with starting from conceptual capacities, but the hope here is to begin with something weaker in order to see whether some interesting conclusions about the first person can still be derived. This

[14] There are two other potentially relevant sources that I have not covered here. One is Cassam's more recent project in *The Possibility of Knowledge*, in which he argues (amongst other things) that "in order to perceive that something is the case and thereby to know that it is the case one must be capable of spatial perception" (2007, p. 88). This is another version of the spatiality thesis. The other is Campbell's recent work, in which he argues that object perception requires spatial awareness in certain sense (2007, 2012b). This is yet another version of the spatiality thesis. In Cassam's recent works, the further thesis about the first person is not explicitly discussed. In Campbell's works, both recent and otherwise (e.g., 1994), he explicitly rejects a certain version concerning the transition from space to the first person.

brief comparison is not meant to show that there is anything wrong with the Strawsonian ancestry; rather the point is that those views within this family all engage in slightly different projects that may or may not be mutually compatible. As stated, this project has a different starting point, namely object cognition. Moreover, the intermediate steps involving space make use of different spatial notions. Last but not least, the conclusion also slightly differs from all earlier Strawsonians. This explains why there has not been, and will not be, any direct scholarly discussion of works by Strawson, Evans, and others. Rather, discussions of their views only appear when required, and in such instances I shall be as faithful to the texts as possible. But the point of this comparison remains. The aim of the current investigation is to offer an original picture through conceptual analysis, while ensuring that it is supported by what we know from the relevant sciences, e.g., developmental psychology and animal studies on object permanence and the constraint of solidity (Ch.2), on the distinction between egocentric and allocentric spatial representations (Ch.3), cognitive neuroscience on tactile pattern and object perception (Ch.4), and clinical psychology on pathological cases such as depersonalisation (Ch.5).

To see why it is important to insist on the credentials of *Naturalised* Strawsonianism, consider "Oxford Kantianism" as Andrew Brook defines it. It is "the Kantian tradition that grew out of P. F. Strawson's work at Oxford in the 1960s":

> Oxford Kantianism insists upon a deep divide between philosophy and empirical psychology… This insistence is peculiar. Philosophers make claims about the mind, specifically, about how the mind must be… Surely it cannot be a matter of indifference whether the mind actually is as they claim to be. Nor is it always clear what is being contrasted to empirical psychology. (2001, p. 190)

Brook goes on to note that, according to Cassam, the contrast is between the empirical and the transcendental (1997a, p. 83). I will have more to say about transcendental arguments in Chapter 2. For now, I just want to emphasise one point: no matter whether Brook's criticism is fair, it would be more satisfying to ensure that the project has sufficient empirical support. In other words, the resulting picture should be not only *compatible* with but also *supported* by the relevant empirical evidence. My own view is that Cassam is *not* at fault in his methodology: philosophy is done in a community, so if one draws a conceptual connection between A and B without any recourse to empirical research, so long as the author leaves open the possibility for others to either vindicate or

refute the putative connection with empirical investigation, one is not guilty of insisting on a purely *a priori* method. Nowhere does Cassam assert that psychology and other empirical disciplines are irrelevant to the project he is pursuing. It is just that he chooses not to engage them directly. Now, in my own project I will seek to ensure that the entire project has enough empirical content, and this will become evident from Chapter 2. In 1.3, we will first see how empirical materials might have a bearing on the current project, though the conclusion there will be largely negative.

David Papineau (2003) has offered a slightly different criticism of Campbell, specifically targeting his *Reference and Consciousness* (2002). Here is Papineau:

> This modern neo-Kantianism has been enormously influential within Oxford, and is establishing notable outposts elsewhere in the English-speaking world… Throughout most of the twentieth century, academic philosophy organized itself around the great fault-line dividing the "Continental" and "analytic" schools… Oxford neo-Kantianism has added a new ingredient to the philosophical mix… [A] new and potentially more fruitful division is emerging within English-speaking philosophy. In place of the old analytic-Continental split, we now have the opposition between the naturalists and the neo-Kantians. The naturalists look to science to provide the starting point for philosophy. The neo-Kantians start with consciousness instead. (2003, p. 12)

Papineau goes on to criticise neo-Kantianism for ignoring the sciences. The spirit is basically the same as Brook's criticism above. I do not agree with Papineau's criticism here, as Campbell obviously takes the relevant sciences seriously not only in *Reference and Consciousness* but also in other works. In any case, it is important here that I defend my own approach against this kind of accusation. Fortunately, even assuming Papineau's characterisation of naturalism, my project can still uphold its naturalistic credentials, since it begins with *object cognition*, which can be anchored to the developmental psychology literature, as we will see shortly. The current project – be it Strawsonian or Kantian – is naturalist even by the standards of those who oppose Cassam's and Campbell's "Oxford Kantianism."[15]

[15] "Naturalism" is a technical and contentious term. More charitable readers, such as Andy Hamilton (1995), would describe Campbell's project as a "naturalized Kantian" one (p. 318). That would also be apt

1.3 Gibsonian Precursors

The inference from sense to space and then to self is not exclusively Strawsonian. Similar ideas can be found in some other traditions and contexts, notably in J. J. Gibson's works on *self-specifying information*. In what follows I briefly discuss Gibson's relevant ideas to see how much we can learn from them, even though, ultimately, it will be argued that the resources one might glean from Gibson's work cannot be invoked to support our conclusion in any direct way. Nonetheless, there is good reason to include this discussion at the current juncture: José Luis Bermúdez, in his intriguing book on self-consciousness (1998), relies heavily on these Gibsonian resources to establish a line that is very similar to the Object Cognition Argument. While I am very sympathetic to his project, I believe that the connection between Gibson's insights and Bermúdez's purposes – which I share – is weaker than he supposes.

I will begin with two caveats. First, there is some theoretical baggage that one might wish to offload at the outset. For example, Gibson's insistence on *direct* perception, together with the opposing view in psychology proposed by Irvin Rock (1997; *Indirect Perception*), might prove a distraction for our purposes. Secondly, the opposition between Gibson's approach and that of David Marr (1982) tends to be exaggerated or misunderstood. For example, it is sometimes said that Marr's computational approach has been dominant within psychology, and that Gibson's view is eccentric and only popular within some circles, such as the embodied cognition literature. In any case, the ideological opposition between Gibson and Marr is not pertinent here. Yet, some key notions from Gibson's works are relevant to our purposes, and these will be outlined presently.

The main source is Gibson's seminal work on ecological optics (1979). The basic idea is that there are three elements in vision that constitute *self-specifying information*:

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to describe what I am aiming to do, but readers such as Papineau would presumably disagree with this label. For more on naturalism and its relations to theories of meaning, see Cheng (2018).

In this project I emphasise one direction of Strawsonianism. But following Kant's lead, Strawson actually argues for the other direction as well. Combining Chapters 2 and 3 of *Individuals*, we find a line of thought from self-awareness to exteroceptive and objective awareness: self-awareness requires the use of criteria of re-identification of particulars, which assumes spatial or quasi-spatial ordering amongst things one learns perceptually, and locating oneself within that spatial ordering so that one can identify oneself as one amongst many things of which psychological predications hold. In so doing, one must recognise one's materiality. This reading is due to M G. F. Martin in a seminar series on these matters.

perceptual invariant, visual kinesthesis, and affordance. Self-specifying information is, by definition, information that specifies the self *or* one's own body. This is a crucial ambiguity that tends to be glossed over too easily. I shall deal with this concern fully in 5.4. In what follows I discuss the three elements in turn:

Perceptual invariants: When perceiving, animals move around in their immediate environment. The animal in question would see many surfaces illuminated from various directions. At different moments, the array of illuminated surfaces would change as the animal moves. The key question is: how can the animal or its perceptual system make sense of these constantly changing patterns and reach any constant perception?

Without denying all the established facts about computations on the retina and further downstream, Gibson points to the changing patterns in the *optic array* that the animal would experience when it moves around. The illuminated surfaces within the field of vision would change in a law-like manner. These are *constant* higher-order patterns exemplified when the perceiver moves and/or when the environment moves: the optic array exemplifies *invariant* information that would remain constant as the perceiver moves. Now, what is crucial is that these patterns change *in relation to the perceiver*: the patterns are not just "out there," independent of the perceiving self; rather, it depends on the properties of the *self* (or its *body*) as perceiver, e.g., its bodily properties that sustain specific forms of movement.

Visual kinesthesis: In a similar vein, this notion is a response to the traditional view of perception in motion. The classical view has it that motion perception is explained primarily by the hypotheses that are constructed via perceptual mechanisms that help parse cues from sensory inputs. Again, Gibson is not denying the role of such hypotheses, but he highlights something that has been ignored by theories of vision: the patterns of optic flow and the relations between the variant and invariant environmental features make more pieces of information concerning movements available to the perceiving self. Crucially, information that specifies the perceiver's movements is contained in visual perceptions. These pieces of self-specifying information again indicate that the self (or its body) has a place in perception.

Affordances: In the optic array, varieties of availabilities are manifest in the animal's visual experience. Affordances are environmental possibilities for the perceiving animal

in question. As such, the notion of affordances is clearly a relational one: in addition to environmental properties, the perceiving *self*'s properties are just as important in determining which affordances are present. Something is edible, i.e., can afford eating, for certain animals, but perhaps not for many others. Here again, many issues have emerged from this aspect of Gibson's thinking, for example whether we perceive affordances directly, whether affordance perceptions are conceptual, or whether affordances are parts of the contents of perception (e.g., Siegel 2014). While these are important issues, they have no immediate bearing on the present context. The crucial point is that these often-neglected elements of visual perception – perceptual invariants, visual kinesthesis, and affordances – contain rich pieces of self-specifying information.

Now, although Gibson's primary concern is vision, these ecological notions are applicable to other exteroceptive sense modalities, at least once some suitable modifications have been made. In audition, for example, research on auditory scene analysis (Bregman 1990) and ecological psychoacoustics (Neuhoff 2004) has established similar structures. In touch, elements concerning kinesthesis and affordance might be even more salient. Moreover, it is easy to forget thermal perception, which is also capable of being exteroceptive: human beings and many other animals can sense not only their own bodily temperatures, but also temperatures in the immediate environment (Marotta, Ferrè, & Haggard 2015). In the exteroceptive cases, notions such as affordance are also applicable. For example, when an animal has a lower body temperature and senses a higher environmental temperature from a certain direction, given that it is not too hot, this then affords the animal to move there and to perhaps rest on a certain object. Exteroceptive perceptions, then, have the general structures identified by Gibson.

The next point is that those Gibsonian perceptual structures are all *spatial*. This should not be too surprising, since exteroceptivity here means "external to one's body," which is undoubtedly spatial. There are some difficult cases such as olfaction: for one thing, as indicated above, some have argued that olfaction is exclusively interoceptive (Smith 2002; Burge 2010);[16] for another, some have argued that olfaction is exteroceptive in a *non-spatial* way (Richardson 2013). But at least in the cases of vision, audition, touch, and the thermal sense, the exteroceptive-ecological structures are guaranteed.

[16] "The chemical senses (smell and taste) seem largely to be non-perceptual sensory systems, unless they are supplemented by input from other sources. Constancies are not prominent in the workings of these senses" (Burge 2010, p. 415).

The general moral of this discussion is that exteroceptive perceptions, though primarily about external environments, essentially involve self-specifying information. This is because in those perceptions, spatial and other kinds of information have to be determined with reference to both the environmental factors and the perceiving self's properties: different perceivers, whether or not of the same species, move differently and have different mental economies. This relational character explains why exteroceptive perceptions make ineliminable contributions to self-related information.

Now, though illuminating, the reason why this Gibsonian picture cannot be of direct help for the current project is that even if it were plausible, this picture operates at the level of *information* only. No matter how one construes the notion of information, it should remain distinct from *consciousness* or *awareness*, which is crucial for our project. It is not that information is entirely irrelevant to consciousness. Integrated information theory, for example, signals an ambitious attempt to explain consciousness with a certain notion of information (Tononi 2004). Even if such an ambitious theory might not be on the right track, it is not unreasonable to hold that information must somehow show up in experiences. The idea that information can have important bearing on consciousness is so weak that even epiphenomenalism can be made compatible with it. Having said that, information and consciousness are not identical, or at least no one has shown that they can be identical under certain circumstances. One need not buy into the "hard problem" of consciousness (Chalmers 1996) in order to agree with this. Therefore, no matter how plausible Gibson's picture might be, it cannot lend direct support to the current project, which seeks to vindicate a certain kind of self-*consciousness*.[17]

1.4 Self-Acquaintance

[17] The informational level of the first person is itself significant and interesting. For a sample, see Lane, Duncan, Cheng, and Northoff (2016), which is a comment on Sui and Humphreys (2015). Another way of developing this line is to formulate the thesis at the *representational* level. Echoing Cassam, in what follows I aim to undertake the even more ambitious project of understanding *awareness* or consciousness. The difficulty in reading off phenomenology from information is also noted by Eilan (2016) in her commentary on Peacocke (2014): "The issue at hand is, rather: how, and on what grounds, do we move from Gibson on the self-specifying information in the optic array to a description of our perception that would yield the claim that, contra Evans, we must include a phenomenal non-conceptual self-representation, of the kind Peacocke advocates, in the content of our spatial perceptions" (2016, p. 316). In 2.4, I explain why my own view does not clash with Evans's cogent phenomenological observation.

From the above discussions, it is clear that one has to be careful and explicit about which level one is focusing on. The framework provided by Peacocke (2014) is helpful in this regard:

> Degree 0: "the subject does not enjoy mental states with *de se* contents" (p. 30).
> Degree 1: creatures with "non-conceptual *de se* states" (p. 37).
> Degree 2: the conceptual counterpart of degree 1.

Peacocke here presupposes his theory of non-conceptual and conceptual contents, and the prior idea that representational content is involved throughout. We do not need to engage in that debate for now. Degree 0 has no first-person bearing at all, and degree 2, which involves conceptual and also linguistic abilities, might be more sophisticated than our target of analysis. It depends on how one construes the connection between conceptual capacities and language. In the remainder of this project, I will be focusing on pre- or non-linguistic subjects, but will remain neutral on the question of whether those creatures have conceptual capacities.[18]

So it is safe to say that in what follows the discussions stay at degree 1, at least primarily.[19] The aim is to suggest that there is one good way of unpacking degree 1 that has been neglected by most philosophers. The only qualification is that our topic is consciousness, which differs from that of Peacocke in that context.

Now, one key notion I will be using is "acquaintance," which is borrowed from Bertrand Russell: "We shall say that we have acquaintance with anything of which we are *directly* aware, without the intermediary of any process of inference or any knowledge of truths" (Russell 1912, p. 25). Furthermore, "I think the relation of subject and object which I call acquaintance is simply the converse of the relation of subject and object which constitutes *presentation*" (Russell 1910-11, p. 108, emphasis added). This connection between acquaintance and presentation is consonant with Cassam's (and my) intention:

[18] Although it is clear that this project is very Kantian, this aspect – pre-/non-linguistic subjects – is rather non-Kantian. For discussion on this point, see Keller (1998, pp. 34-5).

[19] Bermúdez (1998) specifies many forms of primitive self-consciousness available for pre-/non-linguistic creatures (Chs. 5-8). His aim is to explore how more sophisticated forms of self-consciousness can grow from primitive self-consciousness: "we need to recognize the existence of primitive, pre-linguistic forms of self-consciousness if we are to explain the possibility of mastery of the first-person pronoun emerging naturally in the normal course of development" (p. 76). My aim is less ambitious in this regard, since I will focus solely on the nature of primitive self-consciousness.

throughout his discussion, "*presented* subject of experience" plays a crucial role (Cassam 1997, pp. 57, 59, 73-6, 77, 141). So, while Cassam does not make use of the term "acquaintance," given that he stresses the *presentational* character of self-consciousness, it is no great stretch to formulate relevant ideas by way of Russell's notion of acquaintance. And I will follow Cassam's lead here. Russell himself recanted the self-acquaintance view in 1913, and in this regard, his later view became closer to that of Hume and Shoemaker.[20] The present project concedes that perhaps these authors are right about *introspection*, understood as attention directing inwards, but holds that it is possible to find one's (bodily) self elsewhere. Cassam proposes his answer in the Objectivity Argument. In the present case, I propose that one's self can perhaps be found in the capacity for *object cognition*. One crucial point here is that self-acquaintance is a kind of awareness *from within*, i.e., *not* from observations; this is where it diverges from *perceptual* acquaintance. The idea here is that introspection, i.e., turning one's attention inwards, is not the *only* way in which one may gain awareness from within; object cognition, though exteroceptive, can bring out self-acquaintance from within, or so I will argue.

In using this notion, several irrelevant cases can be set aside. For example, for mature human beings with minimal background knowledge, it is not surprising that they might be (sometimes) aware of themselves as physical objects, or as minds that have

[20] Russell held a version of the self-acquaintance view in "Knowledge by Acquaintance and Knowledge by Description" (1911-12) and Chapter 5 of *Problems of Philosophy* (1912). Frege (1918-19) might hold a similar view, according to Kripke (2008). Russell abolished self-acquaintance in the *Theory of Knowledge* manuscript (1913) and proposed a descriptivist alternative (see esp. Ch. 3). The reasons behind Russell's change in view are complex, and here is not the place to rehearse such debates in detail. David Pears (1975) suspects that later Russell is simply convinced by Hume's writing, but there is no decisive evidence for this since Russell had already discussed Hume's relevant passage when he held the self-acquaintance thesis (1910-11, p. 110). It might be helpful to compare Russell's later view with the "no ownership view" discussed in Chapter 3 of *Individuals*; this view holds that no referent is presented in experience for "I." See Madden's manuscript "Russell's Theories of Self-Consciousness" and Martin (2015) for more discussion of the relevant matters. For a defence of Russell's early view, see McTaggart (1927), Ch. 36; for a critique of the idea that the self is an object of awareness, see Broad (1925), Ch. 6. Broad also criticises this terminology in a different context, and suggests using "prehension" instead (Broad 1952/1965, p. 43). Acquaintance can have significant import for other issues too, such as personal identity (Grice 1941). For a criticism of Grice, see Perry (1975). A relevantly recent development is to use such a notion (and perhaps phenomenal concept) to answer Frank Jackson's "Knowledge Argument" (Jackson 1982; Ludlow, Nagasawa, and Stoljar 2004). Yet another important connection is with the discussions on the "Myth of the Given" (Sellars 1956; McDowell 1996).

bodies that are physical objects. Or when people look into a mirror, or look at their body parts, they might also be (sometimes) aware of themselves as physical objects, or as minds that have bodies that are physical objects (Shoemaker 1986; cf. Chisholm 1969). The background knowledge case is irrelevant because it involves implicit top-down inferences; the mirror case is irrelevant because it is not in any way *from within*: seeing things in mirrors involves perceptions, the paradigmatic case of *from without*. Neither case satisfies the notion of self-acquaintance invoked here.[21]

One initial and natural worry concerning my use of the above notion of acquaintance is the following: since one possible reading of my thesis is that self-acquaintance is obtained *through* object cognition in some way, this embodies a blatant contradiction insofar as the relevant notion of acquaintance implies *directness*. For example, if one learns that it is raining outside by checking the weather report, one's knowledge of the current rain depends on the knowledge or awareness of the weather report. It is thus *indirect*. To dampen this worry, it is crucial to note that whether or not something is direct depends on what kind of relation is in question. In the case of raining, the relation in question is *evidential*, which is exactly the epistemological relation that concerns Russell. In my case, it is not part of the view that object cognition is *evidence* for self-acquaintance. Rather, the view is that the capacity for a certain kind of object cognition implicates or requires the capacity for self-acquaintance. Later chapters will flesh out precisely how this comes about, but it is important to clear up this initial worry at this stage. One could also convey the same point through Russell's classic example, whereby one indirectly sees a brown and rectangular table *by* directly seeing some sense-data that bear the relevant experiential qualities. In this case, the sense-data *stand between* the subject and the epistemic target, i.e., the table. Now, in my case it will *not* be argued that object cognition in any way *stands between* the subject and oneself: perhaps that is not even a coherent view. Therefore, the natural worry above turns out not to be a genuine concern.

[21] A slightly different though related point is made by Bermúdez: "perceiving myself in a mirror is not *intrinsically subject referring* because perceptual states need not be about me" (2016, pp. 632-3, my emphasis). This is also to be found in Peacocke (2014, p. 9). Later discussions on the "*qua* subject" qualification will be relevant. The idea is that one can be aware of oneself *qua* subject as an object at the same time. At the "*Self and World*, 20 Years On" event at Institute of Philosophy in 2017, Michael Ayers called this the "single-state view".

There are two further worries concerning the present strategy. Firstly, not every aspect of my usage of acquaintance fits with Russell's original stipulation. And secondly, this Russellian notion might bring more problems than solutions to the project. In order to properly address these worries, it is worth further exploring how this notion was first introduced and how it has evolved.

Russell took the term "acquaintance" from William James's *Principles of Psychology* (1890)[22], but note that James holds that knowledge requires conceptuality, and so would oppose Russellian acquaintance. It is not only important in the current context for Russell; it also plays an important role in his semantics and logic, and his theory of judgement (see Proops 2014). I mentioned previously that the terminological contrast between acquaintance and presentation is crucial for my purposes (Russell 1910-11, p. 108), but Russell actually abandons the view of self-acquaintance relatively soon in *The Problems of Philosophy*, perhaps on account of his new considerations about *memory* acquaintance.[23] I shall retain this contrast between acquaintance and presentation throughout. To understand how Russell utilises acquaintance in epistemology, and derivatively in psychology, let us consider how he introduces the official taxonomy about knowledge:

> We have first to distinguish knowledge of things and knowledge of truths. In each there are two kinds, one immediate and one derivative. Our immediate knowledge of things, which we called *acquaintance*, consists of two sorts, according as the things known are particulars or universals. Among particulars, we have acquaintance with sense-data and (probably) ourselves. Among universals, there seemed to be no principle by which we can decide which can be known by acquaintance, but it is clear that among those that can be so known are sensible qualities, relations of space and time, similarity, and certain abstract logical facts. Our derivative knowledge of things, which we call knowledge by *description*, always involves both acquaintance with something and knowledge of truths. Our immediate knowledge of *truths* may be called intuitive knowledge, and the truths so known may be called *self-evident* truths. Among such truths are included those

[22] And James happens to also endorse a version of self-acquaintance: "[The self] is something with which we also have direct sensible acquaintance, and which is as fully present at any moment of consciousness in which it is present, as in a whole life time of such moments" (1890/1983, p. 286).

[23] This conjecture derives from M. G. F. Martin's remarks in a seminar series.

> which merely state what is given in sense, and also certain abstract logical and arithmetical principles, and (though with less certainty) some ethical propositions. Our derivative knowledge of truths consists of everything that we can deduce from self-evident truths by the use of self-evident principles of deduction. (1912, p. 109)

Russell holds that knowledge of things and knowledge of truths are logically distinct from each other; this entails that knowledge of things is not truth-evaluable.[24] However, he also holds that "[a]ll our knowledge, both knowledge of things and knowledge of truths, rest upon acquaintance as its foundation" (ibid., p. 75). For my purposes, only the following route is crucial:

> Knowledge of Things – Immediate Knowledge – By Acquaintance – Particulars

The self belongs to the category of particulars, as opposed to universals. In addition to this, Russell also holds that current/past sense-data and images (sense-data in imagination) falls into this camp.

What is Russell's main reason for holding the self-acquaintance thesis in the first place? It goes something like this: we have self-awareness, and we can make judgements about ourselves. Since no descriptive theory of the first person is satisfactory, there *must* be acquaintance with oneself. Here is how Russell introduces his Principle of Acquaintance:

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[24] One natural additional claim would be that knowledge of things is *non-conceptual*, or perhaps even *extensional*. As will be explained more in 2.1, here I remain neutral on the issues around conceptuality. Anil Gomes raises a possible dilemma at my talk on these: either acquaintance is extensional, so that the "as an object" qualification cannot be in the thesis, or it is intensional, which defies Russell's original definition. Tentatively, I intend the notion of acquaintance here to be an extensional notion, but deny the consequence concerning "as an object." The reason is that for the worry to be genuine, one would need to identify intension with Fregean senses, which is common but actually controversial. For more discussion on this, see Putnam (1975) and Chalmers (2002). For Russell's own discussion on these, see Chapter 4 of *Theory of Knowledge*, where he discusses things being presented in certain ways. Also consider acquaintance theories of perception: if those theories entail one cannot perceive something as something, wouldn't it be a direct refutation of such view?

> *Whenever a relation of supporting or judging occurs, the term to which the supporting or judging mind is related by the relation of supporting or judging must be terms with which the mind in question is acquainted.* This is merely to say that we cannot make a judgement or supposition without knowing what it is that we are making our judgement or supposition about. It seems to me that the truth of this principle is evident as soon as the principle is understood… (Russell 1910-11/1986, p. 211).

The subsequent change of mind is at least partially the result of Russell believing that he has found a way to reinstall a descriptive theory in this regard. These are serious considerations from philosophy of language that exceed the scope of the present investigation. This is not a problem, however, since the main theme of my project is the primitive self-awareness that is pervasive in pre- or non-linguistic creatures. For them, the descriptive alternative that essentially involves language is simply not an option.[25]

Later thinkers, such as Acquaintance Theorists (Balog 2012, BonJour 2003, Chalmers 2003, Conee 1994, Fales 1996, Feldman 2004, Fumerton 1995, Gertler 2001, Levine 2007, and Pitt 2004) and Sellarsians who oppose them (deVries & Triplett 2000, Rosenberg 2007), have taken up these discussions of acquaintance from Russell and his contemporaries, though with different emphases such as epistemic foundations. In general, acquaintance is taken to be a kind of unmediated access to oneself or one's mental states and episodes. It is sometimes said to be a metaphysical relation that makes the relevant knowledge more secure than other varieties of knowledge, though perhaps not infallible. This reminds us that notions of acquaintance might already have their origins in Descartes (1641).[26] This method is not particularly helpful for the present project, since the subjects in question here are pre-linguistic human infants and non-linguistic animals, who do not have the relevant cognitive capacity to employ the method

[25] For a more contemporary endorsement of the descriptive theory of the first person, see Peacocke's early view: "The particularized constitutive role of [the self] for a given thinker at any given time is determined by taking his conscious states at that time and forming the mixed descriptive-demonstrative 'the person with these conscious states'. (This last demonstrative 'these conscious states' is one which can be used to refer to *his* conscious states only by the given thinker)" (1983, p. 119). For the connection with philosophy of language, see especially the discussions on singular thoughts in Jeshion (2010). Note that for the remainder of this chapter I will go beyond Russell's original materials and consider contemporary ramifications.

[26] Russell himself mentions the method of doubt in this context: if one can sensibly doubt something, then one is not acquainted with that thing (Gertler 2011). On related matters, see Duncan (2015, 2018).

of doubt. However, it does bring out one important character of acquaintance; that is, it is *non-causal*. This is because causal relations can be easily manipulated or interfered with; consider Descartes's evil genius case.

Now we are in a position to return to the original two concerns: 1) not every aspect of my usage of acquaintance seems compatible with Russell's original stipulation; and 2), this Russellian notion might raise more questions than answers for my project. With regard to the former, Russell is committed to the view that acquaintance is non-conceptual. As indicated above, I do not follow him in this regard. One potential problem is that later I will argue that certain creatures can be acquainted with themselves *qua subjects*, and some might think that "qua" or "as" implies conceptuality (Fodor 2007). My response is that conceptuality might not be guaranteed so easily. A very primitive creature can see something as food when hungry, and yet see that very same thing not as food when full. This should not imply that the primitive creature in question has the relevant conceptual capacity. Thus, even if I will need the "*qua* subject" qualification later, this does not mean that the conceptuality commitment has to be invoked.

What of the latter concern, i.e., the cost-benefit analysis? It is hard to provide an exact answer to this, since these cannot be quantified in this context. But without the precise quantification, there is no way of arriving at a definitive answer. Russellian acquaintance has been a contentious notion throughout the past 100 years or so, and of course some would find the current picture less implausible if I were to do away with that notion. For those readers, I can only beg for their patience and encourage them to read on. But at least I will argue for this: there are two crucial difficulties concerning Russellian acquaintance that the current picture can legitimately avoid.

The first difficulty is the Davidsonian challenge that the targets being acquainted do not have the right kind of form or structure to provide epistemic justification:

> The relation between a sensation and a belief cannot be logical, since sensations are not beliefs or other propositional attitudes. What then is the relation? The answer is, I think, obvious: the relation is causal. Sensations cause some beliefs and in this sense are the basis or ground of those beliefs. But a causal explanation of a belief does not show that or why the belief is justified. (Davidson 1983/2001, p. 143)

In this passage, Davidson is targeting sensations or sense-data, but the same moral can be drawn if we replace "sensation" with "self": since the self is not propositional, it cannot justify beliefs about it. Only beliefs can justify beliefs, the Davidsonian motto goes. Now, at the outset, one can note that Davidson's view, despite enjoying a considerable amount of support, has not gone unchallenged. McDowell (1996) argues that Davidson jumps to his conclusion because he overlooks the possibility that experiences, conceived as *thoroughly* conceptual, can justify beliefs. I will not enter into this debate here. Suffice it to note that even if we accept Davidson's motto, it is not a problem for the current view, since I do not make the *additional* claim that with self-acquaintance subjects can justify their beliefs about themselves. Again, given what at issue here are pre- or non-linguistic creatures, the further question about justification simply does not arise.

The second difficulty emerges from the "Speckled Hen" problem, though arguably this is a problem about sense-data, not about acquaintance *per se*. Roderick Chisholm (1942) attributes this to Ryle's criticism against A. J. Ayer's sense-datum view. Suppose that in Experience 1, one clearly sees a hen with 48 speckles, and in Experience 2, the same person sees a nearly identical hen with 47 speckles under nearly identical circumstances. It seems plausible to hold that Experience 1 and Experience 2 differ phenomenally, since each speckle would contribute something to the overall visual phenomenology in question. However, in this scenario it is likely that the subject will be unable to tell the difference between Experience 1 and Experience 2. This seems to show that acquaintance, if this relation exists at all, is not so direct and simple, because if it were, then the subject should be able to distinguish between Experience 1 and Experience 2 with certainty.

Like Davidson's motto, this is indeed a difficult challenge with many further ramifications, but given the nature of the current project, the difficulty does not really arise. Notice that in the "Speckled Hen" scenario, the problem is due to multiple epistemic targets: 47 and 48 are numbers that go way beyond human working memory, and they are numerically too close to one another, which makes it hard to distinguish between the two. This does not arise in the case of *self*-acquaintance, since the self, complex or not, is not like 47 or 48 speckles. It is true that in the discussion concerning the metaphysics of the self, it is debatable whether the self is simple or complex, and, if the latter, in what way and to what extent. But the self-acquaintance proposed in this project does not concern the metaphysics of the self. Let us assume, for the sake of

argument, that the self is very complex. Even in that case, it will be argued that certain creatures can be acquainted with themselves as physical objects in an objective world. A physical object can have multiple parts and aspects, depending on how one wants to individuate it, but a physical object has its *material unity*, which helps explain self-acquaintance (Ayers 1991; more on this in 5.4). With this position, the "Speckled Hen" problem does not get off the ground in this context.

Before closing this chapter, I want to say a bit more about the kind of self-awareness in question, as there are some other notions that should be kept apart. Since the view being developed later says that the self can be aware of itself as an *object*, I shall call it "object self-awareness." There will be more on the relevant notion of object at the beginning of chapter 2. This kind of *object* self-awareness is different from the following two kinds of self-awareness:

a) Linguistic self-awareness: the kind of self-awareness that involves the capacity of linguistic ability in general, and of first-person pronoun in particular.
b) Identification self-awareness: the kind of self-awareness that involves the capacity of recognising oneself in mirrors.

The first variety (linguistic) is much more sophisticated than object self-awareness, and will not be my primary concern below. The second variety (identification) is a heated topic in recent cognitive science.[27] Many animals have been shown to be unable to pass the mirror self-recognition test (MSR), and thereby been seen as unable to recognise their own bodies or themselves. In this kind of test, animals or human children have paints applied to their foreheads unbeknownst to them. Later they are shown a mirror, and the experimenters observe whether the subject in question attempts to remove the paints on the forehead after seeing it in the mirror (Gallup 1970). What MSR is actually testing is controversial, but in any case, it is *not* what is at issue here: in MSR, what is crucial is whether the subject itself recognise the one in the mirror as itself. For mature human beings who enjoy object cognition, perhaps they might fail to pass MSR for other reasons. For example, perhaps they just unknowingly underwent plastic surgeries on their faces, and when they see the mirror the first time after that they cannot recognise the ones in the mirror are themselves due to top-down inferences and background knowledge. Conversely, maybe some animals can recognise themselves in mirrors, but

[27] And this is "perspectival self-consciousness" in Peacocke's term (2014).

cannot be said to enjoy object permanence (more on this notion in 2.2). For example, certain kinds of ants seem to pass MSR since they display self-cleaning behaviours after seeing themselves with a dot painted on the clypeus, but there is no such behaviour when the dot is invisible to them (Cammaerts and Cammaerts 2015). So there is perhaps a double dissociation between object self-awareness and self-awareness is the sense of MSR: the ants that can recognise themselves in mirrors (in some sense) are unlikely able to be aware of themselves as objects in an *objective* world: perhaps objectivity is simply too far away from their life-world. Conversely, though dogs and cats enjoy object permanence to some extent, neither passes MSR. This should not be too surprising, as MSR is about *recognition*, and there might be evolutionary constraints about which species need such a capacity, as opposed to others.[28]

It should be acknowledged that the mirror test might be useful in determining whether the creature in question has identification self-awareness, but creatures fail in the mirror test might still be able to be aware of themselves as objects. To be sure, their object self-awareness would be practical knowing-how, in the sense that they lack the relevant concepts and cognitive abilities to formulate the relevant thoughts. Pre-linguistic human infants, for example, at certain stage might start to be able to enjoy object self-awareness, but many of them might not develop theoretical concepts of objectivity and objecthood until late, or perhaps for good. These characterisations might seem quite abstract at this stage, but the meanings of the key terms will be contextualised when more materials are introduced later.

This completes my elaboration of the project's main objectives. I started by introducing the dialectic, explaining how anti-Elusiveness is the primary aim. I then turned to the broader background of Naturalised Strawsonianism and Gibsonian precursors. Finally, a crucial notion of self-acquaintance was introduced and defended in part. Thus, the stage has been set. In Chapter 2, I will outline the starting point of the major argument – object cognition – and how the relevant notions from developmental psychology, notably object permanence and intuitive physics, figure in that argument. In Chapter 3 I will argue that object cognition in the relevant sense requires robust object permanence, which thereby brings with engaged allocentric spatial representation. This then entails consciousness of oneself as a denizen in an objective world. In Chapter 4 I

[28] For a discussion of the connections between MSR and varieties of self-awareness, see Boyle (2018). She argues that passing MSR requires both bodily and objective self-awareness, though she uses the latter terminology in a different way.

will argue that object cognition in the relevant sense also requires robust intuitive physics, which thereby brings with engaged primary quality representation. This then entails consciousness of oneself as a physical object. In Chapter 5 I will rephrase the position in more positive terms under the heading of "Epistemological Objectivism," and modify this view in light of three prominent objections.

CHAPTER 2

Objects

2.1 Objects in the Weighty Sense

In the previous chapter, I have introduced the dialectic (anti-Elusiveness), the theoretical framework (Naturalised Strawsonianism), an indirect conceptual resource (Gibsonian precursors), and one key notion (self-acquaintance). In this chapter, I will focus on another key notion: *object cognition*. I will start by considering objects in the weighty sense as introduced by Strawson, and how core cognition can help us explicate that notion (2.1). I will then discuss two essential elements of core cognition, namely object permanence and the constraint of solidity (2.2 and 2.3). I will then turn to the initial formulation of the Object Cognition Argument, the major argument of the entire essay (2.4). Again, readers may skip over some details in 2.2/2.3 and refer back when needed.

Object What is an object? It is notoriously difficult to be clear about this in English since this word refers to at least two important categories. One is closer to *things*, and the other is closer to *target*. This distinction is evident in some languages, such as German ("Objekt" for the former and "Gegenstand" for the latter) and Mandarin ("物體" for the former and "對象" for the latter). Actually, there was a debate in the Chinese-speaking community concerning how we should translate W. V. O. Quine's *Word and Object* into Mandarin precisely for this reason. Let's start with the one that will *not* be the main concern for us in the following discussion, i.e., the latter, target or Gegenstand. When philosophers talk about the objects of thought or the objects of perception, they mean the *targets* of thought or perception. Sometimes they are called "intentional objects" (e.g., Searle 1983). In the problem of fictional reference, for example, we ask questions such as "if Pegasus does not exist, how can it be thought of?

How can intentionality be relational if one relatum does not exist? How can fictional objects be the *targets* of thought?" In the problem of perception, we discuss whether or not the immediate objects of perception are sense-data, where sense-data are candidates for the *targets* of perception, i.e., *what* we perceive. This usage of "object" is perfectly legitimate and perhaps indispensible in many philosophical discourses, but it will not be our main topic here. Instead we will focus on the former of the two meanings, i.e., things or Objekte. What is an object in this sense? It can be further divided into physical and non-physical objects. The former mainly consists in "medium-sized dry goods" (Austin 1962), though of course being dry is not a necessary condition: marine creatures are all physical objects in this sense. Whether anything falls into the latter category (i.e., non-physical) is debatable. According to physicalism, or indeed naturalism construed in a certain way, the latter is a null set. We need not settle this metaphysical controversy here. Notice that some beings can be physical but *not* objects in the intended sense. Rainbows, shadows, and sounds are all physical, but they are not physical *objects* in the intended sense, as they are not solid or impenetrable (more on this in 4.2). Physical objects, as intended here, are material bodies such as tables, chairs, and stones. There is a metaphysical question concerning the nature of physical objects. For example, are they over and above the molecules that compose them (e.g., Merricks 2003; Thomasson 2007)? Again this is not our chief interest here. For now we will operate with the ordinary conception of physical objects, i.e., things we physically interact with in everyday life, but we will exclude physical *phenomena* such as rainbows and shadows. This will be further discussed in 2.3. According to this usage, physical objects are material bodies that exhibit a certain degree of impenetrability. I avoid using the term "material bodies" because later I will discuss bodily awareness and the term "body" might generate unnecessary confusions.[29]

[29] With this pair of distinctions, we are in a position to see why grouping together Hume and Shoemaker might be problematic: Hume seems to be more concerned about whether the self can be a *target* of awareness, i.e., whether oneself can be *encountered* in introspection, while Shoemaker seems to be more concerned about whether the self can be aware of itself as a *thing*. Again this subtlety seems to be downplayed in not only Shoemaker (1984) and Brewer (1992), but perhaps also in Cassam (1997a). For example, Cassam regards Schopenhauer as a possible opponent, since he holds that the notion that "the subject should become object for itself is the most monstrous contradiction ever thought of" (1818/1966, p. 334). However, in the context it seems clear that Schopenhauer has the *target* reading in mind. If so, Cassam's opposition to Schopenhauer should be indirect at best.

Now, what are objects in the *weighty sense*? This notion is borrowed from P. F. Strawson (1966). In commenting on Kant's *Critique of Pure Reason*, Strawson writes:

> As the investigation proceeds, however, we become aware that the word "object" is to be taken more weightily than we might at first have thought. It means something more than merely a particular instance of a general concept. It carries connotations of "objectivity." To know something about an object…is to know something that holds irrespective of the occurrence of any particular state of consciousness… (p. 73)

So what is crucial is the connotation of *objectivity*, to which we will return in Chapter 3. In *Self and World*, Cassam also relies heavily on this notion. He follows Strawson in holding that objects in the weighty sense are "particular items that are capable of being perceived and of existing unperceived" (1997a, p. 25). Understood this way, this connects to two central topics of developmental psychology, namely *object permanence* and *intuitive physics*, which Strawson and Cassam also discusses, though not with the help from other disciplines: for example "existence unperceived" is the essence of object permanence. Object permanence is crucially relevant when it comes to *objectivity*, while intuitive physics is crucially relevant when it comes to *physical objecthood*.[30] These topics will be discussed in detail in 2.2 and 2.3 respectively. The reason for anchoring the Strawsonian objects, i.e., objects in the weighty sense, with these two notions is to ensure that the project has sufficient empirical friction, and also to utilise the insights gained from research in another discipline. The main reason for focusing on objects in the weighty sense is that we want to understand self-awareness of pre- or non-linguistic creatures, and those creatures are themselves objects in the weighty sense. A subsidiary reason is that identifying the conditions for the capacity to cognise objects in the weighty sense is just philosophical significant and interesting in its own right. Before moving on, another important notion we need to grasp is *object cognition*, not only because object permanence

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Whatever the verdict, the current project mainly concerns the *thing* use of the term "object," not the *target* use. William James (1904) focuses more on the target use and connects it to Moore's view about the diaphaneity of experience (1903). For a more recent discussion of this connection, see Peacocke (2014).

[30] Bermúdez (1998) has emphasised the relevance of object permanence, amongst other things such as autobiographical memory, spatial reasoning, and navigational abilities, in this context.

and intuitive physics are capacities in *cognitive* development, but also because the major argument in the entire project rests on a premiss concerning *object cognition*.

Object Cognition What is object cognition? To answer this question, we need to explain what we mean by "object" and "cognition" respectively. We have already covered the former, but what about cognition? "Cognition" in contemporary psychology is often invoked in a threefold distinction between sensation, perception, and cognition. This is a hierarchical distinction. The idea behind it is that the organism starts with having sensations, and then perceptions, and then finally cognitions, with more and more intellectual resources. This picture is not innocent. For example, in the case of vision, to hold that seeing starts with *visual sensation* is a substantive claim (e.g., Peacocke 1983, Block 1996). Still, this hierarchical distinction might be partially true: when it comes to object *cognition*, it implies that what is at issue is more than object *perception*.[31]

Above I mentioned that the metaphysical question concerning the nature of physical objects will not be the topic, and here is the reason why: in understanding object cognition, what we want to know is how an organism *cognises* objects. So, the organism's point of view is crucial. Unless we use "object cognition" to refer to scientific inquiries, it should cover only the object as the organism *perceives* or *thinks* it. Most philosophers in the analytic tradition tend to focus on human subjects who have linguistic capacities, but in this project our interests lie in non-linguistic cases. The idea is to see how far one can go if the starting point is less intellectualised cognitive apparatuses. This is why in 1.2 I mentioned that this project is more ambitious than some of the earlier versions in the Strawsonian family.

In what follows I review the relevant literature on object cognition, object permanence, and intuitive physics. The review here is heavily indebted to Susan Carey's book, *The Origins of Concepts* (2009). However, her project and mine are distinct in their respective aims. Carey draws the three-way distinction between pre-conceptual episodes, core cognition, and explicit linguistic cognition (Ch. 1). Core cognition is *core* in the sense

[31] Cognition is more ubiquitous than one might have assumed; although cognition often has perception as its more primitive element, it is now commonly held that cognition, roughly understood as involving higher capacities such as working memory and reasoning, is a commonplace in the animal kingdom. One example is colour experience: "So color is, among other things, *for* cognition" (Chirimuuta 2015, p. 88). Given that colour experiences are common in the animal kingdom, it should not be too surprising that cognition also appears in at least some of the creatures that are capable of colour perception.

that it contains initial developmental primitives. Carey's major thesis is that core cognition is both *conceptual* and *innate* (Ch. 2), contra William James (1890), Jean Piaget (1954), W. V. O. Quine (1977), and Jesse Prinz (2002), all of whom defended an empiricist position. This is where my project differs from hers: in what follows I will remain as neutral as possible with regard to these two issues. It is true that these two are significant philosophical and empirical issues as well, but as it happens they are orthogonal to what I am attempting to understand in this project. One thing to be noted is that the nativist claim is in general even more difficult to defend than the conceptualist claim. Nativism might be quite plausible for more primitive mechanisms, such as depth perception (E. J. Gibson and Walker 1960), but full-fledged object cognition that involves object permanence (see below) and other representational capacities might be too substantive to be innate. Again we will remain neutral on this issue.

The phrase "core cognition" is derived from Elizabeth Spelke's research on "core knowledge" (Spelke, Breilinger, Macomber, and Jacobsen 1992). Here the term "knowledge" is to be avoided because we are primarily interested in cognitive capacities; whether the results they bring about are *factive* or true is of less relevance. Although core cognition is mainly a topic in psychology, parallel issues arise in philosophy as well. According to Carey, core cognition is conceptual but pre-linguistic. In philosophy, at least in the analytic tradition, there is a strand of denying this possibility (e.g., Davidson 2001, McDowell 1996, Brandom 1994), though the consensus is that this issue is far from settled. Again whether core cognition is conceptual will not be the main focus of the current project.

Although I do not endorse many aspects of Carey's project, it is helpful to have an overview of her major claims. What follows is her own summary:

1) Conceptualism: "core cognition has rich integrated conceptual content. By this I mean that the representations in core cognition cannot be reduced to perceptual or sensori-motor primitives, that the representations are accessible and drive voluntary action, and that representations from distinct core cognition systems interact in central inferential processes" (Carey 2009, p. 67).
2) Nativism: "core cognition is articulated in terms of representations that are created by innate perceptual input analyzers. Natural selection has constructed these analyzers specifically for the purpose of representing certain classes of entities in the world, and this ensures that there are causal

connections between these real-world entities and the representations of core cognition" (ibid.).

3) Developmental continuity: "the perceptual analysis devices that identify the entities that fall under core domains continue to operate throughout life. Core cognition is elaborated during development because core cognition systems are learning devices, but it is never rendered irrelevant. It is never overturned or lost, in contrast to later developing intuitive theories, which are sometimes replaced by subsequent, incommensurable ones" (ibid., pp. 67–8).
4) Domain-specificity: "systems of core cognition are domain-specific learning devices" (ibid., p. 68).
5) Animal continuity: "some core cognition (including that of objects) is shared by other animals. At least some early developing cognitive systems in humans have a long evolutionary history" (ibid., p. 68).
6) Iconicity: "the format of representation of core cognition is iconic rather than involving sentence-like symbol structures" (ibid.).

In effect, I remain neutral concerning 2), 3), 4), and 6). I am inclined to accept 1) and 5), but none of the major theses in this project will hinge on them. Readers might wonder why I want to talk about core cognition at all if I do not engage 1) to 6), and here is the reason: two crucial notions for me are object permanence and the constraint of solidity in intuitive physics. Often they are discussed under the heading of "core cognition." But the question of whether they are conceptual, innate, and so on, involves substantive issues, and one need not take sides on such matters when theorising upon them. Relatedly, the basic idea of core cognition is very similar to, though not exactly the same as, what Fodor and Pylyshyn (2015) call "basic cognitive science"; it is basic because it forms the foundation for further cognitive development. One can agree with this point without buying into any of the further substantive claims made by Fodor and Pylyshyn. Now with some preliminary ideas about core cognition, I shall turn to the first important element of objects in the weighty sense, *object permanence*.

2.2 Object Permanence

"Object permanence" refers to the understanding that objects continue to exist even when they cannot be perceived. It was extensively studied by Piaget (1977), and has been taken up by many later researchers (e.g., J. G. Bremner, A. M. Slater, and S. P. Johnson

2014). It is sometimes formulated as a *perceptual* phenomenon, but one should acknowledge that even if perception is indeed involved in this capacity, it has to go beyond perception, for the simple reason that when the object in question is out of view, the subject *understands* or *expects* that that object still exists unperceived. This is why, as indicated above, object *cognition* has to be more than object *perception*. The aim of this section then is to convince readers that while there are unsettled empirical controversies in this area, it is safe to hold that the capacity for object permanence is *pre-linguistic*, and therefore fits the overall argumentative strategy.

Piaget According to Piaget's original view, human infants do not have the capacity for object permanence until the age of 18 to 24 months, at the end of the sensorimotor intelligence stage. This has been decisively refuted by many later studies conducted by various research groups. Carey (2009) seeks to argue that this capacity is actually, in a significant sense, innate. Again, to engage with the nativism debate is not one of the aims of the current project, but it is safe to say that five-month-old infants are capable of this kind of understanding (Baillargeon, Spelke, and Wasserman 1985; for worries, see Rivera, Wakeley, and Langer 1999). Other groups have proposed different answers, but they all fall under the age of 12 months. This is important because it means there is a consensus that the object permanence capacity is *pre-linguistic*, even if possibly conceptual. Different theorists characterise the capacity of object permanence in various ways. For example, Gopnik and Meltzoff (1997) understand core cognition and object permanence as *theories*. For most other researchers', this would be an over-intellectualisation of the infant's basic cognitive repertoire. At the other extreme, the possibility of under-intellectualisation should also be avoided. For example, "reach where I saw some visual property disappear and some visual property or tactile property will be there" is only a learned *contingency* that is weaker than the genuine capacity of object permanence (Carey 2009, p. 35).[32]

[32] These accusations are all substantive claims that require arguments, but since at this stage I am just reviewing the general territory, and nothing below will hinge on these accusations, I shall move on without backing up these claims. Another concern of over-intellectualisation is provided by Feminist epistemology: "An infant learns to respond *cognitively* to its caregivers *long before* it can recognize the simplest of physical objects" (Code 1991, p. 35). This point can be fully granted. What is important for us is that the capacity of object cognition can bring the infant to a certain capacity for self-consciousness.

Although Piaget's actual view has been refuted, it is instructive to go through his basic argumentation. He has negative arguments against the early object permanence view, and a positive account for how permanence is achieved in his picture. Let's start with the negative part. First, he observed that below the age of eight months or so, infants who reach for desired objects will often give up when the objects are hidden from view, despite the fact that infants at that age are already capable of moving. Second, he argued rather convincingly that older infants still make the crucial A-not-B error, i.e., after retrieving one object from occluded location A, if the object is later hidden in occluded location B in front of them, sometimes they will still search for the object in location A. Piaget (1954) argues that only at 18 months or so, when infants begin to be able to avoid this kind of error, can they be said to have the object permanence capacity. Although these two arguments are quite ingenious, later research has found convincing alternative explanations. The motivation for finding other explanations is that while infants younger than 18 months of age fail to search in the right place, they do succeed in looking-time tasks, which can be confirmed by eye-tracker technology. Looking time tasks "involve the presentation of visual stimuli and the measurement of subjects' corresponding eye gaze toward each stimulus. Interpretations of the subjects' perspective or cognitive abilities are then made based on the patterns of eye gaze observed" (Winters, Dubuc, and Higham 2015; also see Spelke 1985). A natural question is, if they are successful in looking in the right direction, why would they fail to search in the right place? One plausible answer is that the searching tasks require means-ends motor planning and various other executive functions that are supported by the mature frontal cortex (Diamond 1991). Here is not the place to go into the relevant physiological details; suffice it to say that although Piaget's observations and argumentation are solid to some extent, nowadays there are good reasons to believe that object permanence occurs in human infants much earlier than he expected. Whether the capacity can be said to be innate, as in Carey's account (2009), is another matter.

What about Piaget's positive account of how infants reach the object permanence capacity? Again, his argumentation does have initial plausibility. He argues that learning crossmodal correspondences between sensible properties of objects is a crucial process through which robust representations of objects are achieved. Examples of this kind of correspondence include how visual appearances of shapes are correlated with how those shapes feel when being touched, the kind of task that was probed by the traditional Molyneux's Question (Locke 1690). This seems to be sensible initially because unimodal

stimuli do lack the resources to sustain an object's persistence in the subject's mind, especially perhaps in vision, audition, and olfaction. In having crossmodal correspondences, they might be able to confirm the objecthood for the subject, since sensory evidence coming from different informational channels can mutually support one another. But there are at least two reasons why nowadays this theory from Piaget no longer looks convincing. First, even if one already has rich crossmodal correspondences, the objects are still specified with sensory terms. It is unclear how the subject in question can *transcend* the sensory veil and come up with the idea that there is something behind all the sensible properties. Second, even if the first point is unconvincing, it has been shown that crossmodal correspondences also occur much earlier than Piaget expected. Neonates naturally orient visually to locations specified by sounds; they can also represent the correspondence between visually specified and proprioceptively specified facial gestures (Carey 2009, p. 39). Andrew Meltzoff and his colleagues let neonates suck on a pacifier with a special shape, either a smooth cube or a sphere with several bumps. The infants in question were merely a few days old, and they had never had things in their mouths except for nipples and their own hands. Throughout, the infants were not allowed to see the pacifier. Later they were shown two pictures, one of a cube and the other of a bumpy sphere. The infants preferentially paid more attention to the picture that matched the pacifier they sucked before. Meltzoff and Borton (1979) concluded that the infants innately recognised the correspondence between sight and touch, at least under certain circumstances such as the above scenario. Similar results have been replicated both in Meltzoff's lab and other labs. Again, here we are cautious in not making claims about innateness. Our purpose is to show that Piaget's hypothesis concerning how object permanence is achieved is implausible, since his account presupposes that crossmodal correspondences are in place only when infants reach the age of 18 months or so.

New Developments Since Piaget's actual view is not acceptable from a contemporary perspective, it is necessary to see how contemporary developmental psychologists view this matter. The consensus is that by the age of two months, infants can already represent objects as spatio-temporally continuous. Furthermore, they can use spatio-temporal discontinuity as evidence for numerical distinctness. These are shown mainly with the violation-of-expectancy looking-time methodology, which was not available in Piaget's time. Typically, with this paradigm, infants watch events unfolding in front of them. Sometimes a trick is involved so that an impossible or unlikely event is

created. The established result is that infants look longer at impossible or improbable events than usual events, presumably due to the fact that violations of expectancy grab attention. Infants cannot react to this kind of violation unless there is a certain mismatch between their representations of the present outcome and their representations of past events. Therefore, the researchers can make use of patterns of elevated versus non-elevated looking times as evidence for infants' representations of the relevant events.

The first violation-of-expectancy study concerning infants' capacity for object permanence is Baillargeon, Spelke, and Wasserman (1985). Four- to five-month-old infants were habituated to a screen that can rotate 180 degrees, similar to drawbridge. After the habituation stage, an object was placed somewhere within the screen's downward trajectory. Two scenarios were then presented. In the usual scenario, the screen was moving until it touched the object beneath, and then rotated back to the initial position. In the impossible or unlikely scenario, the screen would keep rotating down through the space to the full 180 degrees. This can happen because, of course, the experimenters would secretly remove the object at the right moment. Infants looked longer at the unlikely scenario than at the usual one due to surprise, which shows that they do not expect that to happen. In this early study, the researchers were conservative, so they worked with four- to five-month-old infants and drew conclusions about them. Later studies have suggested that even younger infants exhibit similar behavioural patterns. But again, the aim here is not to enter into this empirical debate. The crucial point is that the age at which infants start to enjoy object permanence is certainly below the age when they can speak. This is important because according to some views in philosophy (e.g., Quine 1960), objectivity comes only with language. We will come back to this in 3.1.

It is important to look into studies that involve more than one object being occluded, for example Spelke, Kestenbaum, and Simon (1995). This is so because it is relevant to issues concerning how infants individuate objects and keep track of numerical identity over time. In this experiment, two screens are placed in front of the infants. Two objects are then brought on to the stage in alteration within the purview of the infants from opposite sides of the screens, before going behind the screen. During the process, at no point are the two objects seen simultaneously, and no object would appear in the gap between the screens. In the full habituation setting, infants keep watching these events until they are no longer interested in them. The key question is, how many objects are there in the current event? For those who are old enough, clearly the answer is "at

least two," since one appeared from the left, the other appeared from the right, and no object ever goes to the gap between the two screens. This is where spatio-temporal (dis)continuity comes in. To obtain answers from pre-linguistic infants, of course it is impossible to have verbal responses. Again, the looking-time method is invoked. Reliably, infants would look longer at the impossible or unlikely scenario, where only one object is involved after the screens are taken down.

One alternative explanation is that perhaps infants have this kind of looking-time pattern not because they represent the paths of the objects behind the screens. Rather, during the habituation period, the infants are already used to the two screens, and therefore two objects in front of them. So when they see only one object and look longer, that might be a novelty preference. This alternative interpretation does require that infants can distinguish between arrays of one object from that of two objects, but it does not require that infants are capable of object permanence, or that they invoke evidence from spatio-temporal continuity as the ground for numerical identity computations.

This alternative, though originally a possibility, has been controlled for. In the control, the only object does appear in the gap during the habituation session. The most straightforward interpretation of this event is that it involves only one object moving back and forth behind the two screens. And this is the story that 10-month-old infants prefer. After the screens are removed, infants look at the two-object result for longer. This shows that they do differentiate between the two scenarios with a clear logic. Spatio-temporal continuity and discontinuity do play crucial roles in infants' object permanence capacity. This has been replicated later with two-month-old infants (Aguiar and Baillargeon 1999, 2002): they do expect objects to move according to spatio-temporal continuity, even with occlusions.

The general result is that infants older than two months can already invoke evidence of spatio-temporal discontinuity to individuate objects, and also that they can represent objects being occluded as persisting behind screens. The addition/subtraction experiments by Kevin Wynn (1992) further confirm this result. He also used the violation-of-expectancy looking-time paradigm to test whether young infants can update representations of occluded objects when additional objects are added or subtracted from the original set. Five-month-old infants were tested. The questions are simple arithmetic, such as "1 + 1 = 2 or 1?" "2 – 1 = 2 or 1" "1 + 1 = 2 or 3." Let's take "1 + 1 = 2 or 1?" as an example. Infants saw a single object being placed on an empty stage, and then a screen was rotated up to hide the object. They then watched a hand bringing a

second object, and the same hand withdrawn empty. Then the screen was lowered, revealing either two objects (expected) or one object (unexpected). A similar test was done for the subtraction condition. The result was that infants' patterns of looking were quite different in the two conditions. In the addition condition they did not look longer in the two-object condition, while in the subtraction condition they looked longer at two objects (surprised). One crucial point is that since the objects are qualitatively identical, infants must make use of spatio-temporal evidence for object individuation: they have no other information as to whether the second object is numerically distinct from the previous one.

If the above general line is roughly on the right track, objectivity in representation might be less demanding than many philosophers have expected. Again, we will return to this in Chapter 3. At least according to mainstream developmental psychology, human infants from two-months-old or so represent material objects as substantial, three-dimensional things that exist independent of the observer. That is to say, infants already possess criteria for individuation and numerical identity for ordinary objects that go beyond mere perceptual primitives, such as edges and surfaces. Perceptual primitives do help us specify currently perceived objects with their paths of motion, but they are not enough in specifying objects that persist when *out of view*. Although objectivity in this sense is still weighty in the Strawsonian sense, it has been shown that it is quite pervasive in the animal kingdom (Holly, Gibson, Vaughan, Rayburn-Reeves, and Zentall 2009, for dogs; Doré 1986, for cats; Etienne 1984, for various zoological levels; Pepperberg and Funk 1990, for psittacine birds). In order to be focused, when formulating the major argument, I will use "pre-linguistic creatures" to cover human and non-human cases.[33] The following table summarises the relevant evidence to the effect that object permanence is a pre-linguistic capacity[34]:

Scenario	Method	Source
1 vs. 2 objects	Habituation	Spelke et al. 1995
One unperceived object	Habituation	Baillargeon 1987

[33] By this l mean to cover both human infants and other animals, so the phrase "pre-" should not be taken to have the temporal implication that all of them at later stages will obtain linguistic abilities.

[34] This is reproduced from the material compiled by Stephen Butterfill. Butterfill proposes an alternative picture to that of Carey. For Butterfill, core knowledge consists in object indexes, motor representations, and metacognitive feelings (manuscript).

constrains another's movement		
Where did I hide it?	Violation-of-expectation	Wilcox et al. 1996
Wide objects can't disappear behind a narrow occluder	Violation-of-expectation	Wang et al. 2004
When and where will it reappear?	Anticipatory looking	Rosander et al. 2004
Marker of the object maintenance/permanence	EEG	Kaufman et al. 2005

There is a closely related phenomenon – amodal completion – that is worth considering too. "Amodal completion" refers to the perception of the whole of a physical structure when only some parts of it are perceived. This is different from object permanence, since while object permanence involves *total* occlusion, amodal completion involves only *partial* occlusion. This has to do with object individuation because for those who have this capacity, the number of objects they perceive will be different from the number of objects perceived by those who do not have the relevant capacity. Although different from object permanence, amodal completion has similar implications concerning objectivity, since the parts being occluded are still perceived as *persisting unperceived*.

With this kind of case, what we want to know is this: in what kinds of situation can infants obtain representations of a single and spatio-temporally continuous object that extends behind the barrier, as opposed to two numerically distinct objects? Again, the violation-of-expectancy looking-time method is invoked in answering this question (Kelleman and Spelke 1983). They discovered that if the visible ends of the occluded object move together, four-month-old infants can represent a single object as partially occluded: after the barrier is removed, infants look longer if a broken rod appears.

Amodal completion might be much less demanding than many have supposed, as in the case of object permanence. It has been shown that at least in chickens, this capacity might be innate. New-born chickens are first imprinted on with a red triangle partially hidden behind a barrier. When they moved for the first time, they went with the complete triangle, as opposed to the broken one. These chickens had no chance to learn about complete figures. Therefore they must have imprinted the complete triangle, even

if the actual stimulus was a triangle with a barrier. Similar is true of object permanence. Neonate chicks imprinted on a ball would search behind a barrier for the ball the first time it disappears near the barrier. Before this movement, they had not seen things going behind another. To be sure, humans might be different in this regard, but since we do not aim to argue for innateness here, this kind of indirect evidence is still helpful.

Notice that the amodal completion literature seems to exhibit a very different pattern from the linguistic cognition literature, which shows that children under the age of five tend *not* to be sensitive to broken parts as belonging to one object (Shipley and Shepperson 1990):

> The canonical countable entity for 3- and 4-year-old children is a discrete physical object. When children were asked to count labeled entities such as "forks," they counted each detached part of a fork as a separate entity. When asked to count kinds ("How many kinds of animals?") or properties ("How many colors?), where each kind or property was exemplified by several separate objects, they included each discrete object in their count. (p. 109)

The issues are complicated here. As adults, we tend to use phrases such as "a broken fork," implying that the broken parts still belong to the original object, though this seems to be a controversial metaphysical claim. But apart from this, this current case actually exemplifies a rather different capacity: while what is important for us is object permanence in the case of *occlusion*, the current case is about object permanence in the case of *disassembly*. Therefore, it is not a problem even if it exhibits a different pattern, which might be due to the fact that linguistic abilities are much more complex and demanding, and therefore children have a much worse handle on the linguistic version of individuation. A further reason for not worrying about this case is that we are interested in *non*-linguistic, though perhaps conceptual, capacities.[35]

This completes my review of object permanence and related matters. Now I shall turn to intuitive physics, specifically the constraint of solidity.

2.3 Intuitive Physics[36]

[35] I am indebted to Rory Madden for thinking this through with me.

[36] The style of this section is different from that of the previous section: while in the previous section I spent much more time explaining experimental paradigms, this section engages more with philosophers'

Here I shall begin the discussion of the constraint of solidity by situating it within the larger background of intuitive physics, i.e., "physical principles we employ in our everyday perception, thought and action, which give substance and structure to this fundamental idea, by systematically linking geometrical properties such as length and volume with physical properties such as velocity, acceleration and mass." By "this fundamental idea" they mean "the idea of a physical as opposed to merely abstract or mathematical space is, essentially, a space in which movement, change or, more generally, causal processes and events can occur" (Eilan, McCarthy, and Brewer 1999, p. 2).

The Constraint of Solidity For pre-/non-linguistic creatures, they fail to further develop sophisticated thinking described in the definition, but they do have primitive representations of some physical principles, or else they could not get around in the physical world. Recall that object permanence, though important for object cognition, is not the whole story. Rainbows and shadows can be perceived as persisting unperceived, without being perceived as material bodies, for example. What we need here is solidity, a paradigmatic primary quality (Locke 1690). In contemporary developmental psychology's terminology, solidity is *more than* spatio-temporal persistence plus cohesiveness (Carey 2009, p. 61).[37] "Cohesiveness" here is a technical term, and how it should be understood is, of course, a subtle matter. Roughly, it means "stays together"; parts of shadows can be cohesive, for example. The constraint of solidity, which is a stronger notion, has it that one object would not pass through the space occupied by another object (Baillargeon 1987), or in Eilan's terms: "objects move only on non-intersecting paths, such that no parts of distinct objects ever coincide in space and time" (1999, p. 103). This rules out not only rainbows and shadows, but also water and piles of sand. In one set of experiments, Hespos and Baillargeon (2001) presented one group of two-month-old infants with a hollow cylinder, and the other group with a qualitatively identical cylinder

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ideas. The rationale for this is as follows: when it comes to object permanence, philosophical controversies are minimal. The major debate is about exactly *how early* infants start to have this capacity, which is largely an empirical matter. And that is why I have spent much time describing different experimental paradigms and views. When it comes to the constraint of solidity, and intuitive physics in general, the situation is roughly the opposite. As far as I can tell, the empirical controversies are less pronounced, while philosophers have more disagreements concerning the details of certain aspects of it. This explains the different styles here, and I beg the reader's pardon if they prefer one style to the other.

[37] Spelke et al. (1992) uses the term "coherent," which is rather confusing because coherence is very often related to theories or descriptions, not objects.

closed on top. Later the cylinder was placed upright so that the infant in question was not able to see the top. Then a rod was picked up and inserted into the cylinder slowly, which is a possible scenario if the cylinder is hollow, but is a violation of solidity if the cylinder is closed. The infants look longer at the impossible scenario that violates the constraint of solidity.

The constraint of solidity is one backbone of what many theorists call "intuitive physics," which contains a set of principles that govern how physical objects and physical phenomena interact from a certain subject's point of view. Some researchers identify intuitive physics with explicit theories that are closely related to linguistic capacities. One version, "framework theory" (e.g., Gopnik and Meltzoff 1997), is the kind of theory that grounds ontological commitments and general explanatory principles that we invoke to understand the world. This is a perfectly legitimate use, but it should be acknowledged that there is a more inchoate and perhaps less committal version of intuitive theories that do not require language. The experiment described above is a nice illustration. Two-month-old infants are already sensitive to the constraint of solidity to some extent, though their linguistic capacity is non-existent.

According to a standard definition, as just quoted, "intuitive physics" means "the physical principles we employ in our everyday perception, thought and action" (Eilan, McCarthy, and Brewer 1999, p. 2). The "we" here can be replaced by younger children or any other animal. Interchangeable terms include "naïve physics", "primitive physics" (Campbell 1994, p. 48), and "intuitive mechanics" (Peacocke 1993, p. 162); its examples include: "the *principle of cohesion*: which says that surfaces lie on a single object if and only if they are connected; the *principle of contact* which says that surfaces move together if and only if they are in contact; the *principle of continuity* which says that an object traces exactly one connected path over space and time" (Eilan 1993, p. 103, original emphasis). It is to be contrasted with "theoretical physics": physics that is studied by scientists in systematic ways. Consider a parallel but more familiar contrast between folk psychology and theoretical psychology: the former includes rough and ready principles we use in daily life to explain and predict other minded beings' behaviours, while the latter embodies much more rigorous studies conducted by scientists about how the mind really works. The distinction between intuitive and theoretical physics is similar in this regard, except that the subject matter here is physics, not psychology. We do not use the term "folk" here in order to avoid any cultural connotations. It is true that people with diverse cultural

backgrounds might use different principles in their versions of intuitive physics, but those differences are not our concern here.[38]

Both psychologists and philosophers have tackled issues concerning intuitive physics. In this kind of interdisciplinary setting, researchers often draw a distinction between empirical and constitutive questions. According to a common view, empirical questions are those that should be answered through experimental methods, while constitutive questions are supposed to be answered through conceptual analysis alone. Here are the primary examples concerning intuitive physics provided by Eilan, McCarthy, and Brewer:

> **Empirical Questions**
>
> "What are the principles *in fact* used in segregation of the scene into units, in the prediction of trajectory of moving objects and in predictions of the results of physical interaction among more than one object?" (Eilan, McCarthy, and Brewer 1999, p. 15, emphasis added)
>
> **Constitutive Questions**
>
> "What *must* be true of an entity if it is to count as a physical object? How much of a grasp of the *essential* properties of objects, and of what kind, a subject *must* have if she is to be credited with the capacity to represent physical objects?" (ibid., emphasis added)[39]

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[38] A Campbellian way to draw a similar though not identical distinction between two kinds of physics is this: while primitive physics' content should be specified in causally indexical terms, theoretical or explicit physics should be specified in non-causally indexical terms. A term is causally indexical if its referent varies in accordance with the causal powers of the thinker in question (Campbell 1994). Philosophers' discussions on these can be traced back to Evans (1980), who argues that in order to understand primary qualities, one must "master a set of interconnected principles which make up an elementary theory – of *primitive mechanics* – into which these properties fit and which alone gives them sense" (p. 95, emphasis added).

[39] Lucy O'Brien pointed out that according to some views, constitution can be divorced from modality. For example, some might claim that in the actual world A is in fact constituted by B, without implying that A is constituted by B in all possible worlds. Here I follow the division in Eilan, McCarthy, and Brewer (1999), and argue that even if we follow their lead in building modality in constitution, the way they think of the distinction between the empirical and the constitutive is still unsatisfactory. For those who are not happy with this usage of constitution, they may replace it with "non-empirical."

Although the examples they provide are indeed representative when researchers draw the relevant distinction, it seems that this way of dividing the labour is misleading, as will be explained presently. For current purposes I will focus on how we cognise objects, as opposed to the nature of physical objects. As we can see, one crucial (though perhaps not the most obvious) difference between the two kinds of questions is the modal force: while empirical questions mention what *in fact* are the case, constitutive questions focus on *essences* and what *must* be the case. The contrast is not mutually exclusive because what must be the case should also be what is the case, though not the other way around. To be sure, mutual exclusivity is probably not required for every good distinction, but in the present context it is unclear how we should divide the labour between psychology and philosophy; it leaves unclear whether researchers who set themselves the task of conducting conceptual analysis should care about what *in fact* is the case. The following picture seems to be more accurate:

> Neuropsychology can bring…thought-experiments to life. It allows the formulation and testing of predictions. If a transcendental argument claims that the possibility of a subject's having a particular conceptual ability A is dependent upon his possession of a further conceptual ability B, then this clearly generates the predictions by looking at what happens in neuropathies where ability B is severely impaired. If the argument is sound, we would expect the patient also to lack ability A. If, however, ability A remains unimpaired, then clearly the argument needs further examination. (Bermúdez 1995, pp. 381-2)

"Neuropsychology" is a discipline that studies pathological cases due to brain damages. Although it will not be part of our inquiry below, the general point in the quoted passage is valid across the board: through conceptual analysis, some researchers might claim that in order to explain a certain ability, the other one has to be presupposed. This is where the relevant modal force comes in. Now, what *must* be the case should also be what *is* the case in the actual world, so what *in fact* is the case should be part of the inquiry when it comes to the very same question. The proposal offered by Eilan, McCarthy, and Brewer is not totally wrong; it might capture the actual division of labour we see in scientific and philosophical enterprises. But Bermúdez's way of seeing things is more accurate; it helps us see clearly how conceptual analysis and empirical inquiry fit together. This brings us back to Brook's accusation of Cassam's ignoring of empirical disciplines: recall that the

crucial distinction is between the empirical and the transcendental, and here is Brook's specific criticism:

> Like others in this [Oxford Kantianism] tradition, Cassam makes this contrast (p. 83). He says that he is working with transcendental arguments… However, as he also tells us, the purpose (or one purpose) of such arguments is "the exploration of unobvious connections between major structural features of our thinking about the world" (p. 51). This poses a problem. Claims about such connections would seem to be hypotheses (perhaps with a bit of necessity added). But hypotheses need evidential support. If so, Cassam's work could be a supplement to empirical psychology or even a contribution to it but could hardly be indifferent to it. (2001, p. 190)

Although I do believe Brook has been unfair to Cassam, as explained in the previous chapter, I do agree with Brook that the empirical and the transcendental should coincide. There are at least two ways to make this happen. One is the way Bermúdez proposes, but one can also invoke empirical premisses in arguments and substantiate those premisses with empirical considerations. This is what I do in this project, and specifically in this chapter.[40] The Bermúdez way will be relevant in 3.3 when discussing Bálint's Syndrome.

In what follows we will seek to discover *constitutive* links between intuitive physics and other significant notions, such as object cognition and (bodily) self-consciousness. In uncovering these constitutive links, what *in fact* is the case for humans and other animals will have direct bearing. This is why the above methodological caveat is important. Again, the picture provided by Eilan, McCarthy, and Brewer is not entirely wrong, but it fails to capture what philosophy is supposed to do in this kind of interdisciplinary setting, namely to seek constitutive links between important notions through conceptual analysis, and then to look into empirical studies to confirm or falsify those putative links.

[40] There is no consensus about what is the most fruitful method in this regard. A prominent example is the Burge (2005)-McDowell (2013) debate about the relation between disjunctivism and vision sciences. For more discussion, see *Purposes and Procedures in the Philosophy of Perception* (Logue, ed.). In his chapter "Perception and Autonomy" in this volume, Anil Gomes argues that the way I propose to combine the two approaches makes transcendental arguments undistinctive. It is also useful to think of the robot cats case from Hilary Putnam (1962), in which it might not be clear how some empirical discoveries would have an impact on our definitions or conceptual analyses.

Versions of Intuitive Physics Within philosophy, there have been debates about versions of intuitive physics and, correspondingly, notions of physical objects. Consider folk psychology again. A standard illustration goes like this: I am observing another subject's behaviour. In order to understand, explain, and predict that person's further behaviour, I attribute beliefs, desires, and perhaps other propositional attitudes to her. This is how we humans interpret others (at least for those who are brought up in certain kind of civilisation). Now, it is perfectly possible that other kinds of intelligent creatures, or humans brought up in radically different ways, would interpret each other in very different ways. They can be said to have folk psychology as well, so long as they understand, explain, and predict others' behaviour with mental notions; but the versions of folk psychology they possess might be quite different. This can be said when it comes to intuitive physics too. In what follows I discuss three versions of intuitive physics.

In the physical world, things can be roughly divided into two categories: physical objects or material bodies such as tables and chairs, and physical phenomena such as rainbows and tornados. One entry point is to focus on the former, with an emphasis on the distinction between the two. Below are three prominent versions:

> A) Physical objects are "causally structured entities" (Campbell 1994, p. 92); with "internal causal connectedness" (Campbell 1993, p. 67).
> B) Physical objects are "persisting, bounded, three-dimensional space-occupiers" (Cassam 1997a, p. 68).
> C) Physical objects are space-occupiers with "a quantity of matter…[which is] explicable by the mechanical forces" (Peacocke 1993, p. 170).

There can be at least two readings of what we have here. According to the metaphysical reading, what we have above are putative definitions of physical objects. According to the epistemological reading, those are characterisations of how minded subjects regard or view physical objects. Since versions of intuitive physics are principles subjects use to *view* physical objects, the epistemological reading is intended in this context. From A to C the contents of the characterisations become stronger, but all of them should be non-conceptual or at least pre-linguistic, since the topic on this occasion is intuitive physics in its primitive forms. It is supposed to encompass both human infants and some lower animals. Let's start from A. Campbell writes that "[h]aving primary qualities is just a way of having the kind of causal structure I describe, and space-occupancy also seems to be a

matter of causal structure" (1997, p. 660). But as Cassam points out, this characterisation seems to be "unacceptably weak, for thunderstorms and bouts of flu are internally causally connected and capable of functioning as the causes of many different effects, but would not ordinarily be recognized as physical objects" (1997b, p. 644). Campbell might be right that having primary qualities is just a way of having the kind of causal structure, but in order to distinguish between physical objects and physical phenomena that are not material bodies, Campbell's definition is unsuitable. This is crucial for the current project because awareness of ourselves as physical objects (as opposed to physical phenomena) is a critical target of analysis. What about B and C? At bottom they are not that different, since, as Peacocke points out, mechanical force is also a primary quality in the classical sense. "A primary quality is a quality of a general kind such that necessarily any material object has some quality of that general kind" (Peacocke 1993, p. 172). With B, Cassam intends to include canonical primary qualities such as shape, location, and solidity.[41] In C, Peacocke agrees with this but adds mechanical force. Which one is correct then? In order to retain our focus, we will only discuss the case of pre-linguistic human infants. It is partially an empirical question whether they take into account mass and force in predicting physical objects' trajectories. According to influential experimental works done by Cooper and Munger in the 1990s, the answer seems to be negative. They investigated one kind of source of dynamic information, i.e., depicted mass of an object, to the magnitude of distortion effects. In the experiment,

> [e]ach trial began with a brief presentation of the rotation of the object about the horizontal axis into a top view. Then this top view of the object was presented sequentially in three orientations differing by 17 degrees, and implying a rotation in the picture plane about the object's centre. A fourth, test view was then presented in either the same position as that of the immediately-preceding third view or in a position varying about the third by +/-2, 4 or 6 degrees, with equal

[41] It is true that the term "solidity" is not included in this formulation, but it appears in the context of the defence of the intuition version of the Objectivity Argument, which has it that "tactile perception provides us with a sense of our own solidity…" (Cassam 1997a, p. 62). Therefore it is clear that solidity is what Cassam intends, and this formulation is supposed to exclude things such as 3D hologram, clouds of gas, and electric fields. I thank Rory Madden for pressing me on this point.

> probability. The subject's task was to determine whether the position of the final display was the same as or different from that of the previous third view. (ibid.)[42]

The important, novel finding of the present experiment is that "objects differing in perceived mass do *not* result in memory distortions of differing magnitudes" (Cooper and Munger 1993, p. 116). If this is correct, one might suppose, Peacocke's C is directly refuted. But this conclusion would be too hasty. As Peacocke explains, his view does not imply that subjects can use *correct* knowledge of mass and mechanical force to predict physical movements accurately:

> When I say that the perceptual representations of a subject who experiences the world as made up of material objects must serve as input to an intuitive mechanics, I do not mean that this mechanics must make *correct predictions* about the mechanical behaviour of the perceived objects, nor that the subject must be in *a position to know* the weight, or forces necessary to move an object, just on the basis of those perceptions. All I mean is that when a subject perceives an object as a material object, and takes the experience at face value, he or she will have some conception of the magnitude of force, and will take it that force is necessary to change the state of rest or of certain kinds of motion of the perceived object. This can still be true of the subject, even if his or her intuitive mechanics contains systematic errors and gaps. (Peacocke 1993, p. 170, emphasis added)

This is a nice example of how empirical and constitutive questions intertwine. Peacocke's point, if valid, is based on constitutive considerations: were it not for the fact that the subject in some way registers the fact that mass and force play important roles in governing the trajectories of physical objects, she would not be able to have genuine object cognition. This raises a question in respect of the extent to which the subject needs to master intuitive physics concerning mass and force. Must the subject by and large get them right? The answer is negative, according to empirical studies done by Cooper and her colleagues. But this does not refute Peacocke's constitutive claim. Rather, it tells us about under that constitutive constraint, in what way, and to what extent the relevant kind of subject does make use of intuitive physics concerning mass and force.

[42] The details of this experiment are quite complex and this quotation does not do full justice to it.

This is different from the model quoted from Bermúdez, but he never claims that the quoted case is the only possible scenario.

We have seen that there can be versions of intuitive physics, but only those that mention primary qualities directly can be invoked to distinguish between physical objects and other physical phenomena. This leaves us with options B and C. At bottom they are not so different: the only difference is that C takes mass and force as essential too. We have also seen how empirical and constitutive considerations interact with each other in this particular corner. The interim conclusion is that option C can be taken as plausible in the case of human infants. Notice that this is compatible with the view that A might be the right answer to the metaphysical question concerning the nature of physical objects, but that is besides the point since the current topic is object *cognition*. Now, the next step is to see what this version of intuitive physics, together with object permanence, can do for the relevant kind of subject; in particular, how it links to object cognition and bodily self-consciousness. This is the heart of the entire project, which will be laid out in 2.4. Before moving on, another important notion concerning object cognition – object file – needs to be introduced as well, since according to one major view, subjects cognise objects *through* object files.

Object Files "Object File" is a term of art that stemmed from how we understand "file." A file contains pieces of information that are classified together for a reason, normally due to the same subject matter. An object file contains representations of a single object. This notion in psychology was first introduced in Kahneman and Treisman (1984), in the context of the feature-integration theory of attention. The relation between objects and attention has been studied for decades. Figure-ground segregation can be dated to at least Gestalt psychology, and today the topic is often studied under the name of mid-level object-based attention (Scholl 2002). Why are objects so important? In philosophy, Strawson (1959) has argued that objects are *basic particulars* in our actual conceptual scheme. In psychology, it has also been established that not only can attention be directed toward particular locations, but it can also be directed toward individual objects that can be traced through space and time. These mid-level object representations are stored in the working memory system, and therefore can be accessed when needed. Here is an example of an experiment from Treisman's group (Kahneman, Treisman, and Gibbs 1992). Participants are exposed to letters in boxes, and then the boxes are moved to other locations. The task is to report whether the letter that appeared

in one box during the test trials was one of the two original exposed letters. Their reports are chiefly influenced by whether the letter (as object) is the same as before; locations are not relevant. One natural explanation is that participants obtain object files, i.e., sets of object representations, amongst other things, so that they can track objects in space and time (see also Pylyshyn on multiple object tracking, 2007).

The psychological literature on object files and object-based attention has found three psychophysical signatures of object file computations:

1) "[P]rivileging spatio-temporal information over property/kind information in individuation and computations of numerical identity" (Carey 2009, p. 71).
2) "[A] set-size limit on the number of objects that may be simultaneously attended to and represented in working memory (on the order of three or four)" (ibid.).
3) "[T]he capacity to track individual objects through occlusion, with specific spatio-temporal information distinguishing cessation of existence from occlusion" (ibid., pp. 71-2; for more on this and related issues, including the parallel case in infants and some other animals, see Carey 2009, Ch. 3).

One potential worry is that we are ultimately interested in bounded, cohesive, three-dimensional, spatio-temporally continuous material bodies. However, many things we know about object files come from experiments in which stimuli are two-dimensional entities on computer screens (e.g., Scholl and Pylyshyn 1999). There have been many discussions about this, but one very strong reason to believe that object files are, or at least can be, about three-dimensional (3D) material bodies is that under many circumstances, when infants are participating in experiments with two-dimensional (2D) stimuli, they attempt to pick them up. Many studies have shown that infants under the age of one year often attempt to manipulate 2D objects in front of them, and this behavioural disposition disappears completely only after 18 months or so (e.g., Deloache, Perroutakos, Uttal, Rosengren, and Gottlieb 1998). This evidence is not decisive, to be sure, but it is at least telling that object files can be about 3D material bodies or physical objects. One way to think about this above issue is to compare the physical object as Cassam defines it and the "Spelke object" in the psychological literature. Here is the oft-cited threefold definition offered by Elizabeth Spelke:

a) Cohesion: Objects maintain their connectedness and their boundaries as they move.
b) Contact: Distinct objects move together if and only if they touch.
c) Continuity: An object traces exactly one connected path over space and time (Spelke 1990).

These might be necessary conditions to what we intend to mean by "object" here, but they might not be sufficient. For example, in visual psychological experiments, many visual targets on screens satisfy these three conditions, but what we want are *physical* or *material* objects with mass and acceleration, amongst other things. What do we need to capture this idea in addition to the three conditions? Following Cassam, we understand physical objects as possessing "a range of Lockean primary qualities, including shape, location, and solidity" (1997a, pp. 2-3); a physical object is "a persisting, bounded, three-dimensional space-occupier" (ibid., p. 68).[43] Notice that this is *not* supposed to be a scientific or metaphysical definition of physical object; a scientific definition would need to refer to micro-particles, electrons, and the like, while a metaphysical definition would involve considerations about whether macro physical objects exist over and above those micro-level stuffs. None of these concerns us here. Nor is our concern the metaphysical nature of space, be it Newtonian or Leibnizian. Instead, what concerns us is the ordinary idea of physical objects. To be sure, in our everyday lives, we seldom talk about "physical" and related terms, if at all. Moreover, many competent perceivers amongst us do not have some of the concepts, or at least lack the relevant vocabularies. But the Lockean notion of the physical object is supposed to capture what objects are like for ordinary humans and perhaps some other species; it does *not* imply that these creatures are able to spell out what a physical object is from their own points of view.

The philosophical literature also has many discussions of object files. Peacocke defines it as "a store of mental representations whose contents are all taken, in one way or another, to apply to the same thing" (2014, p. 15).[44] Before him, notions similar to

[43] For relevant interdisciplinary discussions of this, see Xu (2007) and replies from Ayers (2007), Hirsch (2007), and Wiggins (2007).

[44] Peacocke maintains that "[s]ubjects who self-represent have mental files on themselves, labeled with the first person notion, that can explain the capacity to grasp the first person notion" (2016, p. 309). He calls this "self-file" in the book. I find this idea plausible, but nothing in the argumentation on this occasion will hinge on this specific idea. To the best of my knowledge, the term "self-file" is from Campbell (2004b).

object file has been invoked to explain propositional phenomena by the likes of Paul Grice (1969), P. F. Strawson (1974), Robin Jeshion (2002), and Francois Recanati (2012). In the psychological literature introduced above, more often it is about the perceptual systems. Here I do not summarise the philosophical literature, as philosophers' views concerning object files are too diverse. I would like to remind ourselves what brought us here. We started with a notion of *objects in the weighty sense* from Strawson and Cassam, and we decided to anchor this fine notion with empirical investigations in developmental psychology to ensure the necessary empirical friction. This brought us to object cognition, and then object permanence and the constraint of solidity respectively. There is a question about how the creatures in question make use of these capacities, and object files are supposed to fit the bill, since they are object mid-level representations that are stored in the working memory system and can be accessed when needed. Now I shall turn to the major argument that relies heavily on the notions we introduced above.

2.4 The Object Cognition Argument

In the previous chapter, I have explained what the current project is reacting to, i.e., the Humean Elusiveness Thesis that we can never be aware of ourselves in the sense specified (i.e., we need to rule out the uninteresting mirror case, etc.). I have also proposed that we can make use of the Russellian notion of acquaintance to flesh out the positive view. In this section, I lay out the basic structure of the Object Cognition Argument, which is parallel to Cassam's "Objectivity Argument" in Chapter Two of *Self and World* (1997a). To provide more context here, let us briefly discuss his argument. Its key thesis runs as follows:

> For one to be in a position to conceptualise one's perceptions as perceptions of objects in the weighty sense, one must be intuitively aware of oneself as a physical object. (Cassam 1997a, p. 31)

Cassam offers two versions of this key premiss: the quoted one is the "intuition version," since it asserts "one must be *intuitively* aware of oneself as a physical object" (emphasis added). The other version is the concept version, which says "one must *conceive* of oneself as a physical object" (ibid., p. 30). As he explains, in drawing this distinction "one does not thereby commit oneself to the idea that intuitive awareness of oneself as a physical object is a form of awareness which is '*non-conceptual*' or '*pre-conceptual*'" (ibid., p. 31,

emphasis added). For Cassam, and I follow his lead, "intuitive awareness" here simply means "experience." Whether or not the experience in question is conceptual is something in respect of which we will remain neutral.[45] That is about the second half; so what about the first half? "To be in a position to conceptualise one's perception as perception of…" is a highly sophisticated intellectual capacity. It is unlikely that human infants and other animals, for example, are able to conceptualise their own perceptions in this way. Starting with this premiss, Cassam aims to focus his attention on mature human subjects, perhaps with normal linguistic abilities. The crucial difference between Cassam's project and the current one is that here we are primarily interested in understanding the case of pre-linguistic human infants and other animals. Therefore, our starting point has to be much less sophisticated.

A similar line can be found in Peacocke: "in thinking of how one represents the world, one must also be capable of reflective self-consciousness" (2016, p. 311). By "reflective self-consciousness" he means "*de se* awareness of being in a *de se* state or of enjoying a state with *de se* content" (ibid., p. 310). The crucial difference lies in the kinds of self-consciousness in question. I follow Cassam (and Bermúdez 1998) in focusing on consciousness or awareness of oneself as a physical object, which is never a topic in Peacocke (2014, 2016).[46] The thesis in *Self and World* also needs to be distinguished from another of Cassam's theses: "awareness of one's own body is a necessary condition for the acquisition and possession of concepts of primary qualities such as force and shape" (2002, p. 315; the "bodily awareness thesis"). Officially, this bodily awareness thesis is not about *oneself*, unlike the thesis in the book. However, at times the distinction seems to slip: "It is not just that one must be embodied in order to acquire the concept of force but also that one must be aware of *oneself* as embodied in order to acquire this concept" (ibid., p. 318; emphasis rearranged). In what follows I stick to my own argumentation rather than discussing these other lines from various authors.

The Argument and Its Premisses In what follows we lay out the argument first and then explain:

The Object Cognition Argument (first pass)

[45] Jérôme Dokic nicely dubs the "doxastic version" for Cassam's "concept version," to avoid the connotation that the intuition version has to be non-conceptual (1998, p. 448).

[46] Naomi Eilan also makes the observation concerning this difference of topic (2016, p. 313).

P1. For one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world.

P2. Some pre-linguistic creatures are capable of object cognition.

C. Those pre-linguistic creatures must be able to be acquainted with themselves as physical objects that are located in an objective world.

P1 is parallel to, but different from, Cassam's key thesis quoted above. There are two crucial differences. First, the first half replaces "in a position to conceptualise one's perceptions as perceptions of objects in the weighty sense" with "capable of object cognition." Second, the second half replaces "intuitively aware of" with "acquainted with." The review provided above has made plausible P2 and also explained its contents. What is crucial for the remaining project is P1, which contains two claims, the claim that for one to be capable of object cognition, one must be able to be acquainted with oneself as something located in an objective world, *and* the claim that for one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object. They will be the topics of Chapters 3 and 4 respectively. To anticipate, Chapter 3 will develop the Permanence Argument, which concludes that the capacity for object permanence requires one to be able to be acquainted with oneself as located in an objective world. Chapter 4 will develop the Solidity Argument, which concludes that the capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object. Taken together, they jointly entail P1.

Notice that P1 is about the conceptual connection between two capacities; in particular, it is not a *phenomenological* claim. Therefore it is compatible with a phenomenological observation that Evans makes (1982), which is summarised nicely by Eilan: "basic perceptual awareness of the world does *not* include a representation of oneself" (2016, p. 315, emphasis added). By the same token, it is also compatible with Susanna Schellenberg's view that "sophisticated perceptual states have mere *de hinc* ['here'] but not *de se* content" (2016, p. 338). This is so because I do not wish to argue that every act of object cognition has first-person content or self-consciousness; rather, and again, what I will argue for is a conceptual claim relating two *capacities*. Another point in relation to Schellenberg is that for her, we can get something like P1 without bifurcating into the Permanence Argument for objectivity and the Solidity Argument for objecthood, since "perceiving the intrinsic spatial properties of objects requires moving from egocentric to allocentric frames of reference. Moving from egocentric to allocentric frames of

reference in turn requires representing one's location so as to abstract from that location" (ibid., p. 341). If she is right, then something like the Solidity Argument is enough; there would then no need to go into object permanence. Here I do not take issue with this point; suffice it to say that assuming she is right, it would follow that the Permanence Argument would become redundant. But as long as it is a sound argument, it will still fit my purposes.[47]

This is, then, the backbone of the Object Cognition Argument. Before closing this chapter, I discuss three further issues: the first concerns the distinction between objectivity and objecthood; the second concerns the nature of the argument; and the third explains why I need to depart from Cassam's original project.

Clarifications First, although objectivity is closely related to physical objecthood, they are nevertheless distinct, at least conceptually. On the one hand, something can be perceived as objective without being perceived as a physical object: sounds can be heard as objective, at least according to many views, without being heard as physical objects. Similar is true of shadows. On the other hand, perceiving things as physical objects might not imply perceiving them in an objective world: according to one theory, for infants aged 0-4 months, object identity is maintained for a steady state of the visual environment. They are able to track objects moving on a trajectory and staying at rest in a place. For those aged 5-8 months, object identity is maintained for transformations of visible objects. They now perceptually understand objects in motion stopping and objects at rest starting to move. Only for those between 9-18 months is object identity maintained for transformation producing *occluded objects* (Meltzoff and Moore 1995). If something like this theory is right, then human infants below a certain age (nine months or so) perceive physical objects without perceiving them as *objective* particulars. This theory is not universally accepted: as reviewed above, some have suggested that object permanence is in place around five months (Baillargeon, Spelke, and Wasserman 1985), and some go even further in suggesting that object permanence is innate in the case of humans (Carey 2009, Ch. 2). But even if this nativism is correct, still there is a *conceptual* distinction between physical objecthood and objectivity. What's more, there seem to be existential proofs of physical objecthood without objectivity in other animals: cats enjoy

[47] Peacocke invokes considerations about disparity between two retinal images, and binocular convergence, to argue against Schellenberg's case (2016, pp. 353-4). Since I do not endorse Schellenberg's case, there is no need to respond to Peacocke's criticism for the present dialectic.

a certain degree of object permanence (Doré, 1986), dogs to a larger extent (Holly, Gibson, Vaughan, Rayburn-Reeves, and Zentall, 2009), but not all animals exemplify this capacity. Dolphins and beluga whales seem not to have it due to the fact that they mainly rely on echolocation (active sonar), but perhaps they can perceive things as physical objects via touch (Mitchell and Hoban 2010). At any rate, there are many other, less sophisticated animals that can perceive things as physical objects, i.e., they have some intuitive physics, but nevertheless lack object permanence. The distinction between physical objecthood and objectivity needs to be firmly in place, not because one of them is unimportant for the present purpose; quite the contrary: they are important throughout the argument outlined above and in the final conclusion.[48] Notice that, again, the current insistence on the distinction between objectivity and objecthood does *not* hinge on any empirical study cited above: the difference between these two notions can be seen through conceptual analysis; empirical cases are cited only to make the claim easier to understand, or perhaps more interesting for some readers. Even if what is cited about dolphins and human infants is incorrect in some regard, e.g., a certain laboratory gets the exact month wrong, it will not affect the point being made here, namely that objectivity and objecthood are distinct phenomena, and they are taken care of by object permanence and intuitive physics respectively.[49]

Secondly, as formulated, the major argument involves a *modus ponens* structure with necessity: P1 states or can be rephrased as a conditional, and P2 identifies a group that satisfies the antecedent. C then states the consequent of P1. However, it is intended that the major argument is also what has been called a "transcendental argument." In general, a transcendental argument identifies a target thesis to be established, and finds a relatively unproblematic starting point that has the target thesis as a necessary condition. It can often, if not always, be formulated with the *modus ponens* structure, but it is intended to go beyond that structure. Compare the following two examples: bachelors are or must be unmarried; A is a bachelor; therefore A is unmarried. It embodies a valid *modus ponens* transition, but there is nothing *transcendental* about it. This following one is

[48] What I say here about animals and object permanence might be incompatible with Tyler Burge's influential view that even lower animals such as jumping spiders have objective representation (2010). See also 5.1 on solicitations. Parallel to this, there is an unresolved debate about whether insects have subjective experiences (Barron and Klein 2016; Key, Arlinghaus, and Brownman 2016).

[49] To emphasise the importance of objects and object cognition is compatible with the idea from Campbell that it is possible to represent space and re-identify places without thinking about physical objects (1993).

different: world-disclosing experiences must be thoroughly conceptual (conceptualism); mature human subjects have world-disclosing experiences; *ergo*, conceptualism (McDowell 1996). The target thesis, conceptualism, is identified as a necessary condition of world-disclosing experiences. This requires serious arguments to establish. To be sure, the nature of transcendental arguments cannot be explicated so easily (Stern 1999), but the spirit should be clear. Here is a simple description of transcendental arguments from Cassam:

> On one interpretation, transcendental arguments are attempts to demonstrate that the truth of some proposition which is the target of sceptical attack is a necessary condition of the truth of some other proposition which the sceptic does not or cannot doubt. Transcendental arguments in this sense are "truth-directed" (Cassam 1997a, p. 33, quoting Peacocke 1989, p. 4).

He acknowledges, and I agree, that this is not the only version of the transcendental argument (also see Stroud 1968). Notice that "sceptical attack" here should be understood in a broad sense; it does not refer only to scepticism technically defined in philosophy, such as external world scepticism. More specifically, the major argument here is the "self-directed transcendental argument," which "tells us something about the cognitive faculties of the thinking or knowing self" (Cassam 1999, p. 85; see also Cassam 2007a, Ch. 2). Now here is an important objection from Barry Stroud:

> Put in the most schematic terms, what is problematic is that the conclusions of the most ambitious transcendental arguments without transcendental idealism are apparently meant to state how things are… and in a way that in itself says nothing about anyone's thinking or believing that things are those ways… We start with what we can call psychological premisses… and somehow reach non-psychological conclusions which say simply how things are, not that people think things are a certain way. (Stroud 1999, p. 160-1)

Those who invoke this kind of transcendental argument would need to confront this objection from Stroud. The current version is *not* the target, though, simply because it is *self*-directed: it does *not* have a non-psychological conclusion. Therefore there is no need to worry about Stroud objection in the present context.

Unsurprisingly, the paradigm example of this strategy is found in Kant. As Pierre Keller explains, "a transcendental condition is a condition under which cognition in general, and empirical cognition in particular, is possible. Kant regards transcendental apperception as such a non-empirical condition on what can be known empirically" (1998, p. 21; he is commenting on A343/B401). According to Keller, transcendental apperception should be understood as *impersonal* self-consciousness (ibid., p. 2), which denotes the idea that this self is "just one person among many possible other persons" (ibid., p. 4). This interpretation of transcendental apperception is highly controversial, but interpreted this way, what Kant is up to is very similar to the current project. Or perhaps it suffices to emphasise that everyone agrees that by "transcendental" Kant is always referring or alluding to the *possibility of experience*, and this is what concerns this project too.[50] Since this is not a historical essay, I do not wish to take a side on these interpretative issues, but it is worth highlighting the possible similarities with Kant, if only to make explicit the nature of this project. One merit of this impersonal character is that it pre-empts the potential worry that this kind of project is individualistic in the sense that it ignores the second and the third person. It is true that *others* do not play prominent roles in the project, but this does not mean that they are not implicated in the very idea of transcendental apperception. To avoid historical digressions, in what follows I shall not use this Kantian term, but one half of the consequent of P1 – the part concerning objectivity – should be understood this way. It is only one half because the other half – physical object – is not covered in this notion. There are worries from the phenomenological tradition about this "*just one* person among many possible other persons" idea, which will be addressed in 5.4.

Relatedly, P1 in this transcendental argument is a supposed to be a necessary truth: it is about the conceptual connection between two capacities. This claim can nevertheless be refuted by empirical considerations potentially: if we find any existential proof in the actual world that one creature is capable of the former (i.e., object cognition) but not capable of the latter, then the claim is thus falsified. Why and how can such claim be refuted by empirical cases? The idea is this: claims of this sort are supposed to capture metaphysical necessary truths, that is, propositions that are true in all possible worlds. Now, if a proposition is supposedly true in all possible worlds, then that proposition is also supposedly true in the actual world. This is where putative empirical counterexamples come in. P1 above is such a proposition. It claims that in all possible

[50] This point is due to Rory Madden.

worlds, the capacity of object cognition implicates the capacity of self-acquaintance of some sort. This entails that these two capacities have such a connection in the actual world too. Therefore, this kind of conceptual claim is not spinning in a void. To use Kripkean terminology (1980), this kind of proposition is necessary *a posteriori*, or they exemplify *de re* necessity.[51]

When it comes to necessity, the three major options are nomological, metaphysical, and logical necessity. The nomological is about worlds with the same natural laws as the actual world, the metaphysical is about metaphysical laws, while the logical is supposed to be about every logically possible world, which is the strongest notion. All three notions are legitimate in this context; here I shall focus on the metaphysical notion. If the formulation with the metaphysical notion fails, we can always replace it with the weaker, nomological notion, and see whether this weaker formulation works. Now, correspondingly we can ask about its *epistemological* and *linguistic* counterparts: even if certain relation is necessary, it is still possible that the relation is known *a posteriori* (Kripke 1980), as indicated above. Linguistically, we can ask about the nature of the entailment connection (e.g., the debate between Chalmers 1996 and Block and Stalnaker 1999). These are all significant further questions one can and should pursue. The metaphysical question concerning the necessary connection between object cognition and self-awareness, however, has conceptual priority, so it will be our concern below.

Now, finally, I will explain why I have decided to depart from Cassam's original project: the objectivity condition would be more plausible if formulated in a much weaker way. Here is how Cassam formulates this condition: "…being able to think of at least some of one's perceptions as perceptions of objects in the 'weighty' sense, that is, particular items that are capable of being perceived and of existing unperceived" (ibid., p. 25). Now, while I do accept the Strawsonian notion of objectivity, as indicated above, it strikes me as unclear why we need the "being able to think of." It seems to be an extra layer of intellectual complexity, which might need further justification. It is true that the "objectivity condition" is a technical term, so how one should understand it remains up for grabs. Still, without strong reasons, it is unclear why we should start with a notion that requires that extra layer.

[51] I am grateful to Wayne Wu for urging me to make this line of thought more explicit. A further issue I would like to think through on future occasions is a potential tension between conceptual analysis and *de re* necessity. In Kripke's primary examples, such as water and H_2O, empirical investigations of the substances in question are required.

Here is presumably why Cassam proceeds with that extra layer. In "Things without the Mind" (1980), Evans presents his critical reading of Chapter 2 of Strawson's *Individuals* (1959). Evans defends "the Kantian thesis that space is a necessary condition for objective experience" (1980, p. 250). Here Evans is alluding to the Transcendental Aesthetic of the *First Critique*. "Objective experience" is a term from Jonathan Bennett's review (1968) of Strawson, which is then taken up by Evans. Strawson himself seems reluctant to attribute objectivity to experience itself; he seems to think that objectivity obtains only when a certain conceptual scheme is in place. One way to interpret this claim is, like Bennett and Evans, to think that experience can indeed be objective; it is just that its objectivity is obtained from a certain conceptual scheme. But this is not the only way. The other interpretation is that objectivity obtains only at the level of thoughts or judgements, i.e., experiences themselves are neutral or "silent" (Travis 2004). On this view, the objectivity condition should be construed in the way Cassam suggests, since perceptions themselves are not objective or non-objective; they are neutral in this regard. Now, even if we adopt this second interpretation favoured by Cassam, it does not seem to be compatible with his official view on perception defended elsewhere, namely that perceptions have representational content (Campbell and Cassam 2014). Things are quite subtle here. Perhaps Cassam means that perceptions do have contents, but all perceptual contents are non-conceptual, *and therefore not relevant to objectivity*. Some philosophers might accept the non-conceptualist claim but deny the later claim.[52]

This takes us into the thorny territory of philosophy of perception and in particular the question concerning whether perceptions have representational contents, and, if so, what are the connections between those contents and objectivity. This will take us too far. As explained above, I instead start with *object cognition*, and seek to pin it down with two well-established notions from developmental psychology, i.e., object permanence and the solidity constraint in intuitive physics. This helps us bypass the difficult content question for this reason: developmental psychology is indifferent to the content question in philosophy; object permanence and the solidity constraint can be empirically studied independent of any commitment to representational contents. Even if

[52] Two things to note: first, whatever verdict it is, note that "objective experience" in Strawson's context is supposed to be contrasted with "solipsistic consciousness" and also with "pure sense-datum theory." Secondly, Evans seems to operate with the assumption that colours and some elements of experience are subjective unless proven otherwise (1980, pp. 98-9, pp. 272-3). This was pointed out by M. G. F. Martin in a seminar series.

we tentatively adopt the idea that objectivity comes with conceptual schemes and therefore not at the perceptual level as such, still it is not mandatory to go for that extra layer, and Cassam does. Object cognition fulfils the minimal requirement for objectivity given object permanence, and this is entirely independent of any theory of perception in philosophy.[53] In getting rid of this extra layer, the resulting version of the argument is *thoroughly intuitional*: while Cassam's versions always start with "conceptualise one's perception," mine starts with object cognition, which is at least not explicitly conceptual.

Focusing on object cognition has another advantage. The objectivity condition, as Cassam formulates it, is rather sophisticated. This by itself is not a problem, but it does rule out the case of pre-linguistic infants and other animals. My primary interest is in understanding that given a much more deflationary conception of the objectivity condition specified by object cognition, what would follow with regard to self-consciousness. So, to replace Cassam's objectivity condition with object cognition does not amount to an objection to Cassam's proposal; instead, a different though parallel project is pursued here. Relatedly, no matter how one construes the first point regarding conceptual schemes and objectivity, the idea there is that objectivity is inherently conceptual. This is a kind of intellectualism I wish to avoid here. Starting from object cognition, which is specified by object permanence and constraint of solidity that are shared by many non-linguistic creatures, we are freed from the assumption that objectivity has to obtain at the conceptual level. Again, this is not supposed to be an objection to Cassam. Rather, this is merely a plea for considering a slightly different project that starts with a more widely exemplified psychological phenomenon.

Yet another reason for departing from Cassam's original formulation is that by his own lights, both the concept and the intuition versions of the Objectivity Argument fall short of establishing the desired conclusion. As he himself puts it, "[i]t has emerged that the connections established by the two versions of the Objectivity Argument are not as tight as might have been hoped for at the outset, for it is possible to make some sense of the possibility that a subject's experience might satisfy the objectivity condition even if she does not conceive of herself as a physical object or is not, at least for a time, intuitively aware of herself as a physical object" (Cassam 1997a, p. 89-90). Cassam

[53] Notions of conceptual schemes have been controversial. For further discussions, see Davidson (1973-74), McDowell (1999), and Gupta (2006). Usually what is contrasted with conceptual schemes are "uninterpreted sensations" (Peacocke 1993, p. 173). In that context, what is taken as something like a conceptual scheme is intuitive mechanics.

himself turns to the Identity Argument in Chapter 4 of *Self and World*. I believe it might be premature to discard the objectivity considerations altogether: I will argue that given a certain kind of object cognition as the starting point, it is possible to make sense that the creatures are able to be acquainted with themselves as physical objects that are located in an objective world. Putting abstractly, this is so because both object cognition and awareness of oneself as a physical object in an objective world are both more primitive than thoughts, and because a crucial notion of engagement will be introduced to make crucial transitions. Given object cognition's connections to object permanence and intuitive physics, the current project can be said to embody a *Naturalised* Strawsonianism. In developing the Object Cognition Argument, I do not distinguish between the concept and the intuition version of it; the one I will develop is thoroughly intuitive, since the conclusion to be established is about awareness, not about thought, and same is true of the starting point. At a very abstract level, the line developed here can be summarised thus: "the richer one's conception of the nonself, the richer one's self-consciousness" (Levine 2001, p. 111). In that piece, Joseph Levine finds this view "extremely dubitable" (ibid.) yet without specifying why. The present project can be seen as an effort to make that putatively dubitable line more plausible.

CHAPTER 3

Objectivity

3.1 Varieties of Objectivity

In the previous chapter, we started with a discussion of objects in the *weighty* sense, and pinned it down with object permanence and the constraint of solidity in intuitive physics. We then invoked these two notions to construct the Object Cognition Argument. P1 in that argument is a conjunction of two claims: one about objectivity, the other about objecthood. In this chapter, I will develop an argument for the former, and leave the latter to the next chapter. I will start by selectively surveying different notions of objectivity (3.1). Then I will argue that "engaged allocentricity," which is crucial for both the Permanence Argument and the Solidity Argument (next chapter), is a coherent notion (3.2). The Permanence Argument supporting the Objectivity claim in P1 will then be introduced and defended (3.3). Just to remind, the Objectivity claim has it that for one to be capable of object cognition, one must be able to be acquainted with oneself as located in an objective world. Finally I will explain why objective self-acquaintance is only half of the story (3.4).

A Brief Survey of Objectivity "Objectivity" has a long history in philosophy, and it has been used in a variety of ways with different underlying theories. This section selectively surveys some of these uses of objectivity, and is divided into two parts. In the first part, I shall proceed broadly in chronological order, situating Strawson's notion within this larger background. In the second part, I will single out a thread from Quine and Davidson, since they seem to be hostile to pre- or non-linguistic objectivity, the very topic of this investigation. "Pre-linguistic objectivity" is shorthand for "pre-linguistic *understanding* of objectivity." There are multiple senses of "objectivity"; in what follows, if

the term appears without any specification, I mean Strawsonian objectivity, i.e., *understanding of things that can exist unperceived by me*. When quoting Strawson above, there is no "by me" qualification; this will be explained later this section (3 pages down).

One main strand in this project is to explore various complex relations between objectivity and *space*. There is a historical reason why space plays a crucial role here. Philosophy has a long tradition of worrying about the existence and our knowledge of the *external* world; philosophers have been concerned with the question of whether there is anything existing *outside* the mind. Given these spatial metaphors, it is little wonder that space and objectivity are so often considered together.[54] For Thomas Hobbes, the very idea of mind-independence just *is* the notion of things existing in space (1656/2011). It might be less implausible if we restrict attention to *perceptual* objectivity, though the exact relations between perception and objectivity remain unclear: recall our discussion of how we should interpret the role of a conceptual scheme in Strawson's system. Another strong view is proposed by Descartes with his dualism, according to which whatever is objective is also physical, i.e., has *spatial* magnitude (1641/2017, second meditation. Other related notions include extension and matter).[55] And here is an oft-quoted passage from Kant:

> [I]n order that certain sensations be referred to something *outside* me (that is, to something in another region of *space* from that in which I find myself)…the *representation of space* must be presupposed. The representation of space cannot, therefore, be empirically obtained from the relations of outer appearance. On the contrary, this outer experience is itself *possible at all only through* that representation (Kant 1787/2007, A23/B38, emphasis added).

This and other ideas will be discussed more on later occasions, for example in section 3.3 below. One key thing is to understand exactly what Kant means, and what we should mean, by "outside me." Note that it is not clear that Kant has objectivity in mind in this and related passages. Rather, the context is more of a response to Leibniz with regard to whether space should be understood as an absolute space or spatial relations. However,

[54] This observation is due to Evans (1980). For further discussion, see Mandik (1998).

[55] Rory Madden raised a potential worry that Cartesian souls can exist unperceived by me, but they are not thereby spatial. I believe this is due to the fact that what Descartes had in mind is not the Strawsonian objectivity as defined above.

this passage is often regarded as at least hinting at objectivity (e.g., Schwenkler 2012), and as such I still include it here as a historical transition.[56]

Without qualification, this modern strand of thinking might have trouble accommodating abstract objects or systems such as mathematics. This continues to influence more contemporary thinkers in the twentieth century; specifically, they worry about explaining objectivity of abstract entities with non-physical objects (e.g., Quine 1953; Benacerraf 1965; Dummett 1975; Field 1989). Again, this is less important for us, since what concerns us here are *concrete* objects, where space should play some important roles.

What is crucial for the current project is instead the notion introduced by Strawson in his seminal work *Individuals* (1959):

> I earlier introduced the word "objective" by giving it…a sense in terms of the distinction between oneself and one's states on the one hand, and anything on the other hand which is not either oneself or a state of oneself, but of which one has, or might have, experience…I shall mean by a non-solipsistic consciousness, the consciousness of a being who has a use for the distinction between himself and his states on the one hand, and something not himself or a state of himself, of which he has experience, on the other (1959, p. 69).

Evans (1985) is an important follow-up on this, and as Cassam (2005) puts it, here "the idea of an objective world is the idea of a world that can be perceived and *exist unperceived*" (p. 258, emphasis added).[57] One key theme in this book is to understand what individuals do on top of properties for the world. To this end, the notion of re-identification plays a crucial role, and it is also related to the sense of objectivity introduced above: things can persist when unperceived, and it is possible to be re-identified when they appear again. More specifically, Strawson argues that without criteria for re-identification, there would be no resource with which to distinguish between objective particulars and states of our own minds.[58] This is also relevant to space because re-identification in this sense seems

[56] I thank Rory Madden for reminding me this and the relevance of Warren (1998).

[57] See also see Grush (2000) for discussions from within the Strawsonian tradition.

[58] Strawson introduces re-identification thus: "More generally, we must have criteria or methods of identifying a particular encountered on one occasion, or described in respect of one occasion, as the same individual as a particular encountered on another occasion, or described in respect of another occasion"

to essentially happen in space. Strawson himself later reaches a negative conclusion that ordering in space by itself is not sufficient for objectivity.

Strawson later returns to this discussion in the context of Kant's *Critique of Pure Reason*, which we have discussed in Chapter 1:

> As the investigation proceeds, however, we become aware that the word "object" is to be taken more weightily than we might at first have thought. It means something more than merely a particular instance of a general concept. It carries connotations of "objectivity." To know something about an object, e.g., that it falls under such-and-such a general concept, is to know something that holds irrespective of the occurrence of any particular state of consciousness, irrespective of the occurrence of any particular experience of awareness of the object as falling under the general concept in question. Judgements about objects, if valid, are objectively valid, valid independently of the occurrence of the particular state of awareness, of the particular experience, which issues in the judgement (1966, p. 73).

This Strawsonian notion – i.e., *understanding of things that can exist unperceived by me* – will be in play throughout this chapter. This notion can be usefully and accurately cashed out with "independence of *my* mind":

> [E]xperience must include awareness of objects which are distinguishable from experiences of them in the sense that judgements about these objects are judgements about what is the case irrespective of the actual occurrence of particular subjective experiences of them (the thesis of objectivity). (ibid., p. 24)

(1959, p. 31). On objective particulars, "We think of the world as containing particular things some of which are independent of ourselves; we think of the world's history as made up of particular episodes in which we may or may not have a part; and we think of these particular things and events as included in the topics of our common discourse, as things about which we can talk to each other. These are remarks about the way we think of the world, about our conceptual scheme. A more recognizably philosophical, though no clearer, way of expressing them would be to say that our ontology comprises objective particulars. It may comprise much else besides" (ibid., p. 15).

Call this "Single-Subject-Mind-Independence"; again, *understanding of things that can exist unperceived by me*.[59] Note that in the passage, Strawson does not state explicitly that these particular subjective experiences are attributed to *my* mind. However, it seems natural to interpret it this way, as from the subject's point of view one's own mind is always the most important one. The contrast is always between whether it is independent of *my* mind and whether it is independent of mind *simpliciter*.[60]

"Objectivity" in the Strawsonian sense might not be W. V. O. Quine's central concern, but his writings have deep implications in this regard. For example, his notion of "stimulus meaning" (1960) makes it difficult to understand how intentionality can have objective import. His rather sceptical views about reference and ontology (1953, 1969) also make it hard for others to reconstruct a sensible view of objectivity from his outlook. Donald Davidson (1984, 2001) follows Quine in many respects, but he offers a less sceptical and more systematic framework, which includes more resources to account for objectivity. A distinctive aspect of his view is that objectivity only enters with robust *linguistic* capacities. This will emerge as a strong alternative picture, and will be more fully addressed in the second half of this section.[61]

Thomas Nagel (1979, 1986) connects objectivity to the notion of "point of view." If something can only be accessed by one point of view, then that thing is maximally subjective. The more points of view are involved, the less subjective it is. But paradoxically, maximal objectivity obtains only when we have "the view from nowhere." Objectivity and subjectivity in this sense are gradational notions; they constitute a spectrum. To obtain stronger objectivity entails "abstraction" (1979, p. 206). For Nagel,

[59] This analysis is due to M. G. F. Martin. The crucial point is that this notion, which hinges on a single subject, seems to be different from the notion invoked by Campbell and Cassam in their debate concerning Berkeley's Puzzle (2014). This notion also rules out a certain notion of sense-data, since although the act-object distinction is applicable to it, the data themselves are nevertheless dependent on the subject's mind.

[60] Although Strawson's thought experiment, "the sound world as a no-space world," seems to be highly relevant to the present project, here I deliberately avoid engaging it explicitly, because how the argumentation is supposed to proceed is a highly controversial matter (Snowdon forthcoming). Strawson's discussion is about whether sounds are objective, and/or whether we experience sounds as objective. He does not deny that we can apply spatial predicates to what we hear, but he suggests that if all that we had is *purely* auditory experience, then we would not be able to apply spatial notions to the targets of perception. A related question is, though sounds are spatial, are they *intrinsically* spatial? In the positive proposal, I will argue that certain kinds of spatial representations are necessary for object cognition, but again for practical considerations I will not do so through discussing Strawson.

[61] This is, to be sure, perhaps a more contentious reading of Davidson.

"[t]he pursuit of objectivity therefore involves a transcendence of the self, in two ways: a transcendence of particularity and a transcendence of one's type" (ibid., p. 209). This notion is less relevant to us, since the notion we are using is not a gradational one. A related difference is that the Strawsonian notion applies to things and phenomena in our surroundings, while the Nagelian notion applies to representation, since it is about points of views. Something is perceived or thought as mind-independent or not. And when one perceives and thinks something as objective in our sense, there is still some point(s) of view involved – the current subject's point of view at least. While there are many notions of objectivity, including those that cannot be covered here, most fall under either the Strawsonian idea (metaphysical) or the Nagelian idea (epistemological, which has more to do with impartiality; see also Williams 1985). Again, the current project focuses primarily on the former. To anticipate, the Strawsonians emphasise, with their early modern ancestors, the connections between space and objectivity. A contemporary development, with empirical twists, is to investigate in what sense representations of the objective world is "detached, allocentric, [or] map-like" (Eilan, McCarthy, and Brewer 1999, p. 9; "reference to physical objects is used to grasp the connectedness of the space through spatial thinking at a certain 'absolute' or 'objective level'" Campbell 1993, p. 70). Just to be clear, what is supposed to be objective here is the *world*, but different kinds of spatial representations can be about this same objective world. We will return to this in section 3.2. There I will argue that allocentricity does *not* entail detachment; on the contrary, there is a kind of allocentricity that goes hand in hand with *engagement* (to be defined later).[62]

From the early 1990s, John McDowell has been recommending a comprehensive picture of the relations between kinds of minds and the objective world. His worldview might strike some as threatening objectivity, especially due to his doctrine of "the unboundedness of the conceptual," since according to one reading (the idealist reading), it deprives the world of *mind-independence* altogether (1996).

Kantian themes in this regard never really fade away. Christopher Peacocke (1994) introduces his edited volume *Objectivity, Simulation, and the Unity of Consciousness* like this:

[62] For more on the connections between subjectivity, point of view, and egocentricity, see Mandik (2000), Ch. 2. For discussions of point of view and the "sole-object" view of bodily awareness, see Martin (1997) and section 5.3 later.

> Though Kant no doubt read rather more into this presupposition than we would today, there would still be general agreement that all thought about the objective world, from advanced scientific theory to everyday reasoning, directly or indirectly, requires the thinker to grasp spatial notions (1994, p. xi).

Here again, the importance of space is broached. This abstract description leaves open the question of exactly how we are to cash out the relations between objectivity and space. For example, how should we understand "grasp spatial notions"? Which spatial notions are involved, and in what ways? Do human infants and other animals fulfil this requirement? These are all questions we will pursue in further inquiries.

Later in his paper "Objectivity," Peacocke defines his notion of "minimal objectivity" as follows: "a thinker's being in the state, or enjoying the event, does not in general make the content of the state or event correct…Having a perceptual experience as of something being the case does not in general make it the case" (2009, p. 739). He emphasises that this minimal notion does not imply mind-independence, for the following reason:

> Some judgements display minimal objectivity and have contents whose truth is mind-independent; but other minimally objective judgements have contents whose truth is mind-dependent. On some classical views of secondary qualities, the truth of a judgement "That apple is red" consists in facts about certain possible perceptual experiences of the apple as red. Provided the experiences are distinct from a thinker's making a particular judgement "That apple is red" – as they are – the condition for minimal objectivity of the judgement is met. (Peacocke 2009, p. 740)

If Peacocke is right about this case, then indeed his notion of minimal objectivity is weaker than our notion of mind-independence, at least as philosophers normally have it. Put it abstractly, Peacocke's notion is related to correctness and normativity essentially.

The most comprehensive treatment of perceptual objectivity in recent years is probably Tyler Burge's *Origins of Objectivity* (2010). He distinguishes several notions of objectivity, of which two are particularly relevant here. The first is, unsurprisingly, mind-independence. Burge emphasises the metaphysical nature of that notion by using another difficult notion, "constitutively" (2010, p. 46): something is constitutively mind-

independent if and only if its existence (constitution) does not depend on any mental act. This is slightly different from the Strawsonian notion, i.e., *understanding of things that can exist unperceived by me*. The other one is close to (or perhaps even identical to) Nagel's "point of view" conception. Burge uses another word – "perspectival" – to make his case. At this stage, he makes a further point by connecting this conception of objectivity with veridicality conditions and representational content (ibid., p. 47). On the face of it, this is a substantive move forward, since some philosophers accept the perspectival conception of objectivity but reject representational content as applied to perception. In this investigation, I avoid any talk of content so as to remain neutral on this extended debate. One might wonder just how different are the constitutive and perspectival objectivity. Indeed, their extensions might overlap to a large extent. However, at least conceptually they are distinct, as explained above in the context of Nagel's remarks. As such, in what follows I will leave open the precise connection between them, and focus on the Strawsonian notion. Now, let's turn to the second half of this section. To remind: Quine and Davidson are singled out mainly due to their emphasis on language and the importance of a second person.

Quine and Davidson When Quine remarks on the relation between theories and reality, there seem to be interesting implications for Strawsonian objectivity. For example, in "Identity, Ostension, and Hypostasis," Quine writes:

> The fundamental-seeming philosophical question, How much of our science is merely contributed by language and how much is a genuine reflection on reality? is perhaps a spurious question which itself arises wholly from a certain particular type of language. Certainly we are in a predicament if we try to answer the question; for to answer the question we must talk about the world as well as about language, and to talk about the world we must already impose upon the world some conceptual scheme peculiar to our own special language. (1950, p. 632)

The idea seems to be that we cannot but see things through certain forms of language and the corresponding conceptual scheme, and therefore there is no way to reach *objective* reality in a non-theory-laden way. Sometimes this is referred to as "conceptual relativity." This idea, from today's point of view, is perhaps less surprising. A consensus in

philosophy of science is that theory-laden-ness is unavoidable. However, this has more to do with the *perspectival* notion of objectivity, which I briefly discussed above. This is so because our languages, conceptual schemes, and theories can all be seen as perspectives. Quine's point here seems to be that given theory-laden-ness, objectivity without perspective is not possible. Even if this is the case, as I suspect it is, its relation to the constitutive notion of objectivity seems to be indirect at best.

Thus, in order to see whether Quine has anything to say about our topic, we need to look elsewhere. One natural place is his discussion of "stimulus meaning," which is Quine's *Ersatz* meaning. Here is how he defines it:

> We may begin by defining the *affirmative* stimulus meaning of a sentence such as "Gavagai," for a given speaker, as the class of all the stimulations (hence evolving ocular irradiation patterns between properly timed blindfoldings) that would prompt his assent…We may define the negative stimulus meaning similar with "assent" and "dissent" interchanged, and then define the *stimulus meaning* as the ordered pair of the two. (1960, p. 29)

Quine's insistence on pinning meaning down with ocular irradiations in this case and surface stimulations in general is due to his behaviourism and physicalism. He then provides detailed stories concerning how humans can start from this meagre resource to sophisticated thinking about the world, such as sciences. Languages are involved or even required because, for example, they are essential to thoughts involving quantifications.[63] Now, all these are about the human's *linguistic* understanding of objectivity. What would Quine say about our topic, i.e., objectivity in pre-linguistic creatures? He would probably deny its possibility, given the weight he gives to linguistic devices with regard to thoughts. So the picture I am recommending is indeed incompatible with Quine's. To this I have two responses: first, to evaluate which position is more sensible, we need to wait until the Object Cognition Argument has been fully laid out. Second, and relatedly, Quine's understanding of object cognition is rather close to his contemporaries such as Piaget, and this understanding, as will be shown, underestimates the capacity for object cognition.[64]

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[63] For a summary by Quine himself, see *From Stimulus to Science* (1995).

[64] Rory Madden expressed the worry that perhaps stimulus meanings are not supposed to be about mind-independent things and phenomena. To this my tentative reply is that many sentence meanings are

Let us now turn to Davidson's picture. Davidson rejects Quine's stimulus meaning as the starting point, since he does not inherit Quine's behaviourism, and his physicalism is a more relaxed one. He also replaces Quine's notion of "assent" with "holding true" for similar reasons. Davidson does agree with Quine that the second person is required to guarantee objectivity in a certain sense. The key scenario Davidson invokes has been called "triangulation":

> The relevant stimuli are the objects or events we naturally find similar (tables) which are correlated with responses from the child we find similar. It is a form of triangulation: one line goes from the child in the direction of the table, one line goes from us in the direction of the table, and the third line goes between us and the child. Where the lines from child to table and us to table converge, "the" stimulus is located. Given our view of child and world, we can pick out "the" cause of the child's responses. It is common cause of our response and the child's response. (1992, p. 119)

In other words, "The stimulus that matters is the nearest mutual cause" (1998, p. 84). With triangulation, Davidson argues that the second person/creature is necessary to *objective* content:

> Thought, propositional thought, is objective in the sense that it has a content which is true or false independent…of the existence of the thought or the thinker. Furthermore, this is a fact of which a thinker must be aware; one cannot believe something, or doubt it, without knowing that what one believes or doubts may be either true or false and that one may be wrong. Where do we get the idea that we may be mistaken, that things may not be as we think they are? (1997, p. 129)

Davidson's answer is that the concepts of belief, of objective truth, and of error, are mutually dependent. Like Quine, Davidson is concerned with *linguistic* understanding of objectivity, and they have different theories of it. What would Davidson say about pre-

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supposed to be about objective items, and given that stimulus meaning is an essential element of sentence meaning, at least it is supposed to contribute to the aboutness. It is possible to invoke the "brain-in-a-vat" scenario (Putnam 1981) to motivate this idea, but since the controversies around this thought experiment are vast, I shall not pursue this line.

linguistic animals? He would certainly refuse to attribute any belief to them, because they do not possess the concept of belief. The picture I am recommending does not imply that pre-linguistic creatures have beliefs. What I claim is that the relevant kind of object cognition is sufficient for a primitive version of objectivity, and this implies that the second creature is *not* required. It seems that there is no genuine conflict between Davidson's picture and mine, since he argues that the objectivity of *propositional* attitudes requires the second creature, while I will argue that the objectivity of a certain spatial representation does *not* require the second person. But this Quine-Davidson line of thought does tend to have very strict requirements for objectivity. Here I agree with Burge's observation that this line "overrates the role of individuals' representations of conditions on objectivity in making objective representation possible" (2010, p. 210).[65]

This completes the brief and selective survey of notions of objectivity. The next section will focus on the distinction between egocentric and allocentric space. What will be crucial for us is allocentricity, and I will argue that, contra Campbell (1994) and others, allocentricity can be instantiated in an *engaged* mode.

3.2 Engaged Allocentricity

Allocentricity Although history is not the main focus here, it is instructive to briefly set out the historical development of the notion of allocentricity. Seven decades ago, Edward Tolman proposed that the brain creates an internal representation of the environment that is used by the animal in question to navigate. This is dubbed a "cognitive map" (1948). His works were primarily based on rodents, but similar results have been replicated with some other species. This is what others call "allocentric space," within which "the position of an object…could be derived from reference to at least two other landmarks [i.e., other than oneself or one's own body]" (Ekstrom, Arnold, and Iaria 2014, p. 1; by this people actually mean allocentric *spatial representation*). If in determining the position of an object one uses self-referenced information, either the entire or parts of the body, then the representation is "egocentric." This characterisation should be

[65] Davidson scholarship is complicated in this regard. On another interpretation, his picture does conflict with mine. As Burge summarises at one point: "Thus, not only an ability to speak a language, but actually being interpreted by another person, is supposed to be necessary for having a concept of objectivity. And having a concept of objectivity is supposed to be necessary for representation of, and as of, the physical environment" (2010, p. 269). If this is right, then Davidson is aiming for representation in general, including its propositional and non-propositional forms. But to stick to the main line, I shall not dwell on these intricate matters in respect of Davidson's work.

straightforward enough, but exactly how these different representations are operative in different species of animals remains to be seen.[66] Three decades after Tolman's finding, John O'Keefe conducted seminal studies of the rat hippocampus that led to his discovery of place cells (O'Keefe and Nadel 1978; O'Keefe and Burgess 1996; see also Feigenbaum and Rolls 1991 on the electrical activity of individual neurons in the hippocampus of macaque monkeys). The spatially localised activity of these neurons led O'Keefe and his colleagues to the view that place cells are the neural substrate of Tolman's cognitive map. This claim proved to be a contentious one, but in what follows we will not be discussing physiology. What concerns us is the functional level, i.e., the *psychological* level. Details of neurology are entirely beyond the scope of the current inquiry. The remainder of this section covers several recent discussions of this distinction between allocentricity and egocentricity.

Campbell describes allocentric spatial representation as a way of "thinking about the space as a *disengaged* theorist" (1994, p. 5, emphasis added). A similar description can be found in O'Keefe (1993), where he ties allocentricity to *detachment*. In a way they are certainly right: for example, humans do think and talk about space in such a way when they use cartographic maps, at least sometimes; some would argue that in using maps to navigate, a certain kind of engaged or *embodied* cognition is involved. Now, the Campbell-O'Keefe characterisation is unsatisfying in the current context, since what we are seeking to capture is certain animals' psychological reality when it comes to *navigation* (therefore combining allocentric and egocentric spatial representations), and except for the case of humans reading maps (without using them to navigate), none of the cognitive map realisation would be disengaged or detached. Take our original example of rodents. If they use allocentric spatial representations to navigate at all, would their use be anything like that of disengaged theorists? Presumably not. This description from Campbell and O'Keefe is not wrong in itself, but it is not particularly helpful when it comes to characterising animals' psychological realities.[67] To see how allocentricity can be

[66] For the present purposes, we only need to make sure that allocentric spatial representations involve no reference of the subject or its body parts. To have an uncontroversial definition of allocentricity has proven to be very challenging. For a case study in relation to the two-visual-systems hypothesis, see Foley (forthcoming). Here I am following the dominant view that many animals have allocentric cognitive maps (Burgess 2006, Gallistel 1990, Waller and Hodgson 2006). For a review with a sceptical eye, see Yeap (2014).

[67] Like most other philosophers in this area, such as Cassam and O'Brien, Campbell is more interested in mature human beings' self-consciousness. Campbell argues that the kind of self-consciousness he cares

combined with engagement from another angle, notice that the distinction between allocentricity and egocentricity concerns the *formats* of representations, while the distinction between detachment and engagement concerns the *stances* we have toward or the uses we make of those representations. Formats are intrinsic to representations, while stances are extrinsic.[68] With exactly the same representation, say a cartographical map, one can study it from a pure, detached theoretical perspective, or use it to engage navigations. Given that the two distinctions have different targets, it should not be too surprising that they do not map onto each other perfectly. And this is why allocentric spatial representations can be invoked with either a detached stance or an engaged stance.

Another discussion worth noting concerns in what sense allocentric spatial representation is *map*-like. It is intuitive to call it a "map" because it shares important similarities with the maps we use in everyday life: maps represent geometric aspects of physical space, and perhaps they can be said to have accuracy conditions. Allocentric spatial representations are like that too. But recently this idea has come under fire. Some early researchers held the view that cognitive maps essentially involve a Euclidean metric framework (O'Keefe and Nadel 1978; Gallistel 1990), but this idea has been seriously challenged (e.g., Tversky 1992). The main thought is that unlike static cartographic maps, allocentric spatial representations in animals are not very stable; they are influenced by all kinds of factors, such as prior heuristic knowledge (Stevens and Coupe 1978), experience with specific egocentric points of view (Shelton and McNamara 2001), and geometrically prominent features (McNamara, Rump, and Werrier 2003). Moreover, everyone acknowledges that allocentric spatial representations in animals are never particularly accurate: after all, animals are not human-made machines. Animals are all evolved to cope with their immediate environment, and when they navigate they are subject to all manner of practical constraints. It follows, so the thought goes, that the idea of a

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about requires a *detached* understanding of the subject's causal relations with one's environment(s). This should not be taken as a competing picture here, since the target phenomena – self-consciousness in the mature human case and in the pre-linguistic case – are different. There will be more on this in section 4.3. It is possible, however, to take a harder line. One could argue, as does Jane Heal, that perhaps "some animals have abilities [other than navigation]…which do show that they have 'objective' spatial notions and the rest" (1996, p. 15). The current picture, then, could be interpreted as holding that some animals, due to their capacity for *object cognition*, do have enough resources to come up with objective spatial notions. In the main text, I do not pursue this line since Campbell's main concern in the book is not non-human animals. It would be a stretch to take issue with him on this point.

[68] I thank Rory Madden for suggesting this way of putting things.

cognitive "map" is a misnomer. I believe this is an overreaction. It is true that allocentric spatial representations are not exactly the same as cartographic maps, but it does not follow that they are insufficiently analogous such that both cannot be worthy of the name "map." As alluded to above, both represent geometric aspects of physical space, and perhaps thereby have accuracy conditions. This is what we mean by "map" in the original case. If so, allocentric spatial representations can be said to be maps as long as they exemplify this crucial feature. It is correct to recognise the differences described above, but it does not mean that allocentric spatial representations are not map-like in any interesting sense.

Typically, maps exemplify spatial and functional isomorphism to the relevant spatial regions. Maps are informationally dense (i.e., many pieces of information are compressed in a relatively limited representation), cognitively transparent (i.e., all the relevant information is represented explicitly), and easy to update. General limitations include the difficulties in representing temporal properties, existential quantifiers, and identity. In animals, cognitive maps are only one element of the entire cognitive architecture, so these weaknesses can be supplemented by other parts of cognition, such as biological clocks.[69]

A notion closely related to that of the map is the "model." When one already has a map, one could go further and construct a *model* for it so that more analyses are possible. One paradigm example of models is a GPS navigation system. With a navigational system, one could obtain multiple routes based on the criteria selected, such as time or preferred vehicles. Models are more complicated, since one needs many additional data to support varieties of computation. Think of pocket cartographical maps and systems such as Google Maps; the distinction is exactly like that. Now, when we say an animal navigates with cognitive maps, we certainly do not mean that there is literally anything like a pocket cartographical map in its head. Rather, we mean something more like a model that contains many parameters relevant to navigation. Here I will stick to the term "map" for this reason: in the science literature, "cognitive model" is invoked to

[69] I am indebted to Ali Boyle for this discussion. Mark Kalderon reminded that there are various kinds of maps, so which properties actually exemplify in different animals' cognitive systems is a genuine complex empirical question. There is a meta-semantic question about in virtue of what cognitive maps are about/mirroring spatial properties in the world (e.g., Shea 2018, on correlational information; Blumson 2012, Rescorla 2009, and Camp 2007 on compositional semantics for maps), which goes beyond the scope of the present inquiry.

mean something broader, namely something that approximates animals' cognitive processes in a given domain for explanations and predictions (e.g., van Gelder 1998). An even broader notion is "cognitive architecture," which details the structural properties of a given system (e.g., Anderson 1983/1996). A cognitive model can be either independent or part of a cognitive architecture. In the current context, the term "cognitive map" serves my purposes better, though there is no denying that the term "model" might be closer to the truth.[70]

The egocentric/allocentric distinction has been important in both the empirical and the philosophical literature. There are many directions in which one can go, but for the current purposes I will focus only on the following one: as mentioned above, both Campbell and O'Keefe emphasise that allocentricity goes with detachment, and also objectivity. Here I agree that allocentricity is an important route to objectivity, but wish to deny the bridge of detachment: it will be argued that allocentric spatial representations can be understood as engaged representations, and it is this engaged allocentricity that helps us bridge object permanence and *objective* self-acquaintance.

Engagement The distinction between detachment and engagement can be clearly seen in Hubert Dreyfus's work, especially in his critical papers (2006, 2007a, 2007b, 2007c) against McDowell's view on action and agency. In that series of papers, Dreyfus argues that phenomenological considerations can show the falsity of McDowell's claim that our actions are *permeated with rationality*. In his criticism, Dreyfus attributes several labels to McDowell's picture, such as "detached rule-following", "detached theoretical perspective" (2006), "detached conceptual intentionality" (2007a), and so on. By contrast, engagement is practical and embodied: it is a practical mode of presentation, including know-how and know-where. Engagement implies *dispositions* to act, not actual actions. It is notoriously difficult to find an explicit definition of engagement. McDowell (2009) comes close to one when he remarks that detachment is "a disengagement from motivational propensities associated with feelings, and also from animal capacities for physical intervention in the world" (vii). This seems to be an apt characterisation also for thinkers such as Campbell and Eilan, though they do not put

[70] I am indebted to Lucy O'Brien for this point.

things in this way. Since my sub-arguments rely heavily on this pair of notions, it is crucial to discuss them in greater detail.[71]

Since the 1970s, Dreyfus (1978, 1992, etc.) has undertaken the task of articulating the correct paths along which to understand the human mind mainly through his critique of artificial intelligence. Recently he has opened up a new debate specifically over rationality and action with McDowell. McDowell (1996, 2007a, 2007b) holds that our movements of limbs, *qua* parts of intentional actions, are conceptual and therefore rational all the way out, but Dreyfus (2001, 2006, 2007a, etc.) dissents from this view. It would be too great a digression to discuss the entire debate. In what follows I focus only on the detachment/engagement (or involvement) distinction.

The story begins like this. Dreyfus briefly took issue with McDowell in his introduction to Samuel Todes's *Body and World*. He writes:

> Neither Davidson nor McDowell tries to describe *perceptual objects as they are in themselves* and how they become the objects of thought. By calling attention to the structure of nonconceptual, practical perception and showing how its judgments can be transformed into the judgments of detached thought, Todes is able to provide a framework in which to explain how the content of perception, while not itself conceptual, can provide the basis for *conception*. Thus, Todes's *Body and World* can be read as a significant anticipatory response to McDowell's *Mind and World*. (Dreyfus 2001, p. xvi, emphasis added)

Here Dreyfus separates perception from conception. He thinks that there is something called "perceptual objects as they are in themselves," as quoted above. This seems to beg the question against McDowell, since they have different conceptions of the world, and *objects as they are in themselves* is a specific one that is at issue, but let's grant him this point for now, for there he introduces Todes's seminal work, situating it within certain philosophical contexts by contrasting it with the work of McDowell.[72] My main concern

[71] Some materials here are drawn from Cheng (2015a), which contains a fuller response to Dreyfus, including a discussion of the relation between the person and their body. I am indebted to Dreyfus and Hannah Ginsborg for very helpful comments. For more discussions on this in relation to rule-following, see Cheng (2016). Jason Stanley points out that Dreyfus here "shares Ryle's conception that propositional attitude states are behaviourally inert" (2011, p. 25), which is not universally accepted.

[72] For a detailed discussion of the relations between Todes, Dreyfus, and McDowell, see Rouse (2005).

is with a series of debates in which Dreyfus and McDowell engage with each other seriously, and specifically on detachment and engagement.

Dreyfus begins his real arguments against McDowell in his 2005 APA Presidential Address. He starts his argumentation by posing the following question: "[c]an we accept McDowell's Sellarsian claim that perception is conceptual 'all the way out,' thereby denying the more basic perceptual capacities we seem to share with pre-linguistic infants and higher animals?" (Dreyfus 2006, p. 43) The positive statement of his position goes like this: "in assuming that all intelligibility, even perception and skillful coping, *must be, at least implicitly, conceptual*…Sellars and McDowell join Kant in endorsing what we might call *the Myth of the Mental*" (Dreyfus 2006, p. 46, emphasis amended). In supporting this claim, he brings in a distinction that is crucial to his argumentations:

> The actual phenomenon [i.e., expertise] suggests that to become experts we must switch from *detached rule-following* to a more *involved and situation specific way of coping*…Such emotional involvement seems to be necessary to facilitate the switchover from *detached, analytical rule-following* to an entirely different *engaged, holistic mode of experience*… (Dreyfus 2006, pp. 7-8, emphasis added)

Dreyfus uses some other distinctions to supplement this one, including detached theoretical perspective/engaged situation in the world, calculate/involve, and knowing-that/knowing-how (Dreyfus 2006, p. 44, p. 47, and p. 48, respectively). I shall focus on the distinction drawn in the quotation just given. Dreyfus assumes that McDowell regards actions as detached rule-following, but he never tells us why he thinks that. Moreover, we have positive reasons to think otherwise. In his critique of Saul Kripke's reading of Wittgenstein (Kripke 1982), McDowell painstakingly disabuses this detached conception of rule-following. For example, he writes:

> [Kripke's] line of interpretation gets off on the wrong foot, when it credits Wittgenstein with acceptance of a "skeptical paradox"…[T]he reasoning that would lead to this "skeptical paradox" starts with something Wittgenstein aims to show up as a mistake: the assumption, in this case, that the understanding on which I act when I obey an order *must be an interpretation*. (McDowell 1984, p. 337)

Kripke conceives of understanding as a species of interpretation; his suggestion is that whenever I use the "plus" function, I can interpret my past usages of it so as to conform with any deviant uses, hence the paradox. McDowell argues that the source of the paradox is the *detached* conception of rule-following: the assumption that in order for us to understand something, we *need to interpret a rule*. The problematic picture is that there are some freestanding mental items that have no normative relations with the external world, so we need interpretations to build up these relations. It is this detached picture, McDowell submits, that generates the sceptical paradox. He further connects his critique to Wittgenstein's notions of "practice," "custom," and "form of life." It is not clear, then, why Dreyfus does not regard McDowell as an ally, at least in this respect.[73]

The dichotomy between detached rule-following and involved skilful coping seems to be dubious, and it is precisely what McDowell disagrees with when he writes that "[w]e find ourselves *always already engaging* with the world" (1996, p. 34). What concerns Dreyfus is actually congenial to McDowell. Dreyfus admits this misunderstanding in his reply, "The Return of the Myth of the Mental" (2007a, p. 353): "I did assume, accepting the traditional understanding, that McDowell understood rationality and *conceptuality* as *general*. I should have known better. I'm sorry that I attributed to McDowell the view of rationality he explicitly rejects in his papers on Aristotle."[74] Unfortunately, Dreyfus lapses again ten pages later, when he contrasts "detached conceptual intentionality" with "involved motor intentionality" (2007a, p. 363). This is puzzling: Dreyfus first claims, rightly, that he and McDowell agree that conceptuality is situation-dependent; that is, not general or detached. But then, in the very same paper, he describes conceptual intentionality as detached. Therefore, I do not see decisive progress in Dreyfus's first reply. This is not to say that there is no progress there, to be sure, but Dreyfus still preserves the general structure from his Presidential Address, and wrongly thinks that McDowell has no resources with which to account for engagement.[75]

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[73] For McDowell's characterisation and criticisms of the "sign-post" conception of mental items and its relation to interpretation, see his 1993 paper.

[74] Dreyfus mentions Aristotle because he and McDowell conduct the discussion by focusing on Aristotle's notion of "Phronesis." Since they have reached agreement at this point, I shall not discuss it further here. I relate the discussion to Kripke and Wittgenstein instead, for the connection is relevant but missed in their exchanges.

[75] We might read Dreyfus as connecting detached conceptual intentionality to Gadamer's "free, distanced orientation" (1960). However, I think this is over-charitable, for Dreyfus always insists on the distinction

Dreyfus later goes on to develop his framework in different terms. Again, in order to maintain our focus here, I shall not rehearse the entire debate. We need only spell out why this Dreyfus-McDowell debate is relevant to our present purposes. Let me summarise the thrust of Dreyfus's objection: the line of thought begins with a distinction between detachment and engagement. Moreover, *only* in detachment can we be said to be minded, and therefore only in this case does one have *self*-awareness, or one is able to find oneself, so to speak. By contrast, in involvement or engagement, one simply follows the *flow* of actions; experts do not think about their own skilful actions, otherwise the expertise would be ruined. Now, I hope to have shown, with the resources from McDowell, that the Dreyfus line can be resisted: it is true that in detachment, the self tends to be more *explicit* in one's mental life; however, it simply does not imply, *pace* Dreyfus, that the self is entirely non-existent in involvement or engagement. His conclusion follows only if we understand the self as something monitoring one's mind and actions. But it is unclear whether McDowell, Cassam, or anyone in the Kantian tradition is obliged to accept this narrow conception of the self and self-awareness. This will prove to be relevant in section 3.3, when defending the Permanence Argument.

McDowell's discussion of Merleau-Ponty is illuminating in this regard. The relevant passage from Merleau-Ponty is the following:

> In perception we do not think the object and we do not think ourselves thinking it, we are given over to the object and we *merge into this body* which is better informed than we are about the world, and about the motives we have and the means at our disposal. (Merleau-Ponty 1945/2013, p. 238, emphasis added)

But as McDowell points out,

> Once I have separated *me* – the thinking thing I am – from *this body*, it is too late to try to fix things by talking about the former merging into the latter. No one but a philosopher would take seriously the thought that in perception, or in action for that matter, I merge into my body. (2007a, p. 350, original emphasis)

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between rationality and skilful coping, and detachment/involvement is used to label that distinction. If so, then he still does not recognise the possibility of *non-detached* rationality.

Dreyfus's picture separates persons and their bodies: for him, bodies automatically react to affordances and solicitations (more on this in 5.1), and therefore are person-like. This is why one would think that the self can only be found in detachment.

As indicated above, under the usage specified by Campbell and O'Keefe, allocentricity goes with detachment. In the same vein, I want to allow such usage, but wish to emphasise that this is *not the only* usage. *Engaged allocentricity* makes sense, just like engaged rule-following, and this can easily be seen through some existential proofs: many non-human animals can represent space allocentrically, but they lack theoretical and detached attitudes towards the world. Their copings with the world have to be engaged, practical, motivational, and embodied. Therefore engaged allocentricity is not only a remote possibility; it is something that is ubiquitous in the actual world.[76]

Note that engaged allocentricity does not collapse into egocentricity: animals navigating by way of engaged allocentric cognitive maps can represent two landmarks without representing their own bodies the whole time, and this is the definition of allocentricity. Even if engagement brings in the first person, as will be argued in the following sections, it does not imply that it is then reduced to egocentricity. Indirect evidence for this can be seen in the fact that allocentricity and egocentricity have rather different physiological underpinnings (e.g., Stein 1992; Milner and Goodale 1995, on egocentric representations sustained by the parietal cortex).

It is important to stress that this notion of engagement is not something exclusively invoked in the Dreyfus-McDowell debate. In *Spatial Representation*, Eilan, McCarthy, and Brewer introduce one of their central themes by posing the following question: "What makes what we call 'spatial thought' more than an exercise in mathematical computation but, rather, a way of representing the environment we inhabit, the external world 'out there,' as we say?" (1999, p. 2) One natural answer to this is to think of the distinction as one between detached, mathematical representation, on the one hand, and engaged, intuitive physics, on the other. What we need here, again, is the

[76] Another vivid way to make this distinction between engagement and detachment is to use Bermúdez's terminology, "practical understanding versus reflective understanding" (1997, p. 635). As he points out, in Campbell's framework there are two different modes of representation: the causally indexical mode, which is practical and engaged, and the causally non-indexical mode, which is detached and reflective (1993, p. 82) Compare Burge on *de re* beliefs (1977). Throughout my project, only the former is crucial. There will be more on this in Chapter 4, specifically in section 4.3. In his review, Bermúdez objects to Campbell's framework with a notion of content-involving explanation. This does not concern us here since I seek to avoid any talk of substantive content altogether.

engaged kind of representation, which is pervasive in the mental lives of both linguistic and pre-/non-linguistic creatures. Again, engagement is a practical and motivational mode of presentation, including know-how, know-where, and so on.

3.3 The Permanence Argument

In his defence of the Objectivity Argument, Cassam invokes varieties of spatial representation to bridge objectivity and his conclusion (e.g., 1997a, pp. 34-5). This is what we will do too, though since the Object Cognition Argument is sufficiently different from the Objectivity Argument, our invocation of spatial representations will be quite different, accordingly. We shall start with the notion of a physical object or material body. Minimally, it contains two ideas: one is that it is something that has a location in an *objective* world, and the other is that it is something *shaped and solid*. These two aspects are taken care of by the Permanence Argument and the Solidity Argument, respectively. In this chapter we develop the former, and leave the latter for the next chapter.

The Argument and Its Premisses Now here is the Permanence Argument:

> The Permanence Argument (first pass)
>
> SAP1. The capacity for object permanence requires the capacity for representing space allocentrically.
>
> SAP2. The capacity for representing space allocentrically requires one to be able to be acquainted with oneself as located in an objective world.
>
> ---
>
> SAC1. The capacity for object permanence requires one to be able to be acquainted with oneself as located in an objective world.

The premisses are called "SAP" because they are sub-argument premisses. "SAC" means sub-argument conclusion. The argument is valid if we ensure that "the capacity for representing space allocentrically" means the same thing in both premisses. Recall that allocentric spatial representation is space within which "the position of an object…could be derived from reference to at least two other landmarks [i.e., other than oneself or one's own body]" (Ekstrom, Amold, and Iaria 2014, p. 1).

What is the argument for SAP1? On the face of it, it might seem quite implausible. The natural view is rather that object permanence requires *only* egocentric

spatial representation, which requires reference to only one external landmark.[77] Recall that object permanence refers to the understanding that objects continue to exist even when they cannot be perceived. Now imagine a subject who has only the capacity for egocentric spatial representation, i.e., the position of an object could be derived from reference to one's own body and one external object. Now, it should be clear that object permanence does require egocentric spatial representation, because in order to understand that an object can still persist behind a screen, say, the subject needs to represent the spatial relation between oneself and that object, including the screen in between. But it is unclear why allocentric spatial representation is also required, as SAP1 states. What is the argument for it then?[78]

To see this, we need to draw a distinction between *robust* and *weak* object permanence. Providing definitions for both forms of object permanence is not straightforward, but the following thought experiment might help. Imagine a creature that mistakenly thinks that as it moves, the entire space is carried by it. Within this subjective space, there is object permanence in some sense: the creature understands that within this subjective space, object A can be entirely occluded by object B and still persist. This is *weak* object permanence. This needs to be ruled out because what we should mean by "object permanence" is more *robust* than this; we want to capture the genuine understanding of things that can exist independent of me; the space itself does not move with me. This chimes well with the review of infant studies provided in Chapter 1, though it should be acknowledged that some psychologists might have the weaker reading of object permanence in mind. In order to rule out the idealist scenario, egocentric representation is not enough; allocentric representation is needed, since it contains the idea that anything within the allocentric map can in principle move to any other point within the map. The map is not *carried* by anyone. How can a subject gain this kind of understanding? This is where *engagement* comes in for SAP1: if the creature in question is unmotivated throughout its life, and therefore has no meaningful interactions with other objects, it is hard to conceive how such creature can move from weak to robust object permanence. This "subjective/idealist space" scenario helps show which

[77] See Evans (1982), pp. 171-4, and Burge (2010), p. 200. For some scepticism about this requirement of egocentric frame, see Dokic and Pacherie (2006).

[78] This worry is raised by Bill Brewer at a conference. A related though not exactly the same view with SAP1 can be found in Burge: "A relation between a capacity for perception-based reference to bodies and a capacity for spatio-temporal organization seems constitutive" (2010, p. 201).

kind of object permanence is in question, and why engaged allocentric spatial representation is required: to emphasise again, robust object permanence is what we want to capture, because it embodies a genuine understanding of objective space.[79] This idea is in line with Campbell's suggestion that egocentric space by itself is non-objective (1994, esp. Chs. 1 and 2), though I do not agree that it is necessarily action-oriented (more on this in section 4.3). It is also in line with this view from Schellenberg: "By having a practical understanding of space as containing different possible perspectives for perception and action, the subject gains the capacity to transcend her egocentric predicament and recognize that how things appear from her perspective does not exhaust how things are" (2016, p. 339). But we do disagree about the extent to which action and agency are needed for self-location; for her, "the capacity to act and the capacity to perceive three-dimensional space occupiers come packaged together…" (ibid., p. 341). Note that this is crucially different from Evans's arguments in *Varieties of Reference*, around p. 163. This is so because Evans is trying to move from egocentric space to allocentric space, while in the current case I do *not* intend egocentric space as a starting point of this argument. The reason is that it is even harder to see how objectivity can be derived from egocentricity.

Independent of the above considerations, in some of the literature it seems to be assumed that there is a close connection between object permanence and allocentric spatial representation. For example, in a paper on domestic dogs' spatial working memory, it says that "[i]n the current study, we used an object permanence task to investigate the nature of allocentric spatial information (local vs global cues) encoded in dogs' spatial working memory" (Fiset and Malenfant 2013, p. 3). This seems to indicate that on their view, object permanence is sufficient for allocentric spatial representation. This would be in line with the current position, but the authors in that paper did not spell out this idea. From my conversations with experts in developmental psychology and animal studies, it seems that this is a widespread assumption, and without any putative counterexample. This is good news for SAP1. Note that since many animals are capable of object permanence, including non-linguistic animals, if they represent allocentric space

[79] I am indebted to Rory Madden in considering this thought experiment.

at all, it has to be the engaged and embodied kind (see the previous section for more details).[80]

What about SAP2? On the face of it, SAP2 might also seem to be implausible. Cartographical maps are canonical allocentric representations. But when we see maps without using them to navigate, for example, it is unclear why anything like the self and an objective world is involved. In order to deal with this objection, we need to note that not every kind of allocentric spatial representation will do. The relevant sort is *engaged* allocentric spatial representation, i.e., representing allocentric space in a *practical, embodied* way, as explained in the previous section. This is true for both SAP1 and SAP2: to repeat, for the former, since many animals are capable of object permanence, including non-linguistic animals, if they represent allocentric space at all, it has to be the embodied kind. Also, and perhaps more importantly, engagement helps rule out the idealist space scenario. For the latter, only because the allocentric representation in question is engaged or embodied, the conclusion concerning the objective self follows: in representing allocentric space in an engaged way, one thereby becomes able to be acquainted with oneself as a denizen of an objective world. One potential question is: why self-acquaintance? Why not just the self or other aspect of the first person? Answer: because engagement is both perceptive and *apperceptive*. When one engages with some activities, both relata – the activities and the self – become targets of awareness. One's self is then *presented* in experiences.[81] Allocentricity brings the relevant notion of objectivity into the picture, because it is defined in relation to two landmarks, not in relation to one's own body. This is similar to Strawson's idea that re-identifiability entails things persisting while unperceived. Combining SAP1 and SAP2, SAC1 follows: the capacity for (robust) object permanence requires one to be able to be acquainted with oneself as located in an objective world.

Something like SAP2 can be found in Schellenberg: "moving from egocentric to allocentric frames of reference requires that the subject represent her location in space to

[80] One might wonder why Strawson's views are not explicitly discussed at this point. As indicated in section 1.2, Strawson and Evans are more concerned about the *idea* of space, and therefore the *concept* version of these arguments, so it is better to stick to our main line without digressing into that territory.

[81] I thank Léa Salje for pressing me on this. Here I talk about *target*, which is not the primary topic in this essay, as indicated at the outset. Recall that the key disagreement I want to focus on between Cassam and Shoemaker is about whether we are aware of ourselves as physical objects or material bodies. However, the *target* reading of object is relevant here, as I am emphasising how *acquaintance* comes into the picture, and it is a relation between a subject and a target.

abstract from this location" (2016, p. 339). There might be a potential worry here: allocentric space is a way of defining space. The same space can be defined in this way, but it need not be. If so, how can a definition of space do anything about self-acquaintance?[82] In response, I need to stress that what is doing the work is not *definitions*; rather, it is the mental spatial *representations* that are in the animal's mind. Allocentricity is a property of those spatial representations. More specifically, both allocentricity and egocentricity are formats of representations. And how does the first person come into the picture? Answer: through engagement in the relevant sense. A related scepticism is from Campbell (1994) on monadic versus relational content (pp. 115-21; see also Campbell 1993 for the "film" subject thought experiment, pp. 90-1, and Campbell 2004b, pp. 209-11, 2012a, pp. 117-18). I take it that this is not a real threat because Campbell's point is that Gibsonian considerations do not get us relational *content*. If he is right, Bermúdez (1998) and Peacocke (2014) might be in trouble. The current proposal, however, does not make such inference; recall section 1.3 where I explained why the current project should not rely on Gibsonian insights. Perhaps more fundamentally, the current project makes no claim about first-person content at all. Rather, it makes a claim about the conceptual connection between two capacities, i.e., the capacity for object cognition and the capacity for consciousness of oneself as a physical object in an objective world.

There might be a worry that I have built too much into the antecedent: if it is so strong to begin with, the thought goes, no wonder the consequent follows. To this I reply that it is always a matter of balance between validity and triviality for inferences: we need to make sure the inference is valid, and one way to do it is to hold fixed the consequent and strengthen the antecedent. However, at the same time we need to guard against triviality: if the antecedent is so strong that the consequent trivially follows, then it is not intellectually significant. A related consideration is arbitrariness: the antecedent needs to be strengthened in *non*-arbitrary ways otherwise the inference would also be intellectually insignificant. In the present case, robustness is added since we want to *distinguish* a genuine sense of object permanence from an idealist sense, and engagement is added because it helps *rule out* the idealist scenario. Neither of the moves is arbitrary. In other words, we reach this conclusion *not* by stipulation. It is not as if I draw the distinction between robust and weak object permanence, and *stipulate* that the former requires allocentricity. Rather, this requirement is supported by the consideration of the

[82] This was raised by James Stazicker during my talk on these issues.

possible scenario above. The same goes for engagement: it is added through considering the above thought experiment, so it is not an arbitrary stipulation. Whether this support is strong enough is quite another matter. This general consideration applies to other arguments in this essay, as they happen to have the same argumentative form.

It would be more accurate to reformulate the Permanence Argument in light of the refinements made above:

> The Permanence Argument (refined)
>
> SAP1*. The capacity for **robust** object permanence requires the **engaged** capacity for representing space allocentrically.
>
> SAP2*. The **engaged** capacity for representing space allocentrically requires one to be able to be acquainted with oneself as located in an objective world.
>
> ---
>
> SAC1*. The capacity for **robust** object permanence requires one to be able to be acquainted with oneself as located in an objective world.

Now I shall move to a significant potential objection in this area.

Object without Space At this point, I would like to address a potential objection to the Permanence Argument, specifically to its first premiss:

> SAP1*. The capacity of robust object permanence requires the engaged capacity of representing space allocentrically.

Recall that object permanence is invoked because it is one crucial element of *object cognition*. Given this, I am committed to the view that *object cognition requires the engaged capacity of representing space allocentrically*. Thus stated, it might be threatened by a putative real-life counterexample.[83]

[83] Rory Madden has pointed out to me that it is possible to hold that since patients like RM (see below) do not seem to enjoy object permanence in vision, perhaps this potential objection does not even get off the ground. One way to probe the permanence capacity is to check whether they can re-identify objects. Another consideration is that while my thesis does not explicitly concern vision, the discussion of Bálint's Syndrome is exclusively visual. To this I reply that the current line tries to concede as much as possible and see whether this potential objection can still be met.

The key case here is *Bálint's syndrome*, in particular a patient RM, who has been studied extensively by Lynn Robertson and her colleagues (2003). RM suffered strokes and his posterior parietal cortex has been seriously damaged. As a result, he is unable to localise perceived objects by sight. It is *not* that he constantly sees objects in wrong locations; rather, for him there is *no apparent seen location* at all: "See, that's my problem. I can't see where it is" (quoted by Robertson 2003, p. 158).[84] Moreover, he can see only one target at a time: if there is a two-letter word in front of him, say "ON," he would not be able to see both letters at the same time. Functionally, this kind of cases involves 1) simultanagnosia, the inability to enjoy the visual field as a whole; 2) oculomotor apraxia, the difficulty in fixating one's eyes; and 3) optic ataxia, the inability to reach specific objects with the help of vision. Why is this a putative counterexample then? Well, because if patients like RM can be said to still have object cognition, but lack a visual field to house multiple visual objects, then the above condition seems to be falsified. In other words, perhaps some patients have visual object cognition without visual allocentric spatial representation.[85]

Campbell (2007) argues that RM's visual perception of objects is *gone*, i.e., there is no visual cognition whatsoever, and as such it does not satisfy the antecedent of the conditional. John Schwenkler (2012) has argued that Campbell's move is unjustified. Here is how Campbell argues for the idea that RM's visual perception of objects is gone:

> [W]hen presented with displays consisting of two colored letters and asked to report the name and color of the first letter he saw, RM reported "illusory conjunctions" – in which the color of one object was experienced as conjoined with the shape of the other – at least 13% of the time, even with display times of as long as ten seconds (Friedman-Hall, Robertson and Treisman 1995). (Schwenkler 2012, pp. 316-17)

[84] For a discussion of getting the location right as a requirement for demonstrative thought, see McDowell (1990) and Peacocke (1991).

[85] This pathological case is sometimes invoked to cast doubt on the quotation from Kant given in section 3.1 (e.g., Schwenkler 2012). See also Evans (1982), pp. 174-5, and Burge (2010), p. 199. This is a rare occasion where Burge is in agreement with Evans and perhaps Kant. For a parallel discussion concerning touch, see de Vignemont (2018), especially around p. 70.

The idea is this. Campbell believes that the illusory conjunction here is sufficient to show that RM's object seeing is gone. Schwenkler's contention, then, is that it is actually not sufficient, i.e., RM can still be said to have the capacity for object seeing in the relevant sense. He points out that RM can do another task much better:

> [RM] was simply shown a single letter, and asked to report what he saw. In a block in which the stimuli consisted of the letters "b," "d," "p," and "q," RM identified the letter correctly on 23 of 32 trials, and five of his nine errors consisted in confusing mirror-image pairs. (ibid., p. 318)

The crucial conclusion here is that "RM clearly had accurate visual experiences of the *intrinsic shapes* of the target objects" (ibid., p. 318, original emphasis). Here I agree with Schwenkler for two reasons; first, dialectically speaking, for his position he needs only one example showing that RM still has relevant object seeing capacities, and this other experiment is one such case. Secondly, and more importantly, the case is more relevant to the present discussion than the one Campbell cited: what is at stake is whether RM can still see objects *at all*, not whether RM sees properties of objects *correctly*; that is, there is a distinction between object visual perception and veridical feature binding, and only the former is relevant for the present purposes. The interim conclusion here is that Schwenkler is right in arguing that Campbell's effort here is unsuccessful.

However, if we agree with Schwenkler in holding that RM is a genuine counterexample here, then my argument above is in trouble. In order to find a way out, we need to take a closer look at the case. Schwenkler correctly identifies the crucial dialectical move of his opponents:

> Given RM's insistence that he did not experience objects as having locations within any sort of larger space, the only way for an Apriority Theorist to account for his condition without denying his introspective judgments is by arguing that his awareness of particular shapes *itself* amounted to a way of being aware of space… (2012, p. 322)

This is exactly what his opponents have to say because assuming that we have established that RM has no visual field as a background for his object visual perception, the potential opponents have to say that by seeing one object RM thereby enjoys *minimal visual*

perception of space. Schwenkler then attempts to argue that this defensive move from his opponents does not work. I will dispute this final point. One argumentative move from Schwenkler emerges from his discussion of Wittgenstein. According to Schwenkler, Wittgenstein's example of the moving hand on the face of a clock shows that "visual space involves something more than just the intrinsic spatial structure of a particular object; it also involves the awareness of such an object as *positioned in* space" (ibid., p. 323).[86] For the sake of argument, let's assume that Wittgenstein's case here is cogent. There are two points I would like to make here. First, it is not clear that in that context Wittgenstein is identifying a necessary condition for object visual perception. Secondly, Wittgenstein's topic there is *conscious* visual space. This leads to the positive view here, namely that the relevant necessary condition for object visual perception should *not* be *awareness* of space, as Schwenkler and Campbell have it, but only the "representation of space" (cf. Kant 1787/2007, A23/B38). It is plausible to regard RM as lacking a *conscious* visual field as a whole, but it is compatible with the idea that *unconscious* visual representation of space meets the relevant necessary condition. At times, this distinction between the conscious and the unconscious, though clear enough, can be glossed over. For example, in his abstract, Schwenkler writes: "[m]any philosophers have held that it is not possible to experience a spatial object, property, or relation except against the background of an intact *awareness* of a space that is somehow 'absolute'" (2012, p. 308, emphasis added). This is his critical target. However, at the very beginning of the paper, he states this target in an alternative way: "the *representation* of space has a status in perceptual experience that is reasonably called 'a priori'" (ibid., emphasis added). It is true that the latter formulation leaves open whether the representation in question is conscious or not, but in any case it is easy to be oblivious to the distinction between the conscious and the unconscious, and sometimes it can make a huge difference.

Another important argumentative move from Schwenkler is his proposed refutation of Kant's "incongruent counterparts." Here is the crucial passage from Kant:

[86] This is when Wittgenstein seeks to construct a "phenomenological language" in the *Philosophical Remarks*: it is "obviously possible to establish the identity of a position in the visual field, since we would otherwise be unable to distinguish whether a patch always stays in the same place or whether it changes its place" (1975, pp. 253-4; see also Raleigh forthcoming). A similar line of thought can be found in Husserl's *Experience and Judgment* (1939/1975).

> What indeed can be more similar to, and in all parts more equal to, my hand or my ear than its image in the mirror? And yet I cannot put such a hand as is seen in the mirror in the place of its original; for if the one was a right hand, then the other in the mirror is a left, and the image of the right ear is a left one, which can never take the place of the former. Now there are no differences here that any understanding can merely think; and yet the differences are inner as far as the senses teach…What then is the solution?…Space is the form of outer intuition of [our] sensibility, and the inner determination of any space is possible only through the determination of the outer relation to the whole space of which the space is a part…; that is, the part is possible only through the whole… (Kant 1783/1997, p. 38)

This is relevant to the case of RM because he is sensitive to the difference between, say, "p" and "q." If this Kantian line is in general correct, it follows that RM "did, after all, experience those objects as positioned in space" (Schwenkler 2012, p. 323). However, Kant here misses the crucial distinction between "global reference frame" and "object-centered reference frame" (ibid., pp. 323-4), according to Schwenkler. He argues that RM "could represent spatial relations *only* according to *object-centered frames* of reference" (ibid., p. 324, emphasis added):

> [RM] found the task very difficult, took a long time to respond, and was at chance performance. However, when we asked him to read the word NO or ON in other blocks of trials he was 69% accurate (clearly not good, significantly better than when his task was to locate the N). Although he could not *explicitly* access the location, there was evidence of some *implicit* encoding of spatial information that influenced the identification of the word. (Robertson 2003, p. 180, emphasis added)

I will not defend Kant with regard to his incongruent counterparts. For our purposes, note that there is an interesting and significant difference between this case and another case involving ZO and OZ, where the patients are at chance in telling the letters' relative positions. This is crucially different from the NO/ON case, where top-down semantic inferences are involved. This shows that the patients have *implicitly coded* the relevant spatial information concerning relative positions, though they do not have *explicit access* to

those pieces of information. Although both of them are controversial theory-laden terminologies, in the present context it is reasonable to understand it via the distinction between *conscious* and *unconscious* representing. The key point from Schwenkler and Robertson is that what RM has is *only implicit* encoding or unconscious representation of space. But this fits the original Kantian formulation (A42/B59) defended here, namely that the consequent of the conditional should be *unconscious* representation of space. More specifically, it should be *unconscious visual perception of an overarching space*. Thus, we can agree with most criticisms from Schwenkler against Campbell, and perhaps Kant, but still retain Kant's original formulation that "*in order that certain sensations be referred to something outside me, the representation of space must be presupposed*" (Kant 1787/2007, A23/B38, emphasis added).

Recently, Craig French (2018a, 2018b) has attempted to rescue the line criticised by Schwenkler above, and therefore proposes a view that is incompatible with mine. In that paper, French's main critical target is Chapter 3 of Cassam's *The Possibility of Knowledge* (2007), which is subtly different from the current one. However, in section 4.2, French does touch on something like SAP1:

> Spatial Location Claim (2)
> Seeing an object requires seeing it as being *determinately* or *determinably* located in space (2018a, p. 158, emphasis added).

What is crucial here is the disjunction in the formulation: seeing objects as being *either* determinately *or* determinably can count as seeing location. This claim needs substantive unpacking. In order to stay with our target, here I adopt French's discussion directly:

> Many of the properties we perceive are determinates of determinables. For instance, in perceiving the crimson colour of a drop of blood I am perceiving a determinate of the determinable *red*. Crimson is a more determinate way of being red. But we can also perceive relatively determinable properties. (2018a, p. 156)

The exposition of the distinction between determinates and determinables is standard enough, and I have no disagreement in that regard. Here is how French explains RM's case in terms of this distinction:

> What I want to suggest is that RM's condition is consistent with the idea that he can see an object's property of *being located* or *being somewhere or other*…At most they force us to be clear that those claims are not restricted to just the perception of *determinate* location properties. (ibid., p. 157)

The idea is that perhaps RM sees *determinable* locations: "It is just that they don't see objects to be located in *particular* locations" (ibid.) How to understand this hypothesis? Since in explaining the determinate/determinable distinction, the standard examples are often colours, let's see how it works with colours. For example, if I see something with a very dim luminance, I might be able to see it as coloured, but not as any determinate colour, as (say) red, let alone a specific shade such as crimson. This seems plausible. Is there a strong analogy in the case of location? French believes that there is:

> It seems also that when we see objects which are very far away we are not in a position to see their determinate spatial location properties. For instance, suppose one sees the New York skyline at night, and also the moon shining down brightly. It is not at all obvious that one sees the moon's determinate spatial location properties. (ibid., p. 157)

It is true that in the case of seeing faraway objects, such as the moon, we see only their determinable locational properties. But is it plausible that one can see an object as located but without any specific location, as in the case of colour? It seems not. Imagine the moon moves farther and farther away, so that its seen location becomes less and less determinate. Is it plausible that towards a certain point it looks located *without any specific location*? The answer seems to be negative. In facing the sky, it has to seem to one as if it is to the right or to the left. It is not clear that this explanation of RM's situation, the explanation that RM sees things as located but without any specific location, is satisfactory. But "specific" I mean the location is reportable at least to some extent; in the case of colours, when it is too dark it is not even possible to say what the colours are, even though it is still obvious that things around are coloured.

French correctly acknowledges that "[c]onsistency is one thing, but is it *plausible* to suppose that RM, say, can see an object's determinable spatial location property? Here is one reason…":

> RM can see not only objects, but other spatial features they instantiate, such as shape and extension. It is plausible to suppose, then, that insofar as RM perceives objects there is a limited space which is present to him, a space in which those objects are shaped and extended… (ibid., p. 159)

My basic concern is this: all parties in this debate agree that RM sees objects' intrinsic shapes. Given this, it is not clear why insisting on this point would help us adjudicate any substantive disagreement here. To be sure, it is possible that French can spell out hidden implications of this consensus and thereby support his position, but without that further elucidation, it is not clear how pointing out the fact that RM sees objects' intrinsic shapes can be of any help here.

What are the crucial differences between French's picture and mine? We agree that although Schwenkler's discussion is very insightful, a certain version of the conditional in question can still survive. French argues that RM still has visual *awareness* of space, in particular spatial locations; it is just that he sees objects as located but *without any specific location*. I argue that this is implausible by pointing out the disanalogy between the case of location and the case of colour. In the case of colour, under certain circumstances, one can indeed see only something being coloured without any specific colour, even a very rough one. In the case of location, however, it is not plausible that one can see something as located, but not with at least a specific location. Again by "specific" here I do not mean "highly precise." The example of seeing a faraway object, say the moon, does not serve French's purpose. Here I agree with Schwenkler that cases such as RM have shown that visual awareness of space and location are *not* necessary for object seeing. I have argued that the correct way out is to modify the consequent so that it does not require *awareness*: what is required is an unconscious overarching visual spatial representation. In recent years, philosophers have tended to overemphasise or overestimate the functions of consciousness, but it should be recognised that empirical sciences in general, and Bálint's syndrome in particular, have revealed to us that consciousness, though important, is much less crucial than our ordinary conception tells us.[87] In our context, the allocentric spatial representations in question are in general unconscious. When animals navigate in their environments with allocentric spatial representations, they are not using those representations consciously. Note that I am not implying that Bálint's patients can navigate like animals without the relevant impairment;

[87] For a similar view from different considerations, see Rosenthal (2008).

of course they cannot. The claim is that they do still have some capacity for visual allocentric representation.

To sum up, one premiss of the Permanence Argument has it that object permanence requires allocentric spatial representation. Given that object cognition requires object permanence, we can deduce that object cognition requires allocentric spatial representation. But if so, patients with Bálint's syndrome might constitute real-life counterexamples of this conditional, since they seem to have object visual perception without visual allocentric spatial representation. After adjudicating the debate between Campbell, Schwenkler, and French, I have come to the conclusion that allocentric spatial representation is still required. It is just that the spatial representation in question is *unconscious*. This fits our original discussion, since in the Permanence Argument, the spatial representation is never said to be *conscious*. Considering the case of Bálint's syndrome helps us reconfirm the original formulation that leaves consciousness out of the picture when it comes to spatial representations.[88]

3.4 Objective Self-Acquaintance

The Permanence Argument seeks to establish the first half of P1 of the Object Cognition Argument. The interim conclusion here – namely that the capacity for object permanence requires one to be able to be acquainted with oneself as located in an objective world – cannot bring about the desired conclusion all by itself. This is because we want to establish that some subjects can be acquainted with themselves as physical *objects*. However, the Permanence Argument, even if successful, is only about objectivity. Consider again the distinction between physical objects such as tables and chairs, and physical phenomena such as rainbows and sounds. The latter are certainly physical too, but they lack the objecthood we are aiming for; they are not *material bodies*. Now, SAC1 in the Permanence Argument establishes that only the kind of subjects in question are able to be acquainted with themselves as located in an objective world. But this does not rule out that a subject within that category can become acquainted with itself only as a *mere geometrical point of view* in an objective world. In his exchange with Cassam on transcendental self-consciousness, Strawson has argued that this is a coherent possibility:

[88] There is a recent debate concerning the existence of unconscious perception (Phillips 2016; Block 2016; and Peters, Kentridge, Phillips, and Block 2017). While I believe there is a case to be made for unconscious perception, the view defended here does not hinge on it. What is needed here is unconscious *spatial representation*.

> It is not entirely clear to me that the following concept is, *in the context of the present considerations alone*, incoherent: the concept, namely, of a located but incorporeal centre of consciousness, tracing a subjective experiential route through an objective world (consciously conceived as such), conscious of the possibility of other such routes through that world and hence capable of self-ascription of its own experience of it. (1995, p. 417)

Now, whether this concept is indeed coherent is hard to determine, but at least in our context, if the Permanence Argument is all we have, then we have not ruled out this mere-point-of-view possibility. This is why we need to turn to the Solidity Argument in the next chapter.

CHAPTER 4

Objecthood

4.1 Primary Qualities and the Tactile Field

In the previous chapter, we have seen that even if the Permanence Argument is indeed successful, it establishes only the first half of P1 of the Object Cognition Argument, namely the objectivity claim: P1 states that for one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world. Being located in an *objective* world is one claim, while being a physical *object* is another claim. In order to rule out the mere-point-of-view scenario described towards the end of the previous chapter, i.e., "a located but incorporeal centre of consciousness" (Strawson 1995, p. 417), we need to go beyond the former and move to the latter. This is then the topic of the current chapter.

Some readers might wonder why P1 needs to be established with two steps. In particular, doesn't awareness of something as a physical object entail awareness of that thing as located in an objective world? To this, it should be acknowledged that in most cases the former does require the latter, but it is not always the case. Consider Bálint's syndrome, one topic in section 3.3. The patients might be aware of something as a physical object, but fail to be aware of it as located in an objective world. Or consider another topic in section 3.3, the idealist space scenario. The creature in question might be aware of something as located in a subjective rather than an objective space. To be sure, both are controversial cases, or at least my interpretations of them would not be universally granted. Still, the point to emphasise here is only that physical objecthood and

objectivity are notionally distinct. It does not make the stronger and therefore more controversial claim that they come apart often or ever in the actual world.[89]

Here is the plan for the current chapter. The key argument to be developed is the Solidity Argument, which concludes that the capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object. To this end, the *engaged* capacity for representing primary qualities is the crucial bridge. Although the relevant notion of engagement has been explicated in section 3.2, its particular application here hinges on the sense of *touch*. The remainder of this section will discuss touch and an empirical vindication of a certain aspect of touch that will be crucial for the Solidity Argument (4.1). I will then state and defend the Solidity Argument, with the resources presented presently (4.2). After that I will turn to agency, causation, and time in relation to the current project: while such features are not prominent in the discussion, some philosophers have argued that they should play crucial roles in this area (4.3). I will finish this chapter by taking stock and gesturing the way forward (4.4). Before moving on, I shall briefly discuss the notion of primary qualities being used here.

Recall that in Chapter 2 we made use of the following characterisation offered by Peacocke: "A primary quality is a quality of a general kind such that necessarily any material object has some quality of that general kind" (1993, p. 172). Traditionally, being shaped, located, and solid are taken to be canonical primary qualities. Locke (1690) famously proposes that possession of primary qualities is what makes something a *material body*: those are qualities existing within material bodies and therefore *inseparable* from the body. For him, primary qualities include solidity, extension, figure, motion/rest, and number. He also holds that solidity is the most *fundamental* quality, in the sense that it is "most intimately connected with and essential to Body" (Locke 1690/1998, p. 123). He further writes that the solidity of a body amounts to "utter Exclusion of other Bodies out of the space it possesses" (ibid., p. 125). This is in effect the constraint of solidity introduced in 2.3. This will prove to be important in section 4.2 when I discuss the Solidity Argument.[90]

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[89] The situation is similar to that set out in Block (1995), where he attempts to conceptually tease phenomenal consciousness and access consciousness apart. He argues that it is easier to find actual cases for phenomenal consciousness without access consciousness, while to do so the other way around requires thought experiments.

[90] In section 2.3, I discussed Peacocke's suggestion that force should be included in the list of primary qualities. Historically, there was an interesting disagreement between Locke and Kant concerning which

Touch Now, I shall discuss a crucial element in this project that has yet to be broached, namely the sense of *touch*. The reason for bringing it in at this point is that, in addition to vision, touch is the most acknowledged *spatial* sense: touch can tell us about solidity, shapes, and sizes, and very often locations too. This is why the famous Molyneux's Question is between sight and touch.[91] Audition is often said to be importantly spatial too, but in any case, it is more different from sight and touch. For example, it is much harder, though not impossible, for audition to tell us about shapes and sizes. Now, if touch is so importantly spatial, why was it not introduced in Chapter 3 when the Permanence Argument was under consideration? That is due to the fact that when it comes to allocentric spatial representation, vision seems to be much more powerful in registering it. Arguably, touch unaided can enable the subject to gain objectivity and allocentricity, but it seems to be worse off than vision in this regard.[92] Given this, in Chapter 3 I have attempted to make the Permanence Argument work without invoking any consideration of touch. It seems to me that if what has been said in Chapter 3 was not enough to establish the Permanence Argument, adding considerations about touch is not going to help. The situation might be quite different when it comes to primary qualities and the Solidity Argument. As we shall see in section 4.2, although it might be possible to establish the Solidity Argument solely through considerations about vision, having touch in view will make the case much stronger, as it establishes a closer

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one is more primary. Kant writes: "matter fills a space only by moving force," that is to say, "by such a force as resists the penetration, i.e., the approach, of another matter" (1786/1985, p. 499). As Cassam explains, "Locke's idea is that impenetrability is a power and that solidity is the categorical ground of this power. This is what Kant rejects" (2002, p. 317; see also Peacocke 1993, p. 171). For the purposes of the Solidity Argument below, I need only insist that solidity is distinctive in the following sense: being solid implies being shaped and sized, but not *vice versa*. Being solid is the marker of physical objecthood. Whether force or solidity is fundamental in any sense can be left aside. I also leave aside whether solidity is a metaphysically necessary property of matter (Johnston 1987).

[91] This is not to say that similar or parallel questions cannot be raised for audition. For example, Altieri (2015) has proposed that we can substitute Molyneux's Question with the empirical question about whether newly sighted subjects can exhibit the McGurk effect (McGurk and MacDonald 1976). For further discussions, see Schwenkler (2015). However, historically sight and touch have been regarded as more similar and comparable. This can also be found in the phenomenological tradition, for example in Merleau-Ponty: "visible and tangible belong to the same world…every vision takes place somewhere in the tactile place" (1968, p. 134).

[92] For a review on congenitally blind subjects in this regard, see Morash et al. (2012).

connection to *engagement* in this context. Therefore, in the remainder of this section, we need to diverge for a while to consider the relevant aspects of touch.

Above I have talked about *the* sense of touch, but in some contexts that might be problematic. Since Aristotle (1941), we have been used to talking about the "five senses." But also since his time, we have recognised that it is relatively easier to find *proper* sensibles, i.e., objects or properties proper to the specific senses, for those other than touch: colours for vision, sounds for audition, odours for olfaction, tastes for gustation. But it is not straightforward when it comes to touch, which can bring us information about shapes, sizes, temperatures, textures, and so on. Amongst this, only temperature is not shared with vision, but it seems odd to think that temperature is the proper sensible for touch, even though it is indeed crucial for survival to know about the temperature. Moreover, the objects of touch are striking not only in their multiplicity, but also in their *diversity*.[93] Unlike vision, audition, olfaction, and gustation, "in the field of what is tangible we find several pairs, hot cold, dry moist, hard soft, etc." (Aristotle 1941, Book 2, Chapter 11). In any case, even with the proper sensibles in place, there is still a question about sense modality *individuation*: with what criterion or criteria can we individuate the senses in a non-question-begging way? (Macpherson 2011) Within touch, there have been different views on this matter. Some have argued that given the diversity of touch, there is no satisfying answer forthcoming (Ratcliffe 2012). Others have argued that the unity of touch can be achieved through a proper understanding of explorative actions (Fulkerson 2014). In a paper I have argued that perhaps we should follow the somatosensory system divisions and hold that the nociceptive, the thermal, and the tactile are different senses. The basic rationale for this view is as follows: the nociceptive system can only be directed at one's own body, the thermal system can be directed at either one's own body or the immediate environment, while the neutral tactile system can be directed at specific objects in the environment. From this point of view, Ratcliffe's view overlooks this way of individuation within the somatosensory system, while Fulkerson's view overemphasises the haptic aspect and therefore overlooks the passive aspect of the system (Cheng 2015b). But no matter which answer we go for on this topic, in what follows I will use "the sense of touch" in a neutral way: for those who believe in Ratcliffe, they can regard my usage as a matter of practical convenience. For those who believe in Fulkerson, they can regard my usage as tentatively agreeing with the unity of touch. For those who are sympathetic to my view, they can regard it as referring to the

[93] I owe this observation to Mark Kalderon.

tactile only (i.e., excluding the nociceptive and the thermal). As will become clear, the nociceptive and the thermal, though important in their own rights, will not play any role in establishing the Solidity Argument. The reason for this is simple: when it comes to solidity, pain and temperature are simply much less relevant than the tactile sense strictly defined; as a matter of fact, in experiencing solidity one does always experience temperature as well, but temperature experiences themselves do not tell us about whether something is solid. In what follows I focus on neutral touch, i.e., the *contact* sense as such. Non-neutral cases include painful, hot, cold, and pleasurable touch.

The dialectic here is far from obvious, so allow me to clarify it a bit more. Primary qualities can be represented by sight, touch, and thought. Since the Solidity Argument developed in 4.2 will hinge on the capacity for representing primary qualities, *how* they are represented needs to be discussed. As explained above, in this context *touch* would be the most relevant way, so we are in the middle of the discussion of touch. Now, some have argued that the spatiality of touch is *entirely derived* from other factors (more on this below), and this would deprive touch of its central importance here. Therefore, in what follows I will discuss some empirical works supporting the idea that touch has some *intrinsic spatiality*, so it is fine to just focus on touch in elucidating the Solidity Argument. To be sure, this way of proceeding is indirect and optional; after all, as we shall see, touch does *not* figure in the Solidity Argument explicitly. However, I find this the best way I can think of when it comes to substantiate this argument's premisses. For those who are not sympathetic with this line, it is fine to consider the Solidity Argument in its own right in 4.2 without worrying about what I am going to say concerning spatial touch.[94]

Given the relative similarity between sight and touch, it makes sense to proceed by considering them together. One natural starting point is to think about *sensory fields* in different modalities: since "field" is an important *spatial* concept, it makes sense to think about different ways in which fields might play a role in different modalities. In vision, for example, both in a daily life setting and in the medical context, people very often talk about the "visual field." In daily life, we sometimes joke that someone might have a smaller visual field since he has smaller eyes (this might be culturally specific); in the medical context, a doctor might say that someone's visual field has shrunk due to a brain lesion after a stroke. Historically, the term "visual field" has been related to *sensationalism*, the view that in vision (say) the visual field is constituted by a 2D array of visual

[94] I thank Rory Madden for pressing me on this point. I am sure that he would still be dissatisfied, though.

sensations. Standard sense-datum theorists and Ned Block's mental paint view (1996) might fall into this category (see also Peacocke 1983, 2008). Some might therefore worry that talking about the visual field unwittingly commits one to sensationalism.[95] This worry can be dampened if we remind ourselves that there can be different construals of the visual field corresponding to the major theories of perception (Clark 1996). For sensationalism, the constituents of it are visual sensations. For representationalism, the constituents of it might be either representational vehicles or representational contents. For naïve realism, the constituents of it are physical objects and phenomena in front of the viewer. When a medical doctor talks about a patient's visual field, she probably does not commit to any substantive theory of perception. Or perhaps she does have a specific theory in mind, but this should not prevent us from using that term, since almost every term in theoretical settings is theory-laden anyway. Some neuroscientists, for example, do have explicit commitments to specific theories, such as sensationalism (Smythies 1996).

Now, assuming that talking about the visual field makes sense and might be helpful theoretically, what of the other senses? The possibility of the auditory field has been explored by Matthew Soteriou (2013), though more so in relation to the temporal dimension. Here our main question is: Is there a sensible notion of the tactile field, and if so, in what way can that notion help us with the Solidity Argument? We will start with the former.

In the famous chapter on sounds in *Individuals*, Strawson expresses his scepticism concerning a sensible notion of the tactile field:

> Evidently the visual field is necessarily extended at any moment… The case of touch is less obvious: it is not, e.g., clear what one would mean by a "tactual field" (1959, p. 65)

This strand has been picked up and further developed by Brian O'Shaughnessy (1989), M. G. F. Martin (1992), and also Soteriou (2013). "Touch is dependent on bodily awareness," by which Martin includes one's "posture, orientation in space, the position of [one's] limbs," and also "shapes and sizes of [one's] body, and within and on it [one is] aware of various goings on" (1992, p. 197, p. 201). Although Naturalised Strawsonianism has been the guiding principle of this project, here is where I have to disagree with Strawson. In what follows I begin to explain what I mean by the "tactile field" and why it makes sense

[95] Mark Kalderon has expressed this worry to me.

to postulate one. The resulting view is incompatible with Martin's since it will be explicitly argued that a certain aspect of spatial touch is *not* dependent on bodily awareness as he defines it.

Tactile Field Vindicated Below I am reporting the basic ideas and one experiment from Haggard and Giovagnoli (2011), so the wordings will be quite similar to their paper, and I claim no originality.[96] In that paper, they point out that in the history of cognitive neuroscience and psychology, researchers have spent more time on single points of stimulation, local patterns within a single skin region such as fingertips, tactile motion, and active or haptic touch. By contrast, *tactile pattern perception* over larger regions of the body has been ignored. Therefore their target of investigation is perceptions of large-scale tactile spatial patterns on people's hands, arms, and backs. When it comes to tactile localisation, three kinds of space are relevant. The first is *skin*-space, understood as flattened receptor surface or sheet (derma-topic); the second is *body*-space, understood as torsos, limbs, joints, and their connections (somato-topic); and the third is *external*-space, understood as coordinates in an egocentric representation that will update when the body parts move (spatio-topic) (Spence, Pavani, and Driver 2004). In the past, tactile localisation is often investigated with spatial orienting responses, including eye movements, pointing movements, or orienting of spatial attention. One prime historical example is Lotze (1885), who makes *orienting* the basis of spatial perception, and he investigates how we can get from non-spatial neural impulses to spatial phenomenal qualities from an action-based point of view. To anticipate the view I will seek to establish in this part, tactile field is sustained by the computations carried out by the skin-space. The O'Shaughnessy-Martin line overgeneralises the influences of bodily awareness mainly due to the failure to recognise the important role of skin-space detailed below.

Haggard's project, then, is to investigate a neglected spatial aspect of touch, spatial pattern perception, which involves perceiving the angles, distances, and forms created by *multiple* tactile stimuli. Skin-space plays a crucial role here, as it is the physiological basis of the tactile field. What is a tactile field, then, in the relevant sense? A tactile field sustains representations of the spatial relations *between* the stimuli within a continuous space on the skin. Compare this with vision for the moment: in vision, we

[96] For previous work, see Serino, Giovagnoli, de Vignemont, and Haggard (2008). For recent works, for which I can take some credit, see Haggard, Cheng, Beck, and Fardo (2017), Fardo, Beck, Cheng, and Haggard (2018), and Cheng and Haggard (2018).

seem to be able to see empty space between objects (Richardson 2010). In touch, we are able to perceive space between multiple stimuli (Mac Cumhaill 2017, 2018; also compare Evans 1980 on the simultaneous spatial concept). For touch, the sensory array has a distinctive spatial organisation due to the arrangement of receptive fields on the receptor surface on the skin. The receptive field of an individual neuron is the particular region of body surfaces, such as skin or retina, where stimuli can evoke or modify the firings of the neuron in question. The key quality of field-based organisation is a systematic organisation of receptive fields that are capable of supporting representation of spatial patterns. As such, they need to find empirical evidence for representation of the spatial relations between individual touch locations, resulting in perception of a spatial pattern.

In this specific paper, Haggard and Giovagnoli report four experiments to test different aspects of this hypothesis. In order to remain focused here, in what follows I introduce only the first crucial experiment, which investigates the relation between perception of tactile patterns and the identification of some subsets of those patterns.

Experiment 1: Participants rest their right hand palms downward on a plasticine mould, in which were embedded ten customised miniature solenoids. Participants cannot see or hear the operation of them, but know their geographical layout by seeing a figure with the relevant information, including numerical labels. During the experiment, the participants cannot see their own hands, so there is no question about whether their subsequent judgements are influenced by visual inputs.

Target Localisation Condition: One of the four central solenoids was vibrated; participants identified the target with an unspeeded verbal response. The vibration was random and equiprobable, with the strength 30, 40 or 50 Hz, and 100 or 200ms duration. Each combination of localisation, frequency, and duration was presented 8 times (192 trials in total). In other blocks, upper and lower flankers are similarly tested. Participants were informed which row was going to be tested.

Spatial Pattern Condition: Here participants are required to identify a tactile pattern constituted by vibration of multiple solenoids. In a line-judgement block, one upper row solenoid and the corresponding lower row solenoid were vibrated simultaneously with the same duration and frequency. These vibrations define 3 parallel and vertical lines. The task is to identify which line was perceived across 144 trials. In an alignment-judgement block, the upper and lower flankers were first vibrated to define a line, and after an 800ms interval one of the four central targets was activated randomly

and equiprobably. The task was to judge whether the target was to the left or to the right of the line defined by the flankers (for more details, see Haggard and Giovagnoli 2011, pp. 66-7).

Result: Accuracy was well above chance in every condition (e.g., 86.4% for alignment-judgement). The crucial thing for our purposes is in what way and to what extent the alignment-judgement condition differs from the level predicted from flanker line localisation and individual solenoid localisation. The null hypothesis is that alignment judgements simply reflect independent processes of line localisation and target localisation. The experimental hypothesis is that alignment judgements involve an additional process of representing the overall pattern constituted by the flanker line and the target. This makes the prediction that alignment-judgement performances would be better than predicted from the null hypothesis. The experimental result confirms this prediction.

Perception of tactile spatial patterns is based on *representing the spatial relations between locations* of individual stimuli. The ability to perceive a tactile pattern defined by several stimuli is as good as might be expected from the perception of subsets of the pattern. This experiment shows that people are able to integrate a tactile pattern percept from the location of individual tactile elements on the skin. The authors summarise the other experiments as follows:

> Tactile pattern judgements depend on secondary factors over and above local tactile perceptual ability at the stimulated locations. These factors included the body parts stimulated (experiment 2), the time window over which the different stimuli comprising the tactile pattern are delivered (experiment 3), and the hemisphere(s) receiving tactile information (experiment 4). Because the bandwidth of human tactile perception is low, and *tactile attention* is highly focal (Gallace & Spence, 2008), it may seem as though tactile stimuli are perceived only singly, and that integration of several stimuli into a spatial pattern is limited. Our results show that the basic field-like representations required to perceive a spatial pattern are present. (Haggard and Giovagnoli 2011, p. 73)

Now, this can be regarded as a first step towards meeting Strawson's challenge, since he queries the general intelligibility of a notion of the tactile field. And the work cited above

should be an existential proof of *one* interesting notion of the tactile field. Whether that notion is useful theoretically for Strawson is an independent matter. What about the further challenge from O'Shaughnessy and Martin? Again, their general idea is that the spatiality of touch is derived from bodily awareness such as proprioception. If Haggard's work indeed supports the notion of the tactile field, then there is a case to be made for the *intrinsic* spatiality of touch, since the tactile field can sustain tactile spatial perception on its own without the help from bodily awareness.

It is important to recognise that the Strawsonian challenge is not a parochial view. More specifically, it is not as if O'Shaughnessy and Martin are the only two other thinkers developing this line of thought. Traditionally, thinkers have been casting doubt on the spatiality of touch. A blind person would experience, Lotze writes, "an artificial system of conceptions of movement, time, and effort" (1884, p. 500). Decades later, von Senden argues that blind people have no concept of space. Rather, they have only *schemas* of space, which are much more degenerated. He writes: "true awareness of space can be given only by sight and not by touch (1960, p. 78).[97] Strawsonians, as well as many contemporary thinkers, do not hold this kind of strong view. Nonetheless, they have argued that while touch is indeed spatial, it is not *intrinsically* spatial. That is to say, the spatiality of touch, though genuinely spatial, is *derivative* of other modalities or factors. This view takes several forms:

a. Vision

Tactile spatial patterns can be transformed into a visual field-based organisation (Dijkerman and de Haan 2007). Physiologically, it has been widely reported that there are activations of visual cortical areas during tactile acuity tasks (Peltier et al. 2007).

b. Motion and Temporality

On the one hand, classic works on haptic touch have emphasised that the sense of space is largely derived from motor commands and kinaesthesis (Gibson 1962; Katz and Krueger 1989). On the other hand, many studies on tactile motions (Heller 1989) and successive stimulation (Geldard and Sherrick 1972) have shown that the relevant spatiality can result from cognitive inferences further downstream.

[97] Bishop Berkeley held the exact opposite view (1709).

c. Proprioception

The Strawsonian challenge presses specifically on this score. As quoted above, Martin writes, "the visual field plays a role in sight which is not played by any sense field in touch. Touch is dependent on bodily awareness and if, or where, that involves a sense field, it does so in a strikingly different way from that in which visual experience involves the visual field" (1992, p. 197). Their positive proposal essentially involves proprioception and kinaesthesia.[98]

d. Body Representation

It is notoriously difficult to define body representations such as body schema and body image, and here is not the place to do so (Gallagher 2005). A recent example of this view is Bermúdez (2017), where he invokes the generalised cone model of object cognition from Marr and Nishihara (1978) to conceptualise the body representations, together his A-location/B-location distinction (1998).

What unites these diverse views is the idea that touch, though a spatial sense, is only *derivatively* spatial: it is spatial *only* as a result of vision, motion, temporality, proprioception, and/or body representations. The tactile field hypothesis developed here seeks to show that touch, at least sometimes, can be *intrinsically* spatial. I concede that the above factors – vision, motion, temporality, proprioception, and body representations – all greatly contribute to the spatiality of touch. What has been argued is that apart from those extrinsic factors, the tactile field sustained by skin-space can host a significant spatiality of touch.

What is the relation between this discussion of the tactile field and our project of establishing the Solidity Argument here? In short, spatial touch and the tactile field help substantiate the use of *engagement* in the argument, and this will be clarified in section 4.2, but in order to make that connection, we need to at least discuss *object* perception in touch, since objecthood is the major topic in this chapter. To recall, object perception is one important species of spatial perception: for example, it is true that in addition to object perception, we also perceive rainbows, shadows, sounds, smells, and so on. Still,

[98] It is true that sometimes they do not use these terms explicitly, but their subject matters can be clearly seen from examples they use. For example when Martin's case of running one's fingers around the rim of a glass clearly involves both (p. 199 and on).

objects are important constituents of the spatial world, so object perception is a very important topic if we want to understand the spatial aspect of touch.[99] The important claim here is that the tactile field sustains *tactile object perception*. It has been well established that the nociceptive sense is neither exteroceptive nor object-directed, the thermal sense is exteroceptive but not object-directed, and the tactile sense is both exteroceptive and *object-directed* (Mancini et al. 2015; Marotta et al. 2015; Cheng forthcoming). The basic idea is that to estimate distances between stimuli on the skin requires a metric representation of spatial relations, which underlies abilities of perceiving the size of *external objects*. Both the nociceptive sense and the thermal sense are poor in estimating distances like this, but the tactile sense is much better in this regard thanks to the operation of the tactile field. The tactile field, in other words, helps us *measure* the solidity, sizes, and shapes of external objects.[100]

4.2 The Solidity Argument

Now, let's come back to our original context of supporting P1 of the Object Cognition Argument with the Solidity Argument. We will return to the discussion of touch later in this section.

The Argument and Its Premisses The Solidity Argument goes like this:

> The Solidity Argument
>
> SAP3. The capacity for representing solidity requires the engaged capacity for representing primary qualities in general.

[99] This point is weaker and therefore less controversial than Strawson's point that material bodies are *basic* particulars (1959).

[100] Although the view here is different from Martin's, we do share this *measurement* idea, i.e., using one's body as a template to figure out the shape, size, and solidity of external objects. Specifically, for solidity, different pressures and forces felt on one's body tell one about how solid the object in question is. The crucial difference lies in whether skin-space's important role is accommodated. Note that sensory fields – such as the visual and the tactile field – are *not* identical to receptive fields. The former are psychological, while the latter are physiological. This can be seen from the cases of the nociceptive and the thermal: they do have receptive fields physiologically, since otherwise they cannot receive stimulations and sensory information, but they do *not* sustain any sensory field in the current sense. Note also that what has been said above is specific to humans. What works for other animals needs to be studied in a case-by-case manner. For example, Martin's case of the jellyfish that "has no sense of the contrast between itself and the rest of the world" (1993, p. 211) would have a very different tactile sense and self-awareness (if any).

SAP4. The engaged capacity for representing primary qualities in general requires one to be able to be acquainted with oneself as a physical object.

SAC2. The capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object.

What is the reason for believing SAP3? Within intuitive physics, what is really crucial is the constraint of *solidity*, namely that one object would not pass through the space occupied by another object. Solidity is more than spatial occupancy. Shadows take up space, for example, but they are not solid. Solidity itself is a paradigmatic primary quality. Representing solidity is more than representing shapes and sizes, since rainbows and shadows can have these qualities too. But being solid *does* entail being shaped and sized, as something solid has to take up space and with a certain shape; solidity assumes the instantiations of other primary qualities. This echoes the point from Locke introduced at the beginning of this chapter. SAP3 might appear to be tautological: to embody the constraint of solidity is just to have the representation of primary qualities in general, since merely representing shapes and sizes are not enough in capturing the impenetrability of material bodies. This is not so, because what we have in the consequent has the crucial notion "engagement." And this holds because the capacity for representing solidity *theoretically* requires the capacity for representing solidity *practically*, which further requires that the representations in question be engaged ones: this is just the plain empiricist idea that one needs to experience empirical properties to be able to represent those properties. Note that the impenetrability or non-penetrability is a matter of degree and also relative: it is a matter of degree because one thing can be less penetrable/more solid than another; it is relative because the table is impenetrable by my fist, but perhaps penetrable by a knife. Since everything is composed by clouds of molecules that are cohesive to certain degrees, nothing is absolutely impenetrable. But for present purposes, only the gradational and relative notion of impenetrability is required.

At this stage, one might wonder: if solidity is doing all the work, why do I need to emphasise being shaped and sized? The reason is that what is needed in the conclusion is a physical object, which is not only solid, but also shaped and sized. Just to be complete here, it is important to have all three primary qualities in place. There might be potential counterexamples at this point: when a needle touches one's skin, is one thereby informed about its shape and size? Some might think not. In this case, my point is only that the

object is experienced as having a shape and some perhaps indeterminate (small) size. It is not part of the claim that complete information about shapes and sizes is implicated in these experiences. Another potential counterexample is that when repelled from a magnetic field, one might have some kind of experience of impenetrability, but it is not solidity as characterised above. In reply, I want to stress that this kind of experience is quite different from solidity experience, with which some would also feel certain textures. The solidity experience under discussion is the kind of experiences we have when touching tables and chairs, for example.[101]

What about SAP4? SAP4 shares a similar problem with SAP2, which can be presented in the question: why does the spatial representation in question have anything to do with *one's self* at all? The initial response here is similar: not every kind of primary quality representation will do; *engaged* representation is needed. This can be elucidated by considering the following scenario of alien creature. Imagine a creature that has a huge pair of eyes but a small body. The architecture of its body is so strange that it sees things moving about and bumping into one another around it, but it never sees its body participating in these physical changes. If this is its only resource, then it is hard to see how it can represent its own body as a physical object with solidity. But if this creature is endowed with the sense of touch, then through this modality it can thereby become aware that its own body participates in physical happenings in the world as a physical object with solidity. Without any sense of touch, the creature might be able to represent the constraint of solidity, and thereby understand that things around it have to obey this constraint. But to realise that one's own body is also a solid physical object that is constrained by solidity is required by a sense of one's own body interacting with other objects, through either sight or touch. Both are *engaged* primary quality representation, since in both cases one's own body is under consideration. Some might hold that even without the sense of touch, the sense of *being thwarted* when trying to push against an external object is enough. This is not a problem, as being thwarted should be incorporated into the sense of touch too, since it is a kind of pressure sense that is constitutive of the tactile sense (de Vignemont and Massin 2015), and it is *engaged* in our sense. Again, engagement is a practical and motivational mode of presentation, including know-how, know-where, and so on.[102] This can also be found in Martin (1993, p. 213; for more on solidity and impediment, see Fricke and Snowdon 2003, Blatti 2006). Cassam

[101] These intriguing examples are due to Rory Madden.

[102] I thank Alexander Green for pushing me to make this point explicit.

discusses a similar line on both sight and touch (2002, pp. 324-5). He suggests we follow Ayers in thinking that visual experience is "integrated with, indeed involves, our general tactile and proprioceptive awareness of the head and its relation to the rest of the body" (1991, p. 187). Cassam makes an even stronger point on which I remain neutral, namely that vision is entirely powerless in this regard (p. 2002, pp. 325-6). It is true that *passively* seeing one's own body interacting with other objects is not effective, though. Another point relevant to SAP4 is its relation to Cartesian dualism. I will defer this to section 5.4.

Now, this is only the first step in answering the worry: it only bridges exteroceptive cognition and bodily awareness. However, there is a further question concerning the move from bodily awareness to bodily *self*-awareness, which will be dealt with in section 5.4.

Tactile Field at Work This is where we can find relevance to the tactile field discussion. I quote myself: "to realise that one's own body is also a solid physical object that is constrained by solidity requires a sense of one's own body interacting with other objects, through either sight or touch." Now, seeing one's own body interacting with other objects might make it intelligible for the subject that one's own body, like other physical objects, is subject to intuitive physics, in particular the constraint of solidity. But touch is stronger in this regard for reality testing: when we seem to see something in a non-ideal circumstance, it will be quite reassuring if we can *touch* that given object.[103] Therefore, in the imagined alien creature scenario above, the argumentative route from the sense of touch is more robust. In section 4.1 we saw how the tactile field sustains tactile object perception. In a sense, the plausibility of the Solidity Argument is independent of the account of the tactile field in section 4.1, and this is better dialectically since the less an argument presupposes, the more likely it will succeed. However, the materials in section 4.1 substantiate our picture of tactile object perception, and give us more concrete ideas about how the Solidity Argument should work. Indeed, the Haggard and Giovagnoli paper can be seen as proposing their version of the Solidity Argument. Let me explain.

[103] Consider the case of seeing light objects/holograms in films. If they look too real, people would be tempted to touch them to see whether they are really real. M. G. F. Martin drew my attention to the relevance of this case. See also Fairhurst, Travers, Haywood, and Deroy (2018) and Deroy and Fairhurst (forthcoming) for the idea that touch is more trusted than vision in cases of perceptual ambiguity.

Recall that in section 1.3 we briefly reviewed the Gibsonian insight that basic forms of first-person representation are implicitly presented in *visual* experiences of an animal making orienting actions in egocentric space (see also Evans 1982). In focusing solely on vision, it is harder to make sense of the embodied nature of self-consciousness. Touch, by contrast, might be better in bringing the *embodied subject* into view. In their paper, Haggard and Giovagnoli argue that:

> [A] substantive representation of one's own body as a volumetric object mediates spatial judgements on the body surface. Tactile pattern perception involves representing oneself both as a source of sensory experiences, but also as a physical object with a characteristic body structure, and therefore having spatial attributes analogous to other objects. In touch, then, the linkage between primary experiences and self-consciousness seems stronger than in vision. The linkage shows that the body is a physical as well as a psychological object. In this sense, tactile pattern perception presupposes a self that is an object embedded in the world, rather than simply a viewpoint on the world (Merleau-Ponty 1962). (Haggard and Giovagnoli 2011, p. 76)

The inferential structure here is very similar to our Solidity Argument; in particular, we both emphasise the *duality* of touch, i.e., in some way, the object of touch is always also myself; touch is always *self-relating*. And neither one of us denies the role of vision in contributing to self-consciousness; we just hope to emphasise and articulate in what sense touch can provide a stronger case here. As scientists, Haggard and colleagues can only put forward this kind of abstract conceptual link towards the end of a paper without formulating arguments in the way philosophers often do. This is due to methodological differences and no one is to blame for this. In this section, I have attempted to flesh out how the Solidity Argument should work through conceptual analysis, but work from Haggard and his colleagues can be invoked as subsidiary considerations in favour of the position here.[104]

[104] In another context, Cassam comes close to the Solidity Argument: "Since tactile awareness of another body requires awareness of one's own body, this implies that awareness of one's own body is a necessary condition for the acquisition of the concept of shape" (2002, p. 319). Again, we need to bear in mind that, at least officially, in that paper Cassam is not concerned with any thesis about *oneself*. A precursor of this line of thought can be found in Joske (1967): "our appreciation of the fact that we live in a world in which

There is a potential tension I need to dislodge before moving on. Against Martin et al., I have argued that some spatiality of touch is *not* derived from bodily awareness and other factors. But now I want to argue that spatial touch somehow implicates bodily (self-) awareness. Have I contradicted myself?[105] Not so, because the former thesis does *not* entail that touch as such does not depend on the body at all; of course one needs a body to enjoy the sense of touch. That claim is rather that *some spatiality* of touch can be independent of other bodily factors. Consider this analogy: some aspects of spatial vision are not derived from bodily awareness, but this does not mean that vision can exist without a body. Even computer vision requires a minimal machine body. This does not contradict the idea that the capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object, or so it seems to me. In simplified terms, the Martin-O'Shaughnessy view is that the spatiality of touch is derived from bodily awareness as specified above, while the Cheng-Haggard view is that *some* spatiality of touch is intrinsic, i.e., non-derivative, and the spatiality in question actually contributes to bodily awareness.

4.3 Agency, Causation, and Time

Agency In both the Permanence Argument and the Solidity Argument, the notion of *engagement* has played a crucial role in bringing the first person into view. This is where the current project comes close to *agency*. Recall how the notion of engagement was introduced: in section 3.2, it was contrasted with *detachment*, which was further cashed out by *theory*: for example, reading a map can be done from a theoretical point of view, but it can also be done from an engaged mode, e.g., when using it to navigate. Now, what we have so far from engagement is still *less* than full-fledged agency, at least on the face of it, since in both arguments there is no *action* involved. In the Permanence Argument, we rely on the idea that the creatures in question need to represent allocentricity in an engaged way, but it does not require those creatures to *actually and spontaneously* move: engagement implies *dispositions* to act, not actual actions. Similarly, in the Solidity Argument, the notion of engagement is operative in sight and touch, but not in *action*. This might be at odds with action-oriented views. For example, we have this is from Bill Brewer:

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material things are common is dependent upon awareness of our own body" (p. 18). Notice also that unlike the previous chapter, here I do not have the contrast between the first-pass and the refined version, because *engagement* has been built in from the beginning.

[105] This was raised by Rory Madden.

> Perceptual experience alone is powerless to place its subject with respect to its objects…It is rather that perceptual contents are self-locating in virtue of their contribution to the subject's capacity for basic purposive *action* in the world. (2002, p. 26, emphasis added)

And we have a slightly different idea from Lucy O'Brien:

> [Our] most basic awareness of ourselves is as performers of *actions*, mental and physical. (2007, p. 3, emphasis added)

Similar ideas can be found in Thomas Baldwin in his review of *Self and World*, with an emphasis on causation (2000). In this section, I seek to address the worries from this action-based alternative.[106]

Let's start with Brewer. To anticipate, I am going to argue that our pictures do seem to clash at some point, and that my view is no less plausible. It will take some time to identify the real tension, however, since Brewer argues for several slightly different theses. I shall discuss them in turn and explain in what ways the current view can cope with those different perspectives. First of all, Brewer says:

> Indeed I shall argue that there are serious difficulties with the suggestion that this might be the basic mechanism for perceptual self-location. (1992, p. 17)

And by "this" he refers to the idea of "continually perceiving ourselves along with the things around us" (ibid.). This thesis is compatible with the picture I am recommending, since I do not argue that object cognition is the *basic mechanism* for perceptual self-location or bodily self-acquaintance. The Object Cognition Argument has object cognition as the starting point, and then through two kinds of spatial representation it reaches the conclusion about bodily self-acquaintance. The entire argumentation is a

[106] Other proponents of this line of thought include Merleau-Ponty (1945/2013), Baldwin (1987), and Schellenberg (2007, 2016). For simplicity I do not engage with these works here, but Merleau-Ponty's view on different notions of the body will be discussed in section 5.4. Note that the main purpose of this section is to situate the current view within wider contexts so that what is at stake can become more explicit. Given this, I focus more on other philosophers' theses than their arguments for the theses.

project of uncovering *conceptual connections*, as opposed to identifying basic mechanisms. I agree that when it comes to basic *mechanisms*, at least in many cases, actions need to be involved. Note that in saying this, I am not downplaying the importance of identifying mechanisms. For example, in section 4.1 I spent much time detailing how the mechanism of the tactile field works and why it is relevant. In the present context, however, we are trying to see whether other perspectives would threaten the picture I am recommending, so it is worth pointing out that as far as the major argument is concerned, it is about *conceptual connections*. Given this, Brewer's claim about basic mechanisms would not be competing with the current picture. To say this is not to downplay the importance of identifying mechanisms at all. Now, the next thing Brewer holds is this:

> Furthermore, I shall argue that our existence as an element of the objective order cannot be *inferred* from the raw given in sense perception. (Ibid., p. 17, original emphasis)

I agree with this too. Since the Object Cognition Argument seeks to encompass pre-linguistic creatures, it is not particularly surprising that I will want to exclude the inferential route. To be sure, pre-linguistic creatures are indeed capable of some basic inferences about where to identify food, prey, and conspecifics, amongst other things, but at least as far as the Object Cognition Argument is concerned, the bodily self-acquaintance in question is *non-inferential*. Indeed, Brewer's project seems to be orthogonal to the current one. He writes:

> So our problem is to give an account of what it is in virtue of which perceptual experience carries such *egocentric spatial content*. (Ibid., emphasis added)

Brewer's account is that perception by itself is powerless in this regard; action has to come into the picture. I can agree to this, since my aim is not to give an account of what it is in virtue of which perceptual experience carries such *egocentric spatial content*. Recall that in the Object Cognition Argument, what plays the crucial role is *allocentric spatial representation*: the idea is that object permanence requires not only egocentricity (as my potential opponent would point out), but also allocentricity. Recall, moreover, that I do not wish to derive the point about allocentricity from egocentricity, unlike Evans (1982) and Schellenberg (2007). How to account for egocentricity is not part of the project. I

have argued that *engagement* needs to be incorporated to bring home objective self-acquaintance, otherwise object cognition is a purely exteroceptive matter. In saying this, I am neutral as to how to account for *egocentric* spatial representation. So it still looks like my current project makes no direct contact with Brewer's. This impression is wrong, though. He later states that "perception meets the demand on self-location only in virtue of its context of other psychological abilities" (ibid., p. 18). On this much I can agree as well: my picture is that perception needs to be *supplemented* by cognitive capacities such as object permanence and the constraint of solidity. Now, my positive proposal here seems to be at odds with Brewer's position, since he argues that "the subject's capacity for (attempted) purposive behavior" (ibid.) is the crucial supplement. As I read him, in that paper Brewer intends both the necessity and sufficiency claims. The sufficient claim goes something like this: perception by itself is powerless in determining self-location; perception and action together are sufficient for that. My view is that perception by itself is powerless, but object cognition, which crucially involves perception, is sufficient. It is true that my conclusion is slightly different from Brewer's self-location thesis (more on this towards the end of this chapter), but again, this section seeks to investigate potential conflicts or allies, so we are at a more abstract level. In this regard, then, Brewer's picture and mine *do* seem to be in tension, so I will need to deal with his overall position more seriously.

Brewer calls our attention to the "Simple Theory of Perception" idea (Strawson 1966; Evans 1982, 1985; Cassam 1989; Peacocke 1992), which is "a holistically evolving pattern of judgements and inferences, simultaneously solving for the identity of what is perceived, and the subject's location in the world, on the basis of his experience" (1992, p. 23). A given subject's grasp of this simple theory would mediate a reflective grasp of an objective space and an unreflective egocentric grasp of spatial relations.[107] Brewer's main critical point here is to "question its explanatory value," in particular "it cannot be the key to her [i.e., the subject's] grasp of this notion [i.e., egocentric spatial content]" (ibid., p. 25). Details aside, it is not hard to see that Brewer's criticism here, even if cogent, leaves the current picture untouched, since the Object Cognition Argument does not operate at the level of *judgements and inferences*. Instead, the whole point of this argument is to begin with a deflationary version of the objectivity condition and see how

[107] One potentially interesting comparison is between grasping the simple theory of perception and grasping linguistic concepts such as belief and objective thought in Davidson's framework (Ashford 1996, p. 205).

far we can go. The current project is indeed in line with the philosophers who advocate the Simple Theory of Perception idea, but it does not commit to this idea at all. Moving on, Brewer then puts forward something that looks very similar to the current picture:

> The idea would be to stress the role of perceptual experience in a lower form of spatial reasoning directed at building up and exploiting a cognitive map, which is not necessarily a fully conceptualized structure…[T]he intuitive notion of a map is a system of *allocentric* representations of a kind which raise precisely our opening question how such a thing succeeds in locating the subject in the perceived world without his being one of the explicitly represented items. (Ibid., p. 26)

Unsurprisingly, Brewer holds that "[in] the absence of some connection with *action*, this map suggestion fails to make an impression on self-location" (ibid., emphasis added). Why does he think that?

To approach this, bear in mind that in the picture I am recommending, there is *something like* agency, but weaker: engagement, which is motivational and practical. In considering Brewer's case for action, the main strategy here is to point out that *what he assigns to action can be accomplished by engagement*. He starts with an idea found in Schopenhauer (1818/1966): "the only adequate discrimination of the self as an element of the empirical world is anchored in one's *interaction* with the perceived environment" (ibid., emphasis added). Again, I can agree with this observation, but recall that in defending SAP4, I have urged that "to realise that one's own body is also a solid physical object that is constrained by solidity requires a sense of one's own body *interacting* with other objects, through either sight or touch." In the minimal situation I described, Schopenhauer's point about interaction with the world is accommodated. It is true that the kind of interaction specified is quite minimal, but there is no reason to suppose that it is not enough. Action is of course a more full-fledged kind of interaction, but since we are exploring *conceptual* connections between several notions, to assume *minimal* resources is always preferable. And recall that engagement does not imply actual actions. Brewer then adds that "[p]erceptual experience alone is powerless to place its subject with respect to its objects," and again this is compatible with the current picture, since perceptual experience alone is perhaps powerless in this regard, but *object cognition* should be powerful enough, given the above argumentation. More specifically, object cognition

requires *engaged* allocentric spatial representation and *engaged* primary quality representation, and therefore can bring the relevant kind of self-consciousness in place. I do not need to deny the importance of action, but should simply argue that something more minimal than action – object cognition – is enough for self-location and bodily self-acquaintance. He further explains that "[n]or does [perception's] role in a Simple Theory of Perception or a *non*-practical cognitive map ultimately help" (ibid., emphasis added). Indeed, but why omit the possibility of a *practical* cognitive map? Some might think that since it is *cognitive*, it cannot be practical. This would be reading too much into the term "cognitive" here. Just consider creatures such as honeybees that have the capacity to construct cognitive maps according to most theories in the relevant disciplines (e.g., Menzel et al. 2005). Clearly those cognitive maps, if they exist at all, have to be practical, since honeybees are unable to have theoretical constructs of those maps. In recognising the possibility of practical cognitive maps (engaged allocentricity) and how they can be helpful in bringing home self-location, we can resist Brewer's suggestion that we *have to* bring action into the picture (this is the same point I discussed in section 3.2). Brewer mentions that Evans' remarks (1982, 1985) on the behavioural contributions to the specification of egocentric space exemplify this same idea (see also Peacocke 1983, 1989, and Campbell 1994). But as Maximilian de Gaynesford (2002) points out, this begs the question in favour of the thesis that "[t]he egocentric spatial perception of corporeal objects requires that they perceive and exercise their agency in their environment" (p. 336). A more charitable reading of this line of thought is that they invoke actions and behaviours to specify the origin and axes of egocentric space *without* implying that actions and behaviours are constitutive in this regard, but at least in the case of Brewer, this implication is an explicit thesis.[108]

There is a way to read Brewer that the current tension would disappear. If what he means is only that *dispositions* of action are always involve, then in general there is no disagreement: recall that I define engagement in dispositional terms: engagement is a practical and motivational mode of presentation; when one has an engaged stance towards a spatial representation, that representation is ready to be used for navigation,

[108] Most researchers agree that honeybees have the capacity for constructing cognitive maps as allocentric representation. For disagreement, see Dyer (1998). As Burge points out, "there is empirical reason to think that allocentric spatial representations may not be uncommon, even among lower animals that lack propositional thought. They are certainly not unique to human representation. Allocentric spatial maps with origins on the sun, stars, or nest appear to occur in numerous types of animals" (2010, p. 206).

but the actual navigation need not happen. It really depends on how to further cash out his action-oriented view. I leave the readers to decide. Again, the point of this section is not to have comprehensive and fair treatments of other philosophers' views. It is rather to contrast some aspects of those views so that the view I am recommending can be further clarified.

My reply to Brewer might strike some readers as scattered, but this is because Brewer has made many slightly different points progressively, with the central idea that perception is not enough for self-location, and that what is needed in this regard is action (or related dispositions). Now, my scattered discussion above can be epitomised in one single idea: Brewer is right in pointing out that perception itself is powerless for the relevant purposes, but he seems to overlook the possibility that object cognition and *engaged* spatial representations can be of help. Given this, he turns to action and the will, which is quite sensible. We should agree that action and the will are *sufficient* for self-location and all that, but should also acknowledge that object cognition and engaged spatial representations implicated by it, though less than full-fledged agency, are also sufficient in this regard. And again, there might be ways to read him so that the resulting picture is indistinguishable to mine. I shall not pursue this further on this occasion.

Cassam briefly mentions action's contribution, and Brewer's discussions in a footnote (1997a, p. 53). The above is my attempt to discuss Brewer's criticisms more extensively, since it exemplifies an important alternative picture to mine. One might further worry that if the capacity for object cognition requires the capacity for action, then my point might collapse. In response, recall that in section 2.2 I discussed the looking-time method and how it establishes that infants can track objects being occluded before being motivated to search for the occluded objects under a certain age. There will be more on this in section 5.2 when discussing the Body Blindness Problem.

In the above discussion, we have focused on the *sufficiency* claim. If Brewer intends a constitutive account, the *necessity* claim is needed too, i.e., action is necessary for self-location. The difficulty of this necessity claim can be brought out by "the problem of patient perceivers" envisaged by de Gaynesford:

> If [Brewer's account] is correct, then the perceptual experience of anyone who is not exercising their agency on the perceived environment is not self-locating. This is frankly amazing. Odysseus was still picking himself out perceptually in relation to other objects he was experiencing when bound to the mast of his ship

> and sailing past the rock on which the sirens sang. Someone paralysed for a time has that capacity when being wheeled around on a hospital bed. And so, presumably, has someone paralysed from birth – i.e. someone who may always have been incapable of acting on the perceived environment, though they may be capable of engaging in mental actions. (2002, pp. 340-1)

This comment, though vividly bringing out a potential problem, might be somewhat unfair to Brewer. Brewer would probably agree that in the cases of Odysseus and the patient who is paralysed for a time could self-locate, since they have moved before or they have potential to move. What is crucial is the final case that involves someone paralysed from birth. As de Gaynesford acknowledges, this case is less clear than the previous two, and this is where Brewer might have room to retort. I will leave this to my readers, since what is crucial for the present purposes is the *sufficiency* claim. And for that, I do not seek to refute Brewer's sufficiency claim. Rather, I have attempted to point out that something more minimal than action – object cognition with *engagement* – is sufficient too.[109]

Now let's turn to O'Brien's view. My discussion of her ideas will be less than it actually deserves, mainly for this reason: her main concern is first-person *reference*, which is exactly what I have been trying to avoid taking an explicit view on, given that what primarily interests me in this project is pre- or non-linguistic cases. I do hope in future projects to think more about first-person reference and the doxastic/discursive level, but at this stage I do not wish to assume that my picture here based on object cognition can derive anything directly concerning that difficult topic. Without any commitment to topics concerning self-reference, it is hard to make contact with O'Brien's substantive project. That being said, it is still possible to initiate some minimal discussions about the outcomes of her project, since they concern bodily awareness and self-knowledge.[110]

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[109] If object cognition can be classified as mental action, which I suspect it can, then perhaps the current picture is in even less tension with Brewer's.

[110] This same reason explains why I have not engaged Campbell's work in a systematic way: his 1994 book and other writings are often about the doxastic level, as he summarises: "Are there norms, or only empirical regularities, governing the ways in which we *think*?…In *Past, Space and Self*, I set out a description of self-consciousness, the ability to *think of oneself as 'I,'* and how it engages with the framework of spatiotemporal thought" (1997, pp. 633-4, emphasis added). Even more clearly, he says: "self-consciousness requires explicit physics, and a creature which has only a primitive physics cannot be self-conscious" (ibid., p. 659). This does not show that Campbell and I have disagreement here; rather, it just

In Chapter 10 of her book, O'Brien seeks to "fill out one way of understanding [the claim that] bodily awareness is a *perceptual* faculty" (2007, p. 200, emphasis added). I am inclined to accept this idea, though in my own project there is no discussion on this matter. O'Brien also argues that "bodily awareness is not needed to ground individual acts of first-person reference and that account of self-reference grounded in bodily awareness would be inadequate" (ibid., p. 201). There is a potential conflict with the current project, but again, without making explicit my commitment to self-reference, there is no way to evaluate this potential conflict. O'Brien continues:

> [B]odily awareness does not compete with our awareness of our actions through agent's awareness as a source for self-knowledge…[W]e cannot count [bodily awareness] as a primary source for self-knowledge…Our knowledge of our actions…constitutes a primary source of self-knowledge. (Ibid., pp. 201-2)

The claim here that knowledge of one's own actions constitutes *one* primary source for self-knowledge is compatible with my claim that object cognition is *another* source, primary or not. One complication is that while O'Brien's main concern here is self-*knowledge*, mine is self-*consciousness* cashed out with a notion of acquaintance. This again shows that although the two projects are in the same or near enough ballparks, on closer inspection perhaps there is no real contact. But I believe it is still helpful to at least attempt to comment on the potential relevance, so that perhaps readers can be more judicious than myself in uncovering hidden conflicts or convergences. One potential development hinges on the relation between self-knowledge and self-consciousness: it seems to be natural to think that self-knowledge needs to have self-consciousness as its base. I will leave this to future occasions.

Causation and Time Now I shall turn to Thomas Baldwin's related alternative:

> My own view is that the conception of objective experience has an implicit *causal* content: the subject who thinks of the objects perceived as independent of her must be aware of her perceptual experience as caused by those objects. Indeed

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shows that we are talking about different kinds of self-consciousness. Also note that for him, an understanding of the first person is fundamental in the theory of meaning for human languages. If so, then, it is not too surprising that he and I are concerned with different kinds of self-consciousness.

> Cassam's appeal to spatial location is really only intelligible within a broader causal thought of this kind: the necessity for an intuitive awareness of a spatial relationship arises from awareness of the role of space in the underlying causal relationship. If this is right, then, since this argument legitimates a conception of oneself as a causally efficacious presence within the world it does vindicate the conception of oneself as a genuine physical presence in the world. (2000, pp. 712, emphasis added)[111]

Baldwin here emphasises the role of *causation*. The current project, like Cassam's, does lack explicit discussion of causation and agency. But at least in the present case, the causal contents are built into *engaged* allocentric representation and *engaged* solidity representation, and indeed, *engaged* object cognition more generally. These cognitions and representations are interactive in nature. And in interactions, *causation* is essentially involved.[112] As for agency, we have covered what needs to be said in the above discussions of Brewer and O'Brien. For the former, I have argued that Brewer is right in pointing out that perception by itself is powerless with regard to self-location, but it might be premature to turn to actions to the rescue; *object cognition*, which involves but goes beyond perception, can be powerful enough in bringing home the relevant conclusion. For the latter, I have argued that my own project and that of O'Brien do not make direct contact in any obvious way, so her points concerning agency are compatible with my ideas about object cognition and self-consciousness. The moral of this section so far is that although agency and causation are two important notions that do not play crucial roles in an explicit way in the picture I am recommending, it is unclear that this causes any real trouble for the picture.

Last but not least, causation and time are two closely connected notions, and, like causation, time does not play any explicit role in the current picture. Compare Campbell's view that a crucial necessary condition of self-consciousness is a detached understanding of one's *causal* relations with the environment with one's grasp of the idea of particular *past times* (1994). As a footnote above says, Campbell and I are aiming to understand different varieties of self-consciousness: his is more sophisticated and mine more primitive. Still, one might think, it is unintelligible for me to ignore time in this way. In

[111] Baldwin's fuller statement of his own view can be found in his 1995 paper.

[112] Also, as indicated towards the end of section 3.2, engagement is *causally* indexical, and Campbell and I can agree on this point, even if we disagree in many other respects.

reply, I would like to draw attention to the fact that for many animals, space is a more primitive system than time. It is true that keeping track of *both* is important for survival, but it is not always the case that *memory* plays a crucial role, as implicated in Campbell's picture. Some animals have been said to have only a very short-term memory capacity, though this remains a controversial empirical matter. But those creatures have good spatial capacities so that they can detect food and prey, and move towards or away from the targets. Given that what I am aiming to understand is a very primitive kind of self-consciousness, space naturally plays a more important role therein.[113] Object cognition requires spatial representations, and of course it requires *temporal* representations too: cognition and objects being cognised are temporal creatures. But it is unclear that memory would play any crucial role for this kind of primitive self-consciousness, though of course basic memory has to be involved. Sensory memories and working memories are essential to perception, so if perception is involved in object cognition, so are those basic varieties of memory.

4.4 Object Self-Acquaintance

The Solidity Argument seeks to establish the second half of P1 of the Object Cognition Argument. The interim conclusion here – the capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object – together with the conclusion of the Permanence Argument, forms a complete defence of P1 of the Object Cognition Argument. This can be seen clearly in the following way:

> The Spatiality Argument (Permanence + Solidity)
>
> SAC1*. The capacity for robust object permanence requires one to be able to be acquainted with oneself as located in an objective world.
>
> SAC2. The capacity for solidity representation requires one to be able to be acquainted with oneself as a physical object.
>
> AA. The capacity for object cognition is constituted by the capacity for robust object permanence and the capacity for solidity representation.

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[113] Campbell (1994) seems to deny this in Chs. 1 and 2 of the book if he can be interpreted as arguing that "the three notions – (i) objective space (ii) objective temporal order and (iii) persisting item with two dimensions of causal structure – are *deeply interdependent*" (Heal 1996, p. 17, emphasis added). But again, to fully evaluate Campbell's picture here would take us too far afield.

P1. For one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world.

"AA" stands for "Auxiliary Assumption," which is the claim that object cognition should be constituted by (robust) object permanence and solidity representation. This is definitely not *arbitrary stipulations*: it is not as if we arbitrarily decide this is what we should mean by object cognition. Rather, both object permanence and the constraint of solidity are well-studied phenomena in cognitive psychology, and it makes sense to invoke them to pin down what object cognition is because physical objects, or material bodies, are *solid* items within an *objective* space. The defence of AA in Chapter 2 has been minimal, since I hope to focus our attention on its role in completing the Spatiality Argument (Permanence + Solidity + AA yield P1). But there are potential ways of further developing AA. On the relation between object perception and allocentric spatial representation, one promising line is to make use of the notion of a *visual master map* as defined by Treisman's feature integration theory of attention (Treisman and Gelade 1980; Campbell 2007). The map is invoked to explain feature detection and binding. Note that in Treisman's original theory, the feature map *being conscious* is not a requirement. This fits the line of thought here. Campbell, on the other hand, does have that extra requirement in his picture (2007), and this is where his view is more contentious than mine, which can be clearly seen in the context of Bálint's syndrome (recall section 3.3).

Note also that what has been said above does *not* entail the self-location thesis, i.e., the view that "simply in virtue of its perspectival character, visual experience can include the location of the perceiver among its face value content" (Schwenkler 2014, p. 139; he is attacking this view from Cassam 1997a and Peacocke 2000). This is so because the self-location thesis demands that "*where* the subject is" is implied in one's visual experience, while what I have argued above is only that one's bodily self is aware of itself as *located* in an objective world. My thesis does not say anything about the location where the subject is; it only speaks of *located-ness*: that is, my thesis speaks about awareness of oneself as located; it says nothing about particular locations. Here I also diverge from Brewer, as discussed above. It is important to stress this, since in this way we can remain neutral between the self-location view proposed by Cassam and Peacocke, which seem to require a particular location, on the one hand, and the monadic content view proposed

by Campbell (2002), which does not entail anything concerning the first person's location, on the other.[114]

The Solidity Argument aims to repel the mere-point-of-view scenario, which is envisaged by Strawson in his response to Cassam. Chapter 2 defends P2 of the Object Cognition Argument, while Chapters 3 and 4 jointly support P1 of the Object Cognition Argument. Taken together, Chapters 2, 3, and 4 complete the first pass of the Object Cognition Argument formulated in section 2.4. As we shall see in Chapter 5, this first pass version does not quite work as it stands, due to three strong counterarguments. The next chapter will seek to answer these difficult criticisms and accordingly formulate a more satisfying version of the Object Cognition Argument.

[114] For more on self-location, see Schellenberg (2007). On the relation between object perception and intuitive physics, see Peacocke (1993), which has been touched on above. A potential alternative picture is the idea that perceptions of material objects are what they are due to their predominant distal causes and are *in fact* material objects, and it is causal invariance that explains this (Cummins 1989).

CHAPTER 5

Objections

5.1 Epistemological Objectivism

In the previous chapters, I have attempted to establish the claim that pre-linguistic creatures with the capacity for object cognition must be able to be acquainted with themselves as physical objects that are located in an objective world with the Object Cognition Argument. The main task of the current chapter is to identify three important objections to various aspects of this argument, and to revise the argument in response to these objections (5.2-5.4). Before doing so, however, it will be helpful to remind ourselves of what has been established so far, though in slightly different terms (5.1).

At the beginning of this project, I situated the main idea against the background of the Elusiveness Thesis. In that way, the main thesis might seem largely negative (*anti*-Elusiveness): it is true that the Elusiveness Thesis itself is a negative thesis, and I am providing a certain positive response to it. Still, the terms I was using have *not* made this entirely transparent. From Chapter 2, though, I have set out to defend that idea with positive arguments: the Object Cognition Argument as the major one, and the Permanence and the Solidity Argument as supporting the crucial premiss of the Object Cognition Argument. With all those materials at hand, I am now in a position to put forward the main idea in a more constructive way. For this purpose, I will situate this discussion within a different context, which will hopefully shed some more light on what is going on from another angle.

"The I is not an object" (1914-16, p. 80), Wittgenstein once remarked. It has been called "anti-objectivism" in the literature (Sluga 1996; cf. Nagel 1986).[115] Since it is

[115] Another name for this is the "exclusion thesis" (Cassam 1997a, p. 5).

about the nature of the self, I shall call it "metaphysical anti-objectivism." It has a counterpart thesis about self-*awareness* or *consciousness*, "epistemological anti-objectivism," which has it that the subject is not or cannot be *aware* of itself as an object.[116] Now, the main idea in this project can be seen as a version of epistemological objectivism, since it says that the creatures in question can be *acquainted* with themselves as physical *objects* in an objective world. It is epistemological, since acquaintance is an *epistemological* notion. Now, there is a potential source of confusion: there can be a metaphysical and an epistemological reading of the term "object," as we have seen in section 2.1: the metaphysical reading uses "object" to denote *things* (first-order quantifiable or not, depending on stipulations), while the epistemological reading uses "object" to denote *targets*. In section 2.1, I have said that following Cassam, the subject matter here is the metaphysical reading of object, i.e., things, and more specifically, physical objects. Now, maintaining that we are concerned with *physical objects*, there is a further issue concerning the metaphysical and the epistemological reading, namely: is the question about whether the self is a physical object, or is it about whether one is (able to be) aware of oneself as a physical object? Since our topic is the latter, it is *epistemological* objectivism, which is supposed to be established by the Object Cognition Argument:

> The Object Cognition Argument (first pass)
>
> P1. For one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world.
>
> P2. Some pre-linguistic creatures are capable of object cognition.
>
> ---
>
> C. Those pre-linguistic creatures must be able to be acquainted with themselves as physical objects that are located in an objective world.

Thus, I have attempted to show that pre-linguistic human infants and some other animals must be able to be acquainted with themselves as physical objects that are located in an objective world. To be in line with the label "epistemological objectivism," the kind of self-awareness here is labelled as "object self-awareness," as indicated in section 1.4. It is argued that pre-linguistic human infants and some other animals, such as cats and dogs, should have it, and this might strike one as too broad. Note that at least two kinds of cases are not covered by P2. First, there are simple creatures that are responsive only to "solicitations," to use the term from the phenomenological tradition

[116] This is another name for the "elusiveness thesis" (Cassam 1995, p. 312).

(Dreyfus 2002, 2007a, 2007b; Merleau-Ponty 1945),[117] and/or "affordances," in Gibson's sense (1979). The basic idea is that those creatures lack the relevant cognitive resources to have any cognition of *objects*; what they are sensitive and responsive to are *features* that indicate food, mates, and dangers. Some insects and other lower animals are said to be like this, though this is debatable (e.g., Burge 2010, and Campbell's case against it in the 2011 review). Secondly, as discussed in section 2.4, some have argued that creatures that rely heavily on echolocation (e.g., dolphins) might lack object permanence understanding (Mitchell and Hoban 2010). The reason is that "[e]cholocating animals can keep track of objects (e.g., fish) they cannot see or touch" (ibid., p. 263). This quotation might be misleading, though. What should be said is rather this: both echolocating animals and us keep track of objects they cannot see or touch, but in very different ways. For dolphins, say, things being occluded by sight can be tracked by sounds. For us, things being occluded by sight can be tracked by expectations, and this is where object permanence comes in. Now, one might think it incredible that dolphins lack the understanding of object permanence, given their advanced intelligence. These are empirical territories that go beyond the current investigation. Suffice it to emphasise two points: 1) since object cognition is only one sufficient condition for self-awareness in the relevant sense, dolphins might still have this kind of self-awareness through other routes; and 2) although "the creatures in question" here might encompass many, it is not the case that every kind of animal falls into this category.[118]

Now, as it stands, the Object Cognition Argument is actually problematic. This can be seen in light of the following three strong criticisms raised by Cassam himself to his own Objectivity Argument. I will venture to address each of them in turn, and refine the Object Cognition Argument accordingly in section 5.4.

5.2 The Engaged Stance

[117] "The *intentional arc* names the tight connection between the agent and the world, viz. that, as the agent acquires skills, those skills are 'stored,' not as representations in the mind, but as dispositions to respond to the solicitations of situations in the world. *Maximal grip* names the body's tendency to respond to these solicitations in such a way as to bring the current situation closer to the agent's sense of an optimal gestalt" (Dreyfus 2002, pp. 367-8). "Solicitation" basically means features that motivate the subject in question to act upon. Dreyfus does not define it explicitly; rather he invokes it to define other concepts, mostly from Merleau-Ponty.

[118] A related question, which I will postpone for future occasions, is about the relation between feature binding, object identification, and demonstrative reference (Campbell 2006; Clark 2006).

Body Blindness (Dispensability)[119]

"[E]ven someone who lacks the form of bodily awareness required for tactile perception can still see the surrounding world as a world of physical objects (cf. Aquila 1979, p. 277). Even if such a subject must still have a sense of her own location in the world, she need not be intuitively aware of herself as located in the world as a physical object among physical objects; it is enough that the subject is aware of herself as located only geometrically" (Cassam 1997a, pp. 54-5). The problem is this: for Cassam and me, the Objectivity Condition (to be specified in different ways) requires object self-awareness, to put things very crudely. The imaginary subject is supposed to meet the Objectivity Condition in question, but fail to have object self-awareness: it has vision, but no bodily awareness and no touch. Partial body/proprio- blind cases have been found in the actual world, whereby the subject has no touch or proprioception below the neck but is still able to see the world roughly in the way we do (Cole 1991). However, to consider such real cases is not especially useful in this context, since the relevant case would be total blindness. The idea is that perhaps this kind of real subject identified by Cole can be said to have object self-awareness given his or her capacity for bodily awareness and for touch above the neck.

More specifically, this is supposed to be a problem for Cassam's Objectivity Argument for this reason: a key premiss in that argument states that for one to be in a position to conceptualise one's perceptions as perceptions of objects in the weighty sense, one must be intuitively aware of oneself as a physical object. The Body Blindness scenario satisfies the antecedent but falsifies the consequent. Let's leave Cassam's response to one side and ask: is the Body Blindness scenario in conflict with P1 in the Object Cognition Argument?[120] P1 states that for one to be capable of object cognition, one must be able to be acquainted with oneself as a physical object that is located in an objective world. The Body Blindness case does seem to threaten it too, since the subject

[119] I rename these problems in ways that highlight the issues, and put Cassam's original labels in parentheses.

[120] Cassam takes this objection seriously and offers four responses: the Concept Acquisition Argument, the Acquired Ability argument, the Knowledge Argument, and the Content Argument (p. 80-89). As I read it, he prefers the modified Content Argument (p. 87), but I do not go for this route because I have been trying to avoid any commitment to representational content. My own response comes close to his Knowledge Argument, which is dismissed as irrelevant by him based on the distinction between knowledge and presentation (p. 84). The present *engagement* response does not rest on any claim about knowledge so has no such problem.

in question still has object cognition: it can perfectly see things in front of it, with the relevant higher cognitive capacities, by hypothesis. But given that if I am body blind, "I experience no bodily sensations, or at least none which I am able to identify in connection with some particular body I perceive, and I perceive no body at all which I would identify as my own" (Aquila 1979, p. 277), I should not be able to be acquainted with myself as a physical object that is located in an objective world. The Body Blindness scenario seems coherent. How should we answer this challenge?

Recall that in the Solidity Argument, we noted the need for *engaged* primary quality representations.[121] This is so because to move from representing primary qualities for other objects to representing those qualities for one's own body, passively seeing things around one obeying the constraint of solidity is not enough. One must have resources to realise that one's own body is subject to the constraint of solidity as well, and this requires *engaged* representations, either by touching other objects through one's body with bodily sensations, or by seeing the interactions between one's own body and other physical objects in an engaged way, e.g., whether one's own body or other objects change trajectories after bumping into one another; for those who are sceptical about the second disjunct, it suffices for my purposes to stay with the case of touch. None of these is satisfied in Aquila's Body Blindness case, though it is minimally satisfied by the partial body blindness identified by Cole. Therefore, although Body Blindness seems to be a genuine possibility, at least logically, since it does not satisfy one condition of object cognition, i.e., having *engaged* primary quality representation, it has no direct bearing on P1 in the Object Cognition Argument. This is so because the lack of bodily awareness deprives the subject of the resources of being practical and motivational with respect to its spatial representations.[122]

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[121] As defined in 3.2, engagement is a practical and embodied mode of presentation; it is stance towards the relation between one's body and the immediate environment. And again it is borrowed from the Dreyfus-McDowell debate. To add engagement to the antecedent does not trivialise the thesis, since this concept itself does not contain bodily self-awareness.

[122] For a similar thought experiment, see H. H. Price on "purely contemplative being" that is incapable of physical action (1932, p. 275). Also recall the "film subject" introduced by Campbell. According to him, "this subject…lacks the conception of himself as *a physical thing in interaction with his surroundings*" (1993, p. 92, emphasis added). This thought experiment does not threaten the current position here, since the film subject exemplifies the scepticism at the judgement level (1994, p. 119-21). It is worth noting that Anscombe's sensory deprivation tank thought experiment (1981), though similar to some extent, is not

It is worth considering a real-life example that might pose a similar threat. *Depersonalisation Disorder*, or DPD, denotes a specific feeling of being unreal. In the newest edition of the DSM (Diagnostic and Statistical Manual of Mental Disorders), it has been renamed as *Depersonalisation/Derealisation Disorder*, or DDD. In what follows, I use "depersonalisation" for this syndrome not only because it is handier, but also because depersonalisation and derealisation are closely connected but different phenomena: while depersonalisation it directed toward *oneself* or at least one's own body, derealisation is directed toward the world. Here I will only discuss depersonalisation.

The first reported case of depersonalisation was presented by an otolaryngologist M. Krishaber under the label "cerebro-cardial neuropathy" in 1873. The term "depersonalisation" was coined later in 1880 by the Swiss researcher Henri Amiel in response to his own experiences. Like all the other mental disorders or illnesses, the evaluation and diagnosis of depersonalisation have a long and convoluted history, and the exact causes have not been entirely disentangled. What is crucial for our current purpose is the feeling involved in the phenomenon: patients with this disorder might feel themselves to be "a floating mind in space with blunted, blurry thoughts" (Bradshaw 2016). To be sure, there are individual differences amongst patients, just as there are individual differences among so-called "healthy subjects." Still, this description seems to fit many such patients, and more importantly, even if it does not fit many, the very fact that *some* patients feel like this is sufficient to generate worries here. Here is why: presumably most, if not all, of these patients retain the capacity for object cognition. They still understand that objects are solid, shaped, and sized, and also that things can persist even when occluded. But they seem to lack the kind of bodily awareness in question: the very description of a "floating mind in space" signifies this feeling of *disembodiment*. If this is right, these patients are real-life counterexamples to our thesis here: they have the capacity for object cognition, while lacking awareness of oneself as a physical object. This is *exactly* how a conditional can be falsified.

The response, again, relies on the fact that the capacities in question are all in the *engaged* mode. For this case to a genuine counterexample, it has to fulfil the relevant antecedent. Those patients, however, have lost the capacity for *engaged* object cognition: they do understand that physical objects possess primary qualities, and that they can persist while unperceived. But given the unreal feeling, their capacity for object cognition

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really relevant since it concerns whether sensory inputs are necessary for self-awareness, while the current project concerns the opposite direction. The same applies to Avicenna's floating man scenario (1954).

becomes detached. Therefore, they do not constitute a counterexample; they merely sharpen the idea that the psychological capacities in question should all be *engaged* in this context; as along as the subjects in questions are with the *engaged stance* there should be no problem.[123]

5.3 Subjective Object and Objective Subject

Qua Subject (Incompatibility)

"[B]odily self-awareness cannot be awareness of oneself *qua* subject *and* awareness of oneself as an object among others in the world" (ibid., p. 68), since *qua* subject involves no tracking and therefore enjoys immunity to error through misidentification (IEM; Shoemaker 1968), while *qua* object does involve tracking and therefore does not enjoy IEM. In a sentence, the conditions for "*qua* subject" and the conditions for "*qua* object" are incompatible. Again, I follow Longuenesse in understanding "qua" as *mode of access* (2006, p. 297), as indicated in 1.1 I also follow Keller in understanding self-consciousness here as *impersonal* (1998, p. 2), as indicated in 2.4. Now, consider an analogy from the Necker Cube: there are two visual interpretations of the visual target, and viewers can pay attention in different ways so that different interpretations pop out at different times. However, it is of the essence of this kind of case that it is impossible to enjoy two visual interpretations at the same time: they are simply psychologically incompatible. Now, the *qua* subject problem says that subject and object are just like that: a single state cannot be both of them at the same time; one cannot have it both ways, since being an object and being a subject are mutually exclusive. There are two versions of this problem: the non-linguistic version involves a notion of *tracking*, while the linguistic version involves the putative *immunity to error through misidentification* (IEM) phenomenon. Given the nature of the current project, what I need to reply to is the non-linguistic *tracking* version.[124] The

[123] For a view that is similar in spirit but different in letters, see Wong (forthcoming) on the capacity for bodily awareness as a condition on the capacity for ordinary bodily action. Another possible reply is that these subjects are self-acquainted, but self-acquaintance does not require continuous awareness. There can be gaps or periods of body blindness. Colloquially, we sometimes say "I am acquainted with X, but I do not see her at this moment." I thank Rory Madden for this suggestion.

[124] It is important to note that IEM is a linguistic phenomenon that has no direct implications for the current project. Cassam (1997a) has to take IEM more seriously since his topic, like that of Campbell and O'Brien, is a more sophisticated version of self-awareness that involves linguistic and conceptual capacities. I do have views about IEM, but since it is not directly relevant to the present project, I shall set aside this

idea is that *qua* subject awareness in principle does not involve tracking, while *qua* object awareness does. These two conditions cannot be made compatible.

The Peculiarity of One's Own Body The reply, in a nutshell, is as follows: the body is indeed also a physical object, so it is true that it *might* involve tracking in principle. Still, one's own body is such a special case that it never involves *real* tracking in the relevant sense: one simply carries one's body to wherever one goes, effortlessly. There might be errors about the properties of this particular body, but by saying "this body" without pointing to or thinking about anything else, one's own body naturally fits the bill. What we really need here is an account of the peculiar relation between one and one's own body, as opposed to ignoring the peculiarity and simply treating one's own body as just another piece of a physical object. True, it is one physical object amongst other physical objects, but it is a peculiar one, that involves special connections between itself and a specific subject. Some might suggest that in developing skills we need to keep track of our bodies, but that involves a different sense of tracking, since it concerns only the details of bodily movements, not which body is the right one.[125]

In this context, an often discussed thought experiment is provided by David Armstrong: "We can conceive of being directly hooked-up, say by a transmission of waves in some medium, to the body of *another*. In such a case we might become aware e.g. of the movements of another's limbs, in much the same sort of way that we become aware of the motion of our limbs" (1984, p. 113). I want to grant this possibility, and acknowledge that there is a tension between this scenario and the sole-object view. But again, the no-tracking view does not commit to the sole-object view. The sole-object view might readily explain the peculiarity of one's own body, but it is not a necessary condition for it.

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complication. Léa Salje (forthcoming) calls this "inside-out binding problem." Also see Longuenesse (2006) and Alweiss (2018).

[125] For more on this peculiarity, see Martin (1997) on the sole-object awareness view. For a criticism, see Schwenkler (2013). The plausibility of this response does not rest on Martin's view; it only rests on the relative peculiarity of the connection between one and one's own body. Actually, Martin holds that his view is incompatible with the idea that "in [bodily] experience [one encounters] one's own body as one among others" (1993, p. 209). I remain neutral as to whether this alleged incompatibility is a genuine one. Note that this response is different from Cassam's, which has been subject to a rejoinder by Longuenesse (2006, pp. 297-8). Bill Brewer noted the possibility that tracking is more about linguistic reference, and as such perhaps does not raise the relevant worry in this context.

So the idea is that both the subject and the object involve no real tracking, if the object itself is one's own body. This opens up a new possibility to see that self-acquaintance can be about *subjective object* and *objective subject*: the self can be aware of itself as an object, but it is not *just* another object in the world. It is a *subjective* object, i.e., the object that sustains one's subjective states and episodes. It is also an *objective* subject, i.e., the subject that is situated in an objective world. There is no inherent incompatibility within this distinction between object and subject; they are not mutually exclusive.[126]

It might be helpful to briefly compare Cassam's response with mine. He draws "a distinction between two senses in which one might be aware of something as a physical object, a broad and a narrow sense":

> In the broad sense, to be aware of something as a physical object is simply to be aware of it as a persisting and bounded space-occupier, as shaped, located, and solid. In the narrow sense, to be aware of something as a physical object is to be aware of it as shaped, located, and solid *and* for one's awareness to involve the exercise of an ability to keep track of the object. (1997a, p. 71; my emphasis)

He then points out that while the incompatibility objection rests on the narrow sense, his Objectivity Argument should be understood as invoking the broad sense (p. 72). As I read it, my response is at root identical with his, as I explained why in the case of one's own body, there is no tracking in the relevant sense. I am not sure, though, whether this specific reason for adopting the broad sense would be accepted by Cassam.

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[126] "Subjective object" is tricky terminology. I intend it to mean Merleau-Ponty's "Subject-Object" (1945/2013), or something near enough. The phrase "subjective object" makes more sense to me, but unfortunately it has been taken to mean something else, i.e., sense-data or things like that (Cassam 1997a, pp. 96-107; Allison 1983, p. 261). According to the latter usage, sense-data are subjective objects because they are *mind-dependent* items. Longuenesse also points out how close this Cassam line of thought is to Merleau-Ponty's view (2006, p. 298). To channel Joel Smith, "in bodily awareness my body is given as lived – as embodied subjectivity – but it is also co-presented as a thing – as the one thing I constantly see" (2016, p. 159). By contrast, this line is at odds with Sartre's idea that one's body is either "a thing among other things, or it is that by which things are revealed to me. But it cannot be both at the same time" (1943/2003, p. 304). For more on Merleau-Ponty in this regard, with a comparison to Wittgenstein, see Romdenh-Romluc (2016). Mandik (2000) proposes a somewhat similar view.

Varieties of Bodies This brings us to different notions of the human body, for this reason: if self-acquaintance can be about *subjective object* and *objective subject*, this comes close to Merleau-Ponty's notion of subject-object. However, in both his and Husserl's works, and in the phenomenological tradition more broadly, the general consensus is that we are *never* aware of ourselves as physical objects. In order to incorporate their insights without committing to this latter point, we need to look into some of the details of their views.

For Husserl, the *Body* (Leib) is the "animated flesh of an animal or human being," i.e., a bodily self, while a *mere body* (Körper) is simply "inanimate physical matter" (1913/1998, p. xiv). The Body presents itself as "a bearer of sensations" (ibid., p. 168). A similar distinction emerges in Merleau-Ponty's work between the *phenomenal/lived* body and the *objective* body that is made of muscles, bones, and nerves (1945/2013). There is a debate over whether the distinction should be interpreted as between different entities or different perspectives of the same entity (Baldwin 1988). As in the case of Kant's transcendental idealism, the two-world/entity view is in general more difficult to defend, so for our purposes I will assume the less contentious two-perspective view. The idea, then, is that the human body can be viewed in at least two ways: from the phenomenal perspective, and from the objective perspective. And from the first-person point of view, the body presents to us only as *phenomenal*, not objective.[127]

For Merleau-Ponty, "[t]he body is not one more among external objects" (1945/2013, p. 92). One can only be aware of oneself as the phenomenal self in one's pre-reflective awareness. As Frederique de Vignemont explains,

> [T]he lived body is not an object that can be perceived from various perspectives, left aside or localized in objective space. More fundamentally, the lived body cannot be an object at all because it is what makes our awareness of objects possible…The objectified body could then no longer anchor the way we perceive the world…The lived body is understood in terms of its practical *engagement* with the world…[Merleau-Ponty] illustrates his view with a series of dissociations between the lived body and the objective body. For instance, the patient

[127] For a detailed comparison of Husserl and Merleau-Ponty in this regard, see Carman (1999).

> Schneider was unable to scratch his leg where he was stung. (2011, pp. 17-18, emphasis added)[128]

There are many points of agreement here. To begin with, I agree that the body is not perceived or something one is aware of from various perspectives. But I do insist that it can be localised in objective space, *from the inside*. This has been taken care of by the Permanence Argument, so I shall not repeat here. Secondly, I also agree about the point of practical *engagement*, but Merleau-Ponty, like Brewer, makes a further move to identify practical engagement with action. This has been covered in section 4.3. For cases like that of Schneider, it shows only that the phenomenal/lived body is not the same as the objective body. It does not show that one cannot be aware of oneself as an objective body.[129] Indeed, I have been pushing the point that Merleau-Ponty should be treated as an ally here. For him, one's body is "a being of two leaves, from one side a thing among things and otherwise what sees and touches them" (Merleau-Ponty 1968, p. 137). The human body has a "double belongingness to the order of the 'object' and to the order of the 'subject'" (ibid., p. 137). My notion of the subjective object and objective subject, then, is intended to capture, or at least echo, Merleau-Ponty's "Subject-Object," and Husserl's intriguing idea that the human body is "simultaneously a spatial externality and a subjective internality" (1913/1998).

This phenomenological approach in the current context has been called the "sensorimotor approach" (de Vignemont 2011); its followers include Hurley (1998), O'Regan and Noë (2001), Noë (2004), Siewert (2005), Thompson (2005), and perhaps Todes (2001). Its major rival is the "representational approach," which has it that "in

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[128] Another gloss is that the lived body is "the location of bodily sensation" (Smith 2016, p. 148, original emphasis; cf. Merleau-Ponty, "sensible sentient," 1968, p. 137). Compare Cassam's characterisation of the physical or material body as the "bearer of primary qualities" (2002, p. 331). The difficult question concerns, as we have seen, the relation between these two. Merleau-Ponty might be read as holding an anti-Cassam view when he writes: "I observe external objects with my body, I handle them, inspect them, and walk around them. But when it comes to my body, I never observe it itself. I would need a second body to be able to do so, which would itself be unobservable" (1945/2013, p. 93). I believe there is no real conflict here, since neither Cassam nor I hold that the bodily self is *observable* in the way that other objects are observable (e.g., admit of different perspectives, etc.).

[129] To insist otherwise is to commit the kind of fallacious sense-datum inference, i.e., from the case that one is aware of properties that are not possessed by the physical body, to the thesis that one is aware of something other than the physical body. I owe this point to Rory Madden.

order to account for bodily awareness one needs to appeal to mental representations of the body" (ibid., p. 12). Reasons for postulating these representations include: 1) explaining the disturbances of bodily awareness such as phantom limbs; 2) accounting for the spatial organisation of bodily awareness (O'Shaughnessy 1980, 1995); and 3) understanding the ability to move one's own body (de Vignemont 2010). It has proven to be extremely difficult to decide how many and what kinds of body representations we should postulate since the classic work by Head and Holmes (1911). For my purposes, I will not go into thorny questions about varieties of body schema and body image. The reason for discussing the representational approach is that while crucially different from the sensorimotor approach, the representational approach can raise a similar objection with its own terms: what one is aware of is one's body schema or body image, but not one's *objective* body.[130]

This formulation of the problem might have some initial plausibility. Consider the case of phantom limb, in which the patient feels pain in a limb that has been amputated. The representational explanation says that the patient represents the pain in his body schema/image, which still retains the amputated limb. This shows, so the thought goes, that one is aware of *only* one's own body schema/image. A similar line of thought can be found in Thomas Reid's work, for instance when he argues that bodily awareness, such as sensations, is the result of purely subjective states or episodes (1863/1983, Ch. 5; see Martin 1993 for discussion). If this is correct, then that kind of awareness can only be about something subjective, e.g., the represented body, as opposed to the objective or physical body.

This inference is too hasty. Assuming representationalism in this domain, it is sensible to hold the kind of explanation of phantom limb described above. However, the right thing to say is that one is aware of one's objective body *through* one's body schema/image. They function as *modes* of presentation of the body. This "through" does not imply indirectness, since it is not an evidential use, as argued in section 1.4. Why is this the right thing to say? Again, the Permanence Argument, if plausible, has shown that one can be aware of one's own body *objectively*. If the representational approach needs to

[130] Under the phenomenological tradition, there is a branch called "neurophenomenology," which "aimed at bridging the explanatory gap between first-person subjective experience and neurophysiological third-person data, through an embodied and enactive approach to the biology of consciousness" (Khachouf, Poletti, and Pagnoni, 2013). I do not discuss this branch here, since it only has an indirect bearing on my project.

fit in, the only sensible place is in the *modes* of presentation. In this section, I have been talking about the objective body, not the objective *bodily self*, but this Missing Self Problem will be dealt with below in section 5.4. In sum, the force behind the phenomenological or representational considerations should be fully acknowledged, but the right thing to say is this: what one is aware of is the physical body, but one is not aware of it simply as a *mere* body or just yet another physical object. Rather, as argued above, one's own body is aware of it as a *subjective* object, i.e., the object that sustains one's subjective states and episodes. The bodily self is aware of itself as a subjective object, and as an object in the *weighty sense*, i.e., something can persist without being perceived. Here I echo Martin's view of sensation: "Sensations are not…purely subjective events internal to the mind; they are experiences of one's body, itself a part of the objective world" (1993, p. 209), though we do have different views on the relation between the body and the subject.[131]

5.4 Bodily Self-Awareness

Missing Self (Inadequacy)

The above argumentation "only shows that the perception of solidity by touch is bound up with a sense of the solidity of one's *body*. Since this is not at all the same thing as awareness of the solidity of the *self*, the argument does not achieve what it sets out to achieve" (Cassam 1997a, p. 54). Recall that in section 4.2 when defending SAP4, I answered the prior objection that representing primary qualities does not even require bodily awareness. Now the objection is that even if I have successfully answered that question, there is a further question concerning the gap between the body and the self in awareness.

Imagination Recently, there is a specific and powerful development of the Missing Self problem. It is an argument based on imagination provided by Joel Smith (2006). In the end, I will argue that my view is not his critical target, but at least on the face of it, his

[131] Another possible way out is the following: since Russell introduced acquaintance as an extensional notion, awareness of oneself as a phenomenal body is just awareness of oneself as a physical body, provided that the phenomenal object is identical to the physical object. I do not endorse this way out here, mainly because tentatively I do not wish to endorse Russell's view that acquaintance is extensional, as explained in section 1.4.

target is exactly the kind of picture I am recommending. Here is how he formulates the target:

> [I]n bodily awareness, one is not simply aware of one's body as one's body, but one is aware of one's body *as oneself*. That is, when I attend to the object of bodily awareness I am presented not just with my body, but with my "bodily self." (2006, p. 49)

This looks exactly like the kind of view Cassam and I are defending, so it is crucial for us to take the argument in Smith (2006) very seriously. Let's call the target the "bodily-self thesis." Smith's ingenious argument is based on two claims about *imagination*, which he defends in turn. In order to retain our focus, here I will assume that those two claims are cogent. They are as follows:

1) "[T]o imagine sensorily a ψ is to imagine experiencing a ψ" (Martin 2002, p. 404; the "dependency thesis").
2) "When we engage in imagining being someone else, we do not imagine anything about ourselves" (Smith 2006, p. 56).

With these two claims about imagination, Smith launches his argument as follows:

> The argument…begins with the observation that I can imagine being Napoleon feeling a bodily sensation such as a pain in the left foot. According to [1], when I imagine a pain I imagine experiencing a pain. It follows from this that the content of perceptual awareness will be "mirrored" by the content of sensory imagination…Now, [given 2], then imagining being Napoleon having a pain in the left foot will not contain *me* as an object. The only person in the content of this imagining is Napoleon…Thus, when I simply imagine a pain, but without specifying *whose* pain, the imagined experience is not first personal. (2006, p. 57, emphasis added)

This argument seems to be valid, and given that I want to grant the two premisses concerning imagination, it seems to be a sound argument.[132] How can I rescue the bodily-self thesis? Here is how it goes: For Smith, the bodily-self thesis requires getting the *who* right. This is why *imagining being other people* is relevant. Now, at least for the current picture, getting *who* is the subject right is not part of the view. Suppose that I am engaging the kind of imagination Smith has in mind. In that scenario, according to his view, Tony Cheng is not part of the imagination. Napoleon is. Smith believes that this is sufficient for rejecting the bodily-self thesis, but at least for my version, this hardly places any pressure on the view in question. All I would like to argue is that in having a certain kind of bodily awareness, this awareness is not only about the body, but also about the mind that is associated with that body. Whether the mind is Tony or Napoleon is out of the question here. Perhaps I get the subject wrong. Perhaps, as Smith has it, in the imagination the subject is Napoleon, not Tony. Still, all I want to hold is that bodily awareness is not only about the body, but the *minded* body. If so, even if Smith's argument is sound, as I suspect it is, the picture I am recommending is not one of his targets, since for the current picture to work we do not need to be right about *who* the subject is.[133]

Another way to see the current point is to consider an analogous point concerning the first-person pronoun. As Campbell convincingly argues, the reference of "I" is *token reflexive* in Reichenbach's sense (1956): any token of "I" refers to whoever produces that expression. When I produce a sentence containing "I", it refers to *me*. Whether I correctly identify myself as Tony Cheng or misidentify myself as Napoleon is irrelevant. Likewise, in the case of bodily awareness, the subject is aware of him- or herself as *the person who is experiencing* the bodily experience in question. Whether the subject can correctly identify who he or she is – Napoleon or not – is irrelevant. Although I have emphasised that the current target of analysis is primitive self-awareness,

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[132] I do have reservation concerning premiss 2, but to keep the argumentative flow I do not spell it out here, and will come back to this after I introduce my response.

[133] Pierre Keller makes a similar point in his discussion of transcendental apperception (1998, p. 23). In following him, I have tried to be consistent in my responses to the Missing Self and the *Qua* Subject challenges. In chapter 5 of *Self and World*, Cassam critically discusses Parfit's *impersonal* description thesis: "we could give a *complete* description of reality without claiming that persons exist" (1987, p. 212). This *metaphysical* reductionism has no place in this essay. By "impersonal," I mean the *epistemological* thesis that the identity of the person is irrelevant for certain purposes. Therefore I believe my response to Smith is available to Cassam as well.

not the reflective one exemplified by the use of the first-person pronoun, at this point they do seem to converge. The reason might be that what is unique about the first person, primitive or not, is the *token reflexivity*. The identity of the subject, though important, is always an additional question. When I am tortured and want to escape from the situation, what is crucial is that *I* am being tortured and *I* want to escape. Whether I am Tony Cheng or Napoleon is a further, and less important, question.[134] One outcome of my view is that one then has no absolute authority about what one's is imagining. I do not regard this as a cost, as I follow the general trend in contemporary epistemology that all sorts of first-person authority are less robust than philosophers have thought in the past. But to be sure I do not defend this broad idea in this essay.

This completes my response to the second problem. Before moving on, I shall stress that even assuming the current challenge – the Missing Self problem – can be met, its strength should be properly recognised. In the psychological and neuroscientific literatures, this potential problem or issue is not acknowledged properly; people freely talk about bodily *self*-consciousness or bodily *self*-representation without realising that this is something in need of defence (e.g., Gallace and Spence 2014; Serino et al. 2013). The contribution of philosophy in this area is to emphasise the need of answering the Missing Self challenge. One reason why the science community in general is unaware of this issue is that they largely assume something like the mind-body identity theory. But as Cassam (1997a) points out, even assuming that theory, the current issue does not go away automatically, since bodily self-awareness is an epistemological notion, while the identity theory, even if true, is metaphysical.[135]

This is the end of my defensive move against the Missing Self charge, at least as Smith conceives of it. Below I move to the positive case for thinking that the self is not missing in bodily awareness.

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[134] It is interesting to compare Bernard Williams' thought experiments concerning torturing and personal identity (1970; see also Williams 2006). In order to stay focused, I do not go into them here; what should be highlighted is just this: no matter who I am, who I will be, what I will remember, or what I can imagine, as long as what is going to be tortured is *me*, then I have every reason to fear. In his later writings, Smith is more sympathetic to the view I am proposing. For example, he writes: "if bodily sensations are given as located properties of one's lived body and, further, bodily sensations are presented as properties of oneself, then bodily awareness is an awareness of one's body *as oneself*" (Smith 2016, p. 157).

[135] In responding like this, I might have in effect rejected Smith's premiss 2. I am not sure about this and will leave the discussion as it is. Either way, the actual content of my response is stated in the main text above. Whether that amounts to denying Smith's premiss 2 is a less interesting interpretative question.

Material Unity and Minded Body Besides Cassam and myself, many have argued that bodily awareness can be bodily *self*-awareness, including Ayers (1991), Brewer (1995), and Bermúdez (1998). It is right to recognise that it takes arguments to close the gap. Before going into those details, I would like to point out that there is a similar issue that is often discussed under the same heading, but it is actually not our main concern: that is, the debate as to whether bodily awareness is a form of *introspection*. This was also made popular by Shoemaker's writings, and we can find both the positive and the negative answers to this question. For example, in offering the positive answer, de Gaynesford states that "bodily awareness can count as *introspective*" (2002, p. 348, emphasis added). In providing the negative answer, Martin states that there is "a significant disanalogy between bodily awareness and *introspection*" (1995, p. 282, emphasis added). To be sure, this slightly different issue pursued by de Gaynesford and Martin is perfectly legitimate and interesting, but we need to be clear that it is *not* the same as the current question, as explained in the Cassam quotation above. Basically, the question is, literally, "can bodily awareness be a form of bodily *self*-awareness?" In what follows, I will argue for the positive answer, but what I am going to discuss has nothing to do with *introspection*, as long as we understand introspection as implying deliberation. Now, it is possible that this discrepancy is terminological: perhaps what these authors mean by "introspection" is something like "*qua* subject," while I use it to mean something else, i.e., deliberately turning attention inwards to one's own states and episodes. If I follow the possibly more liberal usage, perhaps these works can be seen as more relevant. I will leave this possibility open for now.

I will also set aside one kind of argument – the kind that focuses on the metaphysical question concerning the mind-body relation first, and then extends the discussion to self-consciousness. The reason is that for this kind of argument to work, the metaphysical part needs to be plausible first, but it is beyond the scope of the current investigation to cover this fully. One good example is from Brewer, who argues that "the psychological subject *is* a spatially extended object" (1995, p. 303, emphasis added). Not only is this beyond the current scope of inquiry, but also both Cassam and I would like to leave open the possibility that even assuming Cartesian dualism, a certain version of epistemological objectivism can still be established. Therefore, in what follows, I do not

discuss the Brewer-style metaphysical argument, even though it is worth discussing in its own right.[136]

The positive argument for thinking that the self is not missing I would like to consider is from Michael Ayers' discussion of Locke, specifically Ayers' notion of "material unity." According to his usage, materially unitary objects are "concretions."[137] To intuitively grasp what this means, consider his example of "a bullet embedded in the flesh of an animal." The bullet "is not materially unified with it, because material unity is not the same as mere *local conjunction*" (Cassam 1995, p. 324, emphasis added). Or consider when water freezes solid:

> If there had been a stone in the water, then, however firmly it is now wedged in the ice, it is still proper to think of it as a distinct individual rather than as part of a materially unitary whole. Its parts are causally and historically related as they are not related to the parts of the lump of ice. It is in broadly the same way that a bullet or, for that matter, a plastic hip-joint remains distinct from the animal in which it is embedded, a tree from the rock enclosed in its roots. (Ayers 1991, p. 232)

The notion of material unity might be intuitive, but even if we grant this, it does not by itself produce any argument for the desired conclusion. The solid ice, for example, has material unity, but has no self-acquaintance. The proposal is not that material unity itself solves the problem of the Missing Self, but that it is the first step.

How should we move forward from this first step? To bridge the gap between the body and the bodily self, one needs to hold that the body is the *minded* body. My body is minded in the sense that it is permeated with my *mentality*. This is not to say that I am always monitoring my behaviours and actions. Rather, it just means that the body is the possible locus of my sensations, and when I am able to act, its physiological structure sustains and instantiates my actions. This "minded body" claim is neutral in respect of various views concerning the mind-body problem. Even if Cartesian dualism were true, it

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[136] Another reason why I do not dwell on this style of argument is that it seems to require the idea that acquaintance is extensional, which again I do not wish to rely on in this context. Also, but setting aside the Brewer-style metaphysical argument, I do not deny that in that paper he also makes the epistemological claim that the body is *given as* the subject, which is very congenial to my view.

[137] Also see Ayers (1974) and Wiggins (1980).

would be compatible with the idea that my body is permeated with my mentality. Whatever view one holds about the mind-body problem, one needs to explain how that metaphysical view can make sense of the minded body claim. But this claim's plausibility is independent of any specific view about the mind-body problem. If my body is minded in this way, then when I am acquainted with my own body in the right ways, I am acquainted with my *bodily self*.[138]

What are the "right ways" here? According the current proposal, *one* right way is through object cognition. With engaged object cognition, one has the relevant two kinds of spatial representations, and then has the relevant kind of self-acquaintance. This route, though starting from exteroceptive capacities, i.e., object cognition and the relevant perceptual capacities, still produces a kind of self-awareness *from the inside*, though not through *introspection*. It is often assumed that introspection is the only capacity that can bring self-awareness from the inside, but this is an unwarranted assumption. "From the inside" only means "not from the outside," i.e., observation. Object cognition, though exteroceptive, brings the relevant kind of self-awareness through *engaged* spatial representations, and this engagement guarantees the from-the-inside-ness. This is, then, how we bridge the putative gap between the body and the bodily self.

To invoke material unity and to remain neutral as to the mind-body problem will help us avoid a common potential problem in this area. Some might think it would be easier to defend epistemological objectivism with the mind-brain/body identity claim. The idea is that if the mind and the body are identical, then the putative gap between the body and the bodily self would be non-existent. This invites an immediate objection: if

[138] The ideas about mindedness and permeation are from McDowell (2007). For more on his debate with Dreyfus on the relevant issues, see Cheng (2015a). Lucy O'Brien expressed worries about this neutrality: if the body and the self are in fact identical, how can self-acquaintance fail to imply the negation of Cartesian dualism? The preliminary reply is that to believe in the bodily self does not commit one to the identity theory or anything similar. This is because there are different ways to spell out the notion of "bodily" here; a Cartesian dualist, for example, can insist that the self is distinct from the body, but it is *bodily* in the sense that the self is *not* like a pilot in a ship. Cassam (1997a) refers to this situation with the label "the problem of misconception" (p. 127-36). Cassam uses the notion of *knowledge* here, which is factive and therefore makes it harder to remain neutral about the metaphysical problem. Rory Madden pointed out that if the nature of the Cartesian soul and the nature of physical objects are too different, there might be a problem here. I have not come up with a stable view here, but am ready to concede that perhaps allowing Cartesian dualism is not the right move. But in any case, my view should be compatible with a wide range of views on personal identity, such as the body view (Williams 1970), the neo-Lockean view (Shoemaker 1970), the animal view (Snowdon 1991), and the integrating apparatus view (Peacocke 2014).

one's mind is identical to one's body, then if one lost an arm, say, one's mind would shrink significantly. But this does not sound right. In avoiding the mind-body identity claim, the material unity idea can accommodate the right verdict that when one has lost a body part, one's mind does not thereby shrink. The idea is only that the body as a whole enjoys material unity, and plus the mindedness claim, the gap between the body and the bodily self disappears. This weaker idea – that is, weaker than the mind-body identity claim – does not commit to the view that when one loses body parts, one's mind thereby shrinks. To be sure, I do not find this potential objection as ultimately convincing in repelling the stronger view, but to avoid this from the outset is a virtue of the weaker view I am recommending.

Here is another consideration that is in favour of my position. Since our subjects are pre-linguistic creatures, whatever the thesis is, it cannot be that they are *explicitly or deliberately thinking* about themselves or their bodies. Instead, whatever is involved in their self-acquaintance, it has to be at a very primitive level. Now, the reply is that at that primitive level, the distinction between the self and the animal body simply does not exist within their self-awareness. As theorists, of course we are able to draw that distinction. But for pre-linguistic beings, what they get from object cognition is some primitive experiences. Their *bodily self-awareness*, arguably, simply does not allow for the abstract distinction between the body and the self. This unsophistication on their part actually helps avoid the Missing Self problem. This is different from Cassam's response, since he is focusing on human subjects who are already able to conceive their own experiences as of external, objective objects. However, the spirit of the responses is similar: he points out that for this present problem to be genuinely threatening, we need to perform an *abstraction* to separate a "mere" body and a "human" body who is alive (Cassam 1997a, p. 57, and 2002, p. 332; see also McDowell 1982. Sometimes this is discussed in the parallel case of the other mind problem). But that abstraction is a theoretical construct, for whatever purposes. From the first-person point of view, at the experiential level, there is simply no such distinction.

Now, one might think that if a given creature cannot represent the difference between the body and the self, how could it be said to be able to represent the self? My tentative response is that as long as the creature in question can represent its own body, in effect it already can represent its bodily *self*, given that they represent their bodies as *minded*. On the other hand, there is solid experimental evidence suggesting that infants are sensitive to mental properties of one's own and others (e.g., Goupil, Romand-

Monnier, and Kouider 2016): they ask for help when they know they don't know. In order to do this, they need to represent their own states of mind, as well as others' possible states of mind. From their point of view, the abstract division between the body and the self is non-existent.[139]

The Refined Object Cognition Argument Where do these discussions lead us? Let me state the refined major argument first and then explain the differences:

> The Object Cognition Argument (refined)
>
> P1. For one to be capable of **engaged** object cognition, one must be able to be acquainted with one's **bodily** self ***qua* subject** as a physical object that is located in an objective world.
>
> P2. Some pre-linguistic creatures are capable of **engaged** object cognition.
>
> ---
>
> C. Those pre-linguistic creatures must be able to be acquainted with their **bodily** selves ***qua* subjects** as physical objects that are located in an objective world.

There are three refinements here, in accordance with the three potential problems. First, in response to the Body Blind Problem, the needs for *engaged* representations are made explicit in both P1 and P2. Secondly, in response to the *Qua* Subject Problem, the "*qua* subject" qualification is inserted explicitly in P1 and C. Finally, in response to the Missing Self Problem, "oneself" is replaced by "one's bodily self." These are not wordplay or *ad hoc*: it is not as if I make these refinements simply to eschew the problems. Rather, I have considered those potential problems, provided answers to them, and refined the major argument accordingly. The potential problems help sharpen the premises and conclusion of the Object Cognition Argument.

To conclude, the Elusiveness Thesis has a strong tradition within philosophy. To resist it, one can either find faults in the arguments supporting the Elusiveness Thesis, or one can construct positive cases for anti-Elusiveness. On this occasion I have pursued the second route by developing the Object Cognition Argument, which concludes that pre-linguistic creatures with engaged object cognition must be able to be acquainted with their bodily selves *qua* subjects as physical objects that are located in an objective world. A high-flown way of stating the conclusion is this: in building up a basic scheme about

[139] Rory Madden expressed this worry to me.

the scaffolding and furniture of the world, one also builds up a primitive form of self-awareness.[140]

Note that even though the present investigation is independent of any actual commitment of physiology, it is consistent with some key findings in neuroscience. Here are two examples. First, the conclusion of the Object Cognition Argument and a closely related phenomenon of body ownership, i.e., "the experience of owning a body [or some body parts]" (Serino et al. 2013), are nevertheless distinct at both the conceptual and the neurological level (see the Serino paper for review). Second, the Object Cognition Argument is compatible with the plain and plausible idea that interoceptive information is crucial or even sufficient for the kind of self-awareness stated in the conclusion (Garfinkel, Nagai, Seth, and Critchley 2013; de Vignemont 2018). The Argument seeks to show that a certain kind of *exteroceptive* capacity – object cognition – is sufficient for one kind of capacity of self-awareness. This is compatible with the view that some *interoceptive* capacities are also sufficient.

In this chapter, I first stated the position in positive terms, i.e., epistemological objectivism. I then dealt with three potential problems with regard to the first pass version of the Objectivity Argument. After responding to those problems, I then stated the refined version of the Object Cognition argument. This completes my defence of epistemological objectivism, and my response to the Elusiveness Thesis.

[140] This way of putting things is inspired by Robert Hanna's description of Campbell's 1994 project (1996, p. 104).

CONCLUSION

Objectuality

I hope by now to have convinced some readers that the major argumentative line is plausible. I also hope to have shown that the current project of vindicating epistemological objectivism with the Naturalised Strawsonian approach is not as parochial as it might seem. In his review of *Self and World*, Peter Sullivan says:

> It is true that several of those Cassam engages with figure more prominently in discussions in Oxford and London than elsewhere, but to count the book *parochial* on that basis would be both mistaken and unfair. Cassam has superbly demonstrated that work growing from a concentrated milieu can have the widest philosophical significance. (1998, p. 248, my emphasis)

I certainly agree with Sullivan's positive appraisal of Cassam's work, and I have aimed to emulate what Cassam has been doing in the past few decades. However, my sociological observation is that even with Cassam's effort, such works are still regarded as parochial and idiosyncratic. Nowadays even those in Oxford and London have lost their passion for it, or so it seems to me. It is true that the value and quality of philosophy should not be evaluated on the basis of its popularity. Still, philosophy is a social art and it needs to have discussions in and input from all manner of directions. Along the way, I have been trying to make this project less parochial and idiosyncratic by situating it within multiple contexts, including the analytic, the empirical, the historical, and the phenomenological.

In *Self and World*, Cassam calls his conception of self-consciousness a "materialist conception of self-consciousness" (1997, p. 2). To give my own conception a perhaps

even loftier label, I shall call it "objectual apperception."[141] The term "objectual" is unusual in English; I use it here to encompass both objectivity and objecthood. I follow the rationalist tradition in using "apperception" to denote self-consciousness: it was originated in Descartes's last treatise, *Passions of the Soul*, as "apercevoir." Leibniz soon precisified the term in *Principles of Nature and Grace based on Reason*. As we all know, in *Critique of Pure Reason* Kant (in)famously makes things more complicated. Of course, to label something does not add to its plausibility. Still, it makes it easier to remember ideas and refer back to them. What's more, it can give the idea more historical contexts so that we do not lost sight of them. In the present case, the close relation between perception (awareness of the environment) and apperception (awareness of one's self) can be in view with the help with this label. In these brief remarks in conclusion, I wish only to highlight the broad relevance of the current project, and to give the conception a useful label. I do not venture to list future directions of research, as there are so many of them along the way, and I look forward to pursuing many of them in my career. I hope that readers will agree that this is a rich territory worthy of further investigation, even if they do not agree with my arguments and/or conclusion.

I would like to end with a suggestive remark: the major conclusion in this work – namely that the capacity for object cognition requires the capacity for objectual self-awareness – might strike some as excessive. The basic intuition is that pre-linguistic humans and non-linguistic animals would not have any interesting or sophisticated self-awareness. Here is not the place to rehearse the entire Object Cognition Argument. One way of distilling the moral of the line taken here is that object cognition is *not* as primitive as one might expect: it requires at least two kinds of substantive spatial representation and thereby requires at least one kind of significant self-awareness. Equally, I should also state that some kinds of self-awareness are not as demanding as one might expect: at least objectual self-awareness as defined here is required by the engaged mode of object cognition.[142] This is further supported by recent studies of the connections between varieties of self-awareness and social skills (e.g., Zhao 2018): "different forms of self-awareness are needed for conspecific collaboration in different types of animal societies" (p. 187). Many animals are social animals, and arguably some social skills are facilitated by varieties of self-awareness. Although this essay does not detail any aspect of social

[141] I have only seen a similar term in Johannes Daubert's work, where he talks of "objectual apperception-act" (1902/2002).

[142] This way of putting things is inspired by a conversation with Josh May.

cognition, I would like to end with a reminder of this further dimension of the current project, i.e., the potential explanations of animals' social skills might need to incorporate their self-awareness of various kinds, and object cognition might play a crucial role in this regard. Last but not least, the kind of object cognition is *engaged* and *practical*. On this note, it seems appropriate to quote Kant here:

> Everything gravitates ultimately toward the *practical*; and in this tendency of everything theoretical and everything speculative in respect to its use, consists the practical value of our cognition. This value, however, is an *unconditioned* value only if the *end* to which the practical use of cognition is directed is an *unconditioned* end. The only unconditioned and final end (ultimate end) to which all practical use of our cognition must lastly refer is *morality*, which for that reason we also call the *plainly* or *absolutely practical*. (1770/1988, pp. 94–5).[143]

I hope readers would agree that this is an appropriate quote at this point, for social skills mark the first steps toward morality.

[143] Alec Hinshelwood drew my attention to this quote in a conversation.

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