
THE STRUCTURING BODY

A Critical Study in the Description & Explanation of Perceptual Experience

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Abstract

The aims of the dissertation are to find the right description of the structure of perceptual experience and to explore the ways in which the structure of the body might serve to explain it.

In the first two parts, I articulate and defend the claim that perceptual experience seems direct and the claim that its objects seem real. I defend these claims as integral parts of a coherent metaphysically neutral conception of perceptual experience. Sense-datum theorists, certain influential perceptual psychologists, and early modern philosophers (most notably Berkeley) all disputed the claim that perceptual experience seems direct. In Part I, I argue that the grounds on which they did so were poor. The aim is then, in Part II, to give a proper appreciation of the distinctive intentionality of perceptual experience whilst remaining metaphysically neutral. I do so by drawing on the early work of Edmund Husserl, providing a characterisation of the perceptual experience of objects as real, *qua* mind-independent particulars.

In Part III, I explore two possible explanations of the structure characterising the intentionality of perceptual experience, both of which accord a distinctive explanatory role to the body. On one account, perceptual experience is structured by an implicit pre-reflective consciousness of oneself as a body engaged in perceptual activity. An alternative account makes no appeal to the metaphysically laden concept of a bodily self. It seeks to explain the structure of perceptual experience by appeal to anticipation of the structural constraints of the body. I develop this alternative by highlighting the conceptual and empirical basis for the idea that a first-order structural affordance relation holds between a bodily agent and certain properties of its body. I then close with a discussion of the shared background assumptions that ought to inform disputes over whether the body itself (in addition to its representation) ought to serve as an *explanans* in such an account.

Key words: Sense-datum theory, Berkeley's theory of vision, phenomenology of transparency, phenomenology of reality, phenomenology of particularity, phenomenology of mind-independence, bodily selfhood, pre-reflective bodily self-consciousness, structural affordances, bodily action, embodied cognition, cognitive scientific explanation.

Notes on the text

- Where possible, I have followed the citation guidelines set out by the 6th edition of the *Publication manual of the American Psychological Association* (2010). However, original publication dates are cited alongside contemporary editions whenever there is significant disparity in pagination, format, content or date of publication (≥ 20 years). In cases where I have had the opportunity to access the original (or a facsimile), only that is cited.
- All quotations from texts of originally non-Anglophone publication are from the standard English translations. To facilitate cross referencing, in some cases the original publication is cited alongside the first instance of the translation cited in the main body of the text. In all these latter cases, for all subsequent citations of the translation, pagination of the original will also be cited between square brackets. Quotations over three lines in the body of the text are at 10pt; quotations over three lines in footnotes are italicised.
- Acronyms will be used for key phrases that recur several times during a chapter. Each will be introduced in parentheses at its first occurrence in any chapter in which such abbreviation is required.
- The language of the text is British English. Hence, I have largely followed British conventions of spelling and grammar in formal writing. However, quotations will retain original orthography.

General introduction

Say you approached someone with an apple. You give it to them to feel, look at in good light, maybe have a bite, *etc.* Then you ask them whether or not it seems like they are perceiving the apple directly, and whether or not it seems real.

What answers might one expect?

Which would be correct?

How should we explain a given answer?

Much of the literature constituting contemporary philosophy of perception presumes that certain answers are to be expected of the confronted person. She will say that it seems like she sees and touches and tastes the apple directly, and that the apple she experiences is real. This conception of perceptual experience, the *direct realist* conception, is presumed correct by many today. But it has not (at least, not obviously) always been endorsed in the past. Moreover, it has yet to be given a sustained articulation, let alone explained in any satisfactory manner. My aim in this dissertation is to begin to fill this lacuna. The result is a description and explanation of perceptual experience as structured by the constraints of the body. The project might seem puzzling to some readers, and the result might well seem counter-intuitive to some others. To begin to clarify, here is a part by part summary of what is to come (a chapter by chapter summary follows at the end of the general introduction).

In **Part I**, I discuss the claim that perceptual experience seems direct. A number of influential figures in the recent history of ideas have claimed that the correct description of the direct object of *perceptual experience* forces us to recognise that *perception* is *indirect*. Although this claim is framed variously as a metaphysical, psychophysical and/or an epistemological thesis, it is interwoven with a supporting account of perceptual experience as somehow impoverished with respect to the objects of perception. My hope is to tease apart claims that pertain to perceptual experience from claims that pertain to the metaphysics, psychophysics and/or epistemology of perception, in order to demonstrate that the impoverished conception of perceptual experience is untenable.

In **Part II**, I discuss the claim that the objects of perceptual experience seem real. Here the methodology developed in **Part I** becomes significant. I assume a position of metaphysical neutrality on the objects of perceptual experience. From this standpoint, I aim to construct a coherent description of how the intentionality of percep-

tual experience is conceived by direct realists. I do this by drawing on recent work concerned to account for the phenomenon of transparency, the relation between belief and perceptual experience, and the experience of mind-independent particulars. In each case, one finds descriptions of aspects of perceptual experience driving a metaphysical debate. In an effort to carry out a *bona fide* description of these aspects, whilst remaining true to the motivations of direct realism, I reconstruct fragments of Husserl's writings on the intentionality of perceptual experience. The key claim developed in this reconstruction is that bodily experience structures the intentionality of perceptual experience.

In **Part III**, I make programmatic attempts to provide an explanatory basis for several positive features of the description evinced in **Part I** and **Part II**. My goal is to provide a minimal theoretical basis for the claim that anticipations of continuity in bodily movement structure the intentionality of perceptual experience. I consider, only to discard, the more obvious strategy of claiming that this structuring role is provided by the body *qua* bodily self. I lay the foundations for an alternative theory by developing the concept of a first-order affordance relation holding between a bodily agent and its parts, to be dubbed a *structural affordance*. Appeal to the notion of a structural affordance presents an opportunity to develop novel accounts of the representational strategies that might underlie the putative structuring role played by bodily experience. In the final chapter, I discuss several issues that bear upon the evaluation of whether the body itself (rather than only its representation) ought to serve as an *explanans* in such an account.

Before I summarise the content of each chapter, some points of clarification are in order. In contrast with many others that have written on the topic, I do not claim to be faithful to any *actual* pre-theoretic, common-sense, folk conception of perceptual experience – if there is such a thing. Indeed, I would not be surprised if the poor person you approached (apple in hand) wondered whether something sinister was going on and treated you with a good deal of suspicion. Appealing to the opinions of folk on matters that they would not usually have cause to question, matters on which they might previously have had no opinion at all, is trickier than many might like to admit. Moreover, arguably the class of creatures able to *think* about perceptual experience is not co-extensive with the class of creatures able to *undergo* perceptual experience; limiting discussions of perceptual experience largely to *homo sapiens* (*qua* human persons) potentially has its drawbacks.

Be all that as it may; it remains true that the appeal to a putatively pre-theoretic, common-sense, folk conception of perceptual experience is pervasive in the study of mind. Most notably, such an appeal is pervasive in the philosophy of perception and in the philosophy of consciousness. A perspicuous case is Bertrand Russell's proc-

lamation that “[w]e are all in the habit of judging as to the ‘real’ shapes of things, and we do this so unreflectingly that we come to think we actually see the real shapes” (1912/1959, p. 10). Russell tells us what we “all” would be expected to say if placed in good view of a rectangular table and asked what shape it looks to be: rectangular, presumably. He moves on to assert another account of how it looks.

If our table is ‘really’ rectangular, it will look, from almost all points of view, as if it had two acute angles and two obtuse angles. If opposite sides are parallel, they will look as if they converged to a point away from the spectator; if they are of equal length, they will look as if the nearer side were longer. (Russell, 1912/1959, pp. 10 - 11)

The suggestion of such an alternative account and its extrapolation to analogous cases is the driving force of what has come to be known as *the problem of perception*, viz. the problem of whether reality can ever be perceived directly.

Russell’s line of argument is typical of those used to set up the problem. It is a classic rendition of the *argument from perspectival variation*, sometimes described as a version of the *argument from perceptual relativity*. Arguments of similar structure form a family that also includes the *argument from illusion* and the *argument from hallucination*. Each of these arguments has been held to yield a problem for the claim that reality is perceived directly. And each of these arguments is either based upon some observation of a case in which an object, property, relation, feature or event is experienced as other than it is in reality, or a case in which it is experienced despite the fact that it is not real or perhaps does not exist. Alfred Jules Ayer gives voice to a battery of such cases:

It is remarked that a coin which looks circular from one point of view may look elliptical from another; or that a stick which normally appears straight looks bent when it appears in water; or that to people who take drugs such as mescal, things appear to change their colours. The familiar cases of mirror images, and double images, and complete hallucinations, such as the mirage, provide further examples. [Similarly] it may be pointed out, for example, that the taste a thing appears to have may vary with the condition of the palate; or that a liquid will appear to have a different temperature according as the hand that is feeling it is itself hot or cold; or that a coin seems larger when it is placed on the tongue than when it is held in the palm of the hand. (Ayer, 1973, p. 3)

It is easy to see how each of these examples might be employed as an antecedent in a similar inference to Russell’s when he claims that “what we see [of the table] is constantly changing in shape as we move about the room” and therefore that “the sens-

es seem not to give us the truth about the table itself, but only about the appearance of the table” (1912/1959, p. 11).

Now, the fact that so many examples might be employed in a similar inference suggests perhaps that *the* problem of perception is not so much a single problem as a whole family of problems; but at the heart of all these lies a conception of perceptual experience as a seemingly direct relation to reality. The problems raised by the arguments above are not the only problems that perception poses in philosophy and other disciplines; yet it might well be that most of other unmentioned problems will also be haunted by the question of how to adequately characterise perceptual experience. If one is to understand the problems facing the study of perception, it seems that one requires an appropriate grasp on perceptual experience.

Yet confrontation with such a daunting array of issues invites modesty in one’s focus. Accordingly, I will attempt to frame a set of issues clustered around two claims: that perceptual experience seems direct; and that its objects seem real. As regards the arguments framing the problem of perception, I will only treat in any detail the observations adduced in typical arguments from perspectival variation. Arguments from perspectival variation focus on spatial properties and relations, such as size, shape and distance. My assumption is that these can be usefully thought about in isolation, at least for the present purposes. Certainly, I will mention the experience of, *e.g.*, light and colour, vibration, pain; but these will receive fairly cursory treatment. I will mention hallucination only occasionally (as well as dreaming and imagination), and there will be extended discussions of several illusions; but this will not be in the context of addressing the arguments from hallucination and illusion *per se*.

I also shy away from various questions regarding the distinction of the senses. Typical questions concern, *e.g.*, whether we have the five senses commonly supposed, and what is distinctive about a sense mode (or its objects) such that it is a specific sense mode. A further question, bearing more directly on the dissertation, concerns the extent to which claims about the structure of perceptual experience in one sense mode might explain perceptual experience in other sense modes. As is a lamentable tendency in contemporary philosophy of mind, the majority of my discussion pertains only to *visual* experience. The reader will find occasional reference to auditory experience, tactile and olfactory experience; but these will be largely in the context of discussing the views of others. I will not address the typical questions of how to count the senses and how to distinguish them, nor will I address any further questions about the structure of experience across the senses. Put bluntly, I simply assume that the nature of the senses is such that claims about the structure of experiencing intentional bodily movement can explain the structure of visual perceptual

experience. Although this assumption is elaborated upon, it is at no point given a sustained defence. I regard it as one of the major issues raised by this dissertation and hope to address it in future work.

Part III of the dissertation ought to be understood as a contribution to the project of *philosophical naturalism*. As with the problem of perception above, it is perhaps infelicitous to denote *the* project; anyone familiar with the expression will know that naturalism comes in many varieties and degrees. Thus to be just slightly more definite, I allude to a naturalistic outlook as a matter of method, rather than as a stance on whether, for instance, nature exhausts reality, or whether the latter is ultimately reducible to the former. Moreover, I do not assume the authority of the natural sciences over and against the claims and concepts (and peculiar problems) created and dissected in philosophical discussion. The *methodological naturalism* I assume is merely a conception of philosophy as broadly continuous with the sciences. More specifically, I assume that the philosophical study of mind is broadly continuous with the scientific study of mind.

Indeed, this dissertation is written with a studied indifference to disciplinary boundaries and I believe that this reflects the plurality of methods in modern philosophy of mind. I attempt to provide a discussion that is equally at home in the philosophy of mind construed *qua* metaphysics, *qua* phenomenological study and *qua* theoretical cognitive science. My attempts at the latter have required me to be a somewhat humble student of psychology and the neurosciences. Having never practiced any of these sciences in a substantive sense, I have tried (where it is possible, and not absolutely detrimental to style) to be cautious rather than cavalier in my discussion. My hope is that in future collaboration and interactions I can correct the errors likely to be present in my understanding and further develop any fruitful lines of thought in concrete empirical study.

Part I

Chapter 1

Sense-data

In the first chapter (and the two following) I discuss ways in which theorists have attempted to distinguish the direct object of perceptual experience from the objects of perception. In each case, this is putatively to be achieved on the basis of a certain description of perceptual experience. This first chapter begins this discussion with the sense-datum theory of perception; later I focus on early modern work in the philosophy of perception, discussing more recent (*circa.* mid-to-late twentieth century) work in the psychology of visual perception along the way. What all this work has in common is an opposition to the direct realist conception of perceptual expe-

rience. This conception is widely considered to be the default opinion of those who have not engaged in theoretical study of perception. Accordingly, the first section of chapter 1 is dedicated to an outline of this default opinion. I make an initial clarification of my stance on its putative pre-theoretical status. I then move on to introduce the sense-datum theory, discussion of which proves useful in two ways. The first is that the exercise of presenting the theory, in a manner that strips it of any epistemological predilections, puts one in a better position to evaluate views that characterise perceptual experience as indirect. The second is that close examination of the metaphysical status of sense-data motivates a need to treat claims about the direct of object of perceptual experience as ontologically neutral, i.e., in independence from any metaphysical determinations driven by a theory of perception.

Chapter 2

Disputing perceptual experience

The second chapter begins to explore the question of whether or not perceptual experience is indirect. Although the very idea might strike the reader as somewhat perverse, my aim in this chapter and the next is to provide a fair trial for claims that implicate such a description. I approach tentatively by extracting an account of perceptual experience that does not hold it to be indirect *per se*, but impoverished with respect to the spatial dimensions of the objects of perception. I consider two ways in which this view can fail to find adequate justification on the very grounds on which authors have attempted to provide justification. I then consider one way of conceiving of perceptual experience as indirect, found in the writings of the influential visual psychologist Irvin Rock. After showing the similar manner in which that account also fails, I examine another strategy that receives more detailed discussion in the next chapter.

Chapter 3

Berkeley & the limits of sensation

In the final chapter of Part I, I further evaluate claims to the effect that perceptual experience is indirect. I argue that Bishop George Berkeley held such a view, as revealed in a study of his philosophy of perception. I begin by introducing a general form of argument attributable to Berkeley, which I call a limitation argument. I then show why Berkeley requires the use of limitation arguments to motivate his theory of vision. Moreover, I examine three different ways in which he evidently used a limitation argument to support the claim that we do not directly visually experience distance. None of the proposals work because they exploit several misleading equivocations in their use of the notion of sensation. But Berkeley's failures are revealing, for they enable further clarity on the ambiguous concept of sensation. In an attempt

to provide such clarity, I specify the manner in which a defendant of the common-sense conception ought to treat the relationship between sensation and perceptual experience.

Part II

Chapter 4

The neutral intentionality of perceptual experience

In the first chapter of **Part II**, I discuss the intentionality of perceptual experience with a view to clarifying my neutral stance on the metaphysics of perceptual experience. Contemporary philosophers discussing perceptual experience are really discussing its metaphysical status, and typically this comes in discussion of the intentionality of perceptual experience. I begin with an illustration of two instances of the move that I want to avoid, moving on to discuss intentionality itself, giving brief overviews of disputes over the history of intentionality and the problem of intentionality as it is attributed to Franz Brentano. I then discuss ways in which intentionality has been treated that are either inadequate in describing perceptual experience or inadequate in addressing the basic problem of intentionality. After that, I move on to more contemporary discussions, specifically a research programme that aims to solve the problem of intentionality by providing a naturalistic theory of representational content. I end the chapter by distinguishing a neutral stance on intentionality from any stance that involves adherence to a metaphysic of content, distinguishing the stance from several notions of ‘phenomenology’ as I do so.

Chapter 5

Seeming real

In the fifth chapter I move on to perhaps the most difficult task in this project, discerning the correct understanding of the claim that the objects of perceptual experience seem real. I attempt to convey such an understanding by critically reviewing members of a family of concepts evoked in the literature, each of which has a bearing on the claim. I begin with an outline of the deeper philosophical motivations of direct realism, specifically with respect to the explanatory role that perceptual experience is supposed to play in fulfilling those motivations. The view requires a conception of perceptual experience as an instance of a *suis generis*, simple relation to the world, in order to maintain a simple connection between the subject and the world she experiences. The most pressing and recurrent difficulty here is the assumption that it is possible for a subject to be in states that are subjectively indistinguishable from perceptual experiences, in particular, the difficulty is that this might serve to confound this connection. Whilst remaining impartial on the issue, I out-

line the assumptions about perceptual experience and its relation to other states that gives rise to this difficulty, I then move on to provide a means of respecting both the claimed *suis generis* nature of perceptual experience and the claimed immediacy of perceptual experience, by distinguishing perceptual and theoretical belief. In further efforts to distinguish description of perceptual experience from metaphysics, I clarify the implications of the claim that perceptual experience is transparent. I then review several ways in which the objects of perceptual experience have been described as seeming present, to conclude by arguing that, in the hands of direct realists, perceptual presence is best construed as the claim that perceptual experience seems to be of mind-independent particulars.

Chapter 6

Husserl on the experience of particularity

In the last chapter of **Part I**, I offer a synthesis of the work in the first five chapters of the thesis by drawing on the work of Edmund Husserl. The account presented takes its initial motivation from the assumption that sensory experience is indeterminate and requires structure to yield perceptual experience. I begin by introducing this point, noting that one of Husserl's innovations is to claim that bodily experience provides such structure. A further innovation is the claim that the objects of perceptual experience have a distinctive quality that he terms *leibhaftige Gegebenheit*. I state the manner in which I read the metaphor, as the experience of objects as particulars in virtue of each exhibiting an extant unity of appearances. The core of the chapter is an analysis of the sixteen inter-related claims that comprise the account. After presenting that, I contrast the account with a view recently developed in the philosophy of perception by Alva Noë. Having hopefully thereby achieved a fairly univocal understanding of the account, I extend its basic principles to a description of the experience of objects as mind-independent, by drawing upon and sufficiently weakening concepts of objectivity found in the Oxonian tradition of the mid-to-late twentieth century and the received Cartesian manner of distinguishing between subjectivity and objectivity.

Part III

Chapter 7

Structural affordances

The final chapter of **Part II** completes the description of the direct realist conception of perceptual experience that is a major aim of this thesis. A distinctive feature of the account presented in that chapter is that kinaesthesia is described as providing a broadly continuous structure to perceptual sensations. Chapter 7, and the re-

maining two chapters of **Part III**, aim to pave a path towards the study of the natural basis of kinaesthesia. The chapter begins with a review of developments in neurophysiology and psychology that suggest a general set of mechanisms that might serve in a naturalistic explanation of kinaesthesia. In later sections, I provide a detailed analysis of the concept of an affordance, in which I introduce the concept of a 'structural affordance' to provide a means for thinking about an agent's relationship to the constraints on its bodily movement. This is followed-up with a review of ways in which agents actually deal with constraints upon bodily movement, in order to show the extent to which structural affordances have been studied already. Structural affordances then serve as an element in a more general theory of the natural basis of kinaesthetic experience. I introduce such an account by clarifying the ambiguities of my previous work on the spatial content of bodily experience, concluding with a summary of how the theory can provide an explanation of the Husserlian descriptions provided at the end of chapter 6, and other forms of kinaesthetic experience besides.

Chapter 8

On bodily selfhood

Having laid out some basic ideas towards a naturalistic explanation of how kinaesthesia provides structure to the intentionality of perceptual experience, I then turn to what might seem to be the elephant in the room. At no point in the previous chapters do I describe kinaesthesia as a form of self-consciousness, but nevertheless I do use the expression 'bodily subject', at several points. Although my use of this term is essentially instrumental, the topic of bodily selfhood ought not to be dismissed entirely. Accordingly, I devote Chapter 8 to a discussion of what I understand to be the core issues facing what I call the bodily self thesis, a positive metaphysical thesis about the existence of bodily subjects *qua* bodily selves. I recount famous arguments from the writings of René Descartes that are ostensibly against the thesis, only to reach a stalemate. To facilitate further debate, I construct a slightly more modern, 'Cartesian' thesis that can be more straightforwardly addressed by the bodily self thesis. After reviewing the core philosophical concerns of authors who seek to defend the bodily self thesis, I draw upon Evans' work in order to show how they might establish a clear line of defence against the Cartesian. I then construct a dilemma for defendants of the bodily self thesis, which leaves them with an open challenge to specify the nature of the body that they claim to be the self. In closing the chapter, I turn to the more general discussion of whether there is such a thing as a self. My conclusion is that again the dispute is likely to remain unsettled, welcoming the idea that the more fruitful topics of discussion are to be found elsewhere.

Chapter 9

Clearing the ground

In the final chapter, I lay out the issues I believe to be fruitful in pursuit of a naturalistic explanation of how bodily experience might play a structuring role in perceptual experience. The issues all cluster around a central dispute between two views on body representation. These views are contrasted by their stance on the relationship between properties of the body as a whole and representation of the body, where one view posits a representation of the body as a whole, and the other does not. Concomitantly, they are contrasted by their stance on whether body representation is embodied (in a sense to be specifically stated). The impetus for distinguishing the two views comes from recent work by Thomas Metzinger on the specific relationship between representation of the body and the most minimal forms of subjectivity. The two views are developed as contrasting explanations of the body representational capacities involved. I go on to provide further means for distinguishing variants of each view and the differences between them. And I then argue for the virtues of certain shared assumptions about what explanation implies in this context, and certain shared constraints with respect to positing representations of and within a dynamical physical process.

PART I

[If] the ordinary man is making any mistake at all when he thinks that he perceives physical objects [he] must be misinterpreting not just some particular item but the general character of his perceptual experience. But then what grounds do we have for thinking this is so?

(Ayer, 1973, p. 73)

Chapter 1 Sense-data

1.0. Introduction

Most accounts of perceptual experience are presented in a way that grinds some theoretical axe or another. I believe there is a reason for this: consideration of perceptual experience itself has been a wellspring of distinctively philosophical problems concerning the metaphysical and epistemological status of perception. One of the long-standing goals of the philosophical study of mind has been to reconcile the presumed nature of perception with compelling arguments designed to force a denial of that nature. And here the presumed nature of perception is simply that which is supposed to seem pre-theoretically evident in perceptual experience.

This chapter and the next two chapters will survey some attempts to distinguish the direct object of perceptual experience from the objects of perception, in each case on the basis of a certain description of perceptual experience. This will involve discussion of several dated works in the study of perception. What these works all have in common is their target, a conception of how perceptual experience is related to reality, considered as the default opinion of those who have not engaged in theoretical study of perception. Accordingly, the first section of this chapter (§1.1) is dedicated to an outline of this default opinion (therein I make some initial clarification of my stance on its putative pre-theoretical status). I then move on (in §1.2) to discuss the main topic of this chapter, the sense-datum theory of perception. The purpose of discussing the theory is twofold. First, the majority of sense-datum theories claimed that perception involved a mediatory relation or event; finding an appropriate notion of mediation and distinguishing this from the associated epistemological consequences of many versions of the theory will put us in a better position to construct and confront accounts that claim one ought to characterise perceptual experience as indirect (see §1.3). Second, it will be instructive to see that close examination of the sense datum theory (in §1.4) in fact motivates (in §1.5) a need to treat claims about the direct objects of perceptual experience in independence from metaphysical claims about the direct and/or ultimate objects of perception.

- 1.1 *Common-sense, reality, and perceptual experience*
- 1.2 *Sense-data & the argument from perspectival variation*
- 1.3 *Indirect perception*
- 1.4 *The metaphysics of sense-data*
- 1.5 *The neutrality of the direct objects of perceptual experience*

1.1. Common-sense, reality, and perceptual experience

From the mouth of Socrates and the pen of Plato (388-367 BCE/1973) we are told that “perception is always of what is” (152c, p. 16), and later that “whenever I come to be perceiving, I necessarily come to be perceiving something; because it’s impossible to come to be perceiving, but not perceiving anything” (160b, p. 29). In seeming agreement, Thomas Reid writes in the 18th century that any man that perceives, “must perceive something” (1785, Essay I, Chapter I, p. 20). And in the middle of the century just passed, the same sentiment is expressed by a character of Wilfrid Sellars’ invention when he exclaims that “you can’t see what isn’t so!” (1956, p. 270). Admittedly, these quotes are taken out of context, and not all of them explicitly speak of existence, and some of those that do might require supplementation to constitute an affirmation of existence. But these wrinkles aside, they are sufficient to suggest a commonly held *ideal of perception*:

- Any instance of perception involves a relation to something that exists.¹

The ideal implies that if one perceives, then one perceives something that exists. This is essentially a metaphysical statement. It states a fact about the nature of perception as such. The ensuing metaphysical issues include how one treats the nature of the relation and how one fills out the “something that exists”. Without taking the trouble to address either, I will treat the concept of *perception* as in correspondence with the ideal.

The ideal makes no claim about perceptual experience. More significantly, the ideal is neutral on the validity of a conception of perceptual experience as an “*immediate consciousness of the existence of things outside us*” (Strawson, 1979/2002, p. 97; latter emphasis mine). There are two aspects to this conception. Both are crucial for understanding the basic issues of **Part I** and **Part II**. One aspect, the first, is the lack of mediation; perceptual experience *seems direct*. Secondly, and equally importantly, there is the commitment to reality in the experience itself. The reality concerned is not (or at least not supposed to be) some *theory* of what is real; indeed, thoughts about the metaphysical possibility of experiencing reality need not be attributed to the subject. Rather this reality is simply the way in which the objects of perceptual experience *seem real*; it is somewhat apposite that the notion of reality P.F. Strawson appeals to is the rather unsophisticated “existence of things outside us”. On this conception, perceptual experience is thought to reflect “a certain view of the world, as containing objects, variously propertied, located in a

¹ I intentionally leave the nature of the relation opaque.

common space and continuing in their existence independently of our interrupted and relatively fleeting perceptions of them” (Strawson, 1979/2002, p. 94).

Strawson’s remarks are an attempt to characterise a certain conception of reality that is informed by the manner in which it seems to be experienced, which he calls *common-sense realism*. He attempts to characterise a “pre-theoretical notion of perceiving” which consists in an “immediate awareness of things outside us” (Strawson, 1979/2002, p. 99). This pre-theoretic notion is nevertheless closely associated with both common-sense realism and a *bona fide* theory of perception known variously as *naïve realism* or *direct realism*. Occasionally these two labels (direct and naïve realism) refer to significantly different theories, and principally I will be concerned with the latter.² For present purposes they highlight two related points of interest. The first is that the direct realist theory of perception, in its compatibility with the common-sense conception of reality, is intended to capture the sentiments of the philosophically naïve as regards their perceptual experience. It is assumed that, to the philosophically naïve, there just are objects properties and relations that exist independently of our perceptions and that these are the things that we perceptually experience. Strawson makes the point with passion:

I am talking of the ordinary non-philosophical man. I am talking of us all before we felt, if ever we did feel, any inclination to respond to the solicitations of a general scepticism, to regard it as raising a problem. I am saying that it follows from the character of sensible experience as we all actually enjoy it that a common-sense realist view of the world does not in general have the status of a theory in respect of that experience. (Strawson, 1979/2002, p. 95)

The second point of interest (highlighted by the name direct realism) indicates a major point of contention: namely, whether this pre-theoretic conception of perceptual experience can either support (or be supported by) a theory that claims that *perceivers are directly related to reality in virtue of their perceptual experience*. As the claimed pre-theoretical conception of perceptual experience is essential to the broader focus of the dissertation, I will say something more about where I stand on its pre-theoretical status before moving on.

² A difference sometimes urged between direct realism and naïve realism is that purportedly on the latter view we always and necessarily experience the world just as it is. By contrast, direct realism is held to allow for the possibility of illusory perception, *i.e.* cases in which a perceiver can genuinely perceive an object whilst experiencing it as having properties that it does not possess (A. D. Smith, 2002, pp. 21 - 23, 27 - 29). One question of interest then, is whether direct realism is only attributable to subjects capable of distinguishing between their experiences and the objects of their experience (Mackie, 1976, pp. 67 - 68).

Firstly, I should make clear a point hinted at in the introduction: I will not be attempting to claim that the perceptual experience of the “ordinary non-philosophical man” (or woman, child, or creature for that matter) is one way rather than another. Moreover, although my aim is to articulate what is often referred to as a *pre-theoretical* conception of perceptual experience, I abrogate myself of any need to remain true to any claims of its strictly pre-theoretical status. I will treat it as a theoretical description of perceptual experience in competition with others, competing for the status of being the correct description of perceptual experience. My aim is not to *prove* that it really is correct. My aim is to show that it has not been demonstrated as false and that it is internally consistent, though occasionally I find it in need of supplementation and theoretical apparatus that I will offer (in this regard, see especially §3.4 and §6.3).

Secondly, Strawson’s insistence is that the story he tells about the ordinary man’s (or woman’s) perceptual experience is no more than a recapitulation of a story that man (woman) must tell if he (she) is to remain true to the overall conceptual scheme implicit in his (her) experience. His aim is to describe the metaphysical picture that one is already committed to, if certain concepts are to even have the possibility of application (cf. Macdonald, 2005, pp. 17 - 20; Strawson, 1959/2003, pp. 9 - 12). That is not my aim. My aim is to describe the structure of perceptual experience that one is already committed to in holding a certain conception of perceptual experience. In **Part 1**, I will do so by critically engaging with the work of those who have developed theories of perception that they believe provide cause to correct the direct realist conception. In **Part 2**, I will do so by critically engaging with the work of those who have sought to account for the direct realist conception by urging direct realism proper, authors who offer a theory of the metaphysics and/or the natural grounding of our capacity to think about the objective world in virtue of our perceptual experience. In all cases, the claims I will make of perceptual experience are of an entirely conditional character. They are made in the service of articulating what I argue to be the commitments of the direct realist conception, and can be thought of as an answer to the question: If direct realism is true, how must perceptual experience be? Nonetheless, from the outset I will be engaged in discussion of literature comprised of claims and arguments that lack the conditional stance that I adopt. My hope is that I am successful in presenting the discussion in such a way that the reader can keep track of this difference.

1.2. Sense-data & the argument from perspectival variation

Strawson is not the only author to attribute the idea that perception is a direct relation to the “ordinary non-philosophical man”. Indeed, the following excerpt suggests David Hume doing so with some confidence:

It seems evident that men are carried by a natural instinct or prepossession, to repose faith in their senses [...] It seems also evident, that, when men follow this blind and powerful instinct of nature, they always suppose the very images, presented by the sense, to be the external objects [...] But this universal and primary opinion of men is soon destroyed by the slightest philosophy. (1777/1975, §XII, Part I, pp. 151, 152)

Hume believes that this “universal and primary opinion of men is soon destroyed” by the following line of reasoning:

The table, which we see, seems to diminish, as we remove further from it: but the real table, which exists independent of us, suffers no alteration: it was therefore nothing but its image, which was present to the mind. (1777/1975, §XII, Part I, p. 152)

But this “slightest philosophy” is a touch too slight as part of the argument has been suppressed. The reader might recall an essentially similar but slightly more expanded line of argument presented in the general introduction to this dissertation. For convenience, and for the purposes of discussion, here is the passage in full:

We are all in the habit of judging as to the ‘real’ shapes of things, and we do this so unreflectingly that we come to think we actually see the real shapes. But, in fact, as we all have to learn if we try to draw, a given thing looks different in shape from every different point of view. If our table is ‘really’ rectangular, it will look, from almost all points of view, as if it had two acute angles and two obtuse angles. If opposite sides are parallel, they will look as if they converged to a point away from the spectator; if they are of equal length, they will look as if the nearer side were longer. (Russell, 1912/1959, pp. 10 - 11)

A crucial step in the argument, suppressed in Hume’s discussion, is the implication that there is some conflict between the thought that “we actually see the real

shapes” of things and Russell’s suggestion that “a given thing looks different in shape from every different point of view” (see Figure 1).³

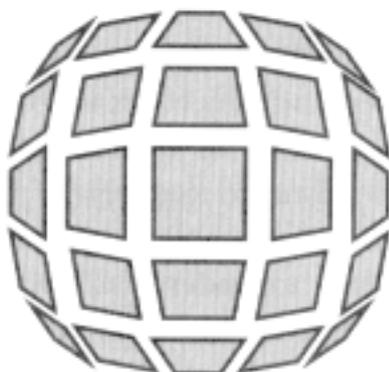


Figure 1 – Perspectival views of a square

A square viewed from different perspectives can look like a trapezoid, a parallelogram, a rhombus, or some irregular quadrilateral.

Reprinted from Palmer (1999, p. 327), with permission from Massachusetts Institute of Technology © 1999.

Charles Dunbar Broad identifies the proposed conflict more precisely, as a situation in which “two sets of properties apparently belong to the same object, and yet are apparently incompatible with each other”, where the apparent incompatibility is between “the apparent shapes and the supposed real shape, and between the change in the appearances and the supposed constancy of the physical object” (Broad, 1927, pp. 85, 86). Russell, Broad and Hume (and many others) move from here to the claim that this difference entails a distinction, *i.e.*, that it is “evident that the real table, if there is one, is not the same as what we immediately experience by sight” (Russell, 1912/1959, p. 11). The reasoning implicitly appeals to *Leibniz’s law* that if x and y are identical then x and y cannot differ in any way; the assumption being that this entails that if something is true of x and false of y , then x is not identical with y ; hence the distinction. Noting the appeal to Leibniz’s law enables one to set out the reasoning more plainly. The significance of demonstrating that the shapes that are experienced differ from the shape of the table itself is in order to claim that these shapes are attributable to something distinct from the table. But what that requires is that *there is something* to which the shapes experienced are attributable in the

³ I leave aside for the moment the claim that in learning to draw we learn something new about our visual experience (for which see the block quotation above). Just as the argument itself is not original to Russell, neither is the appeal to a speculative attitude assumed in drawing and painting. This issue is taken up more fully in the next chapter, in §2.2.

first place. For only then can it be said that it is true of *something* that it is a rhombus, and true of *something else* (e.g. the table) that it is a square. The further assumption here is what Howard Robinson calls the *phenomenal principle*:

- “If there sensibly appears to a subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that sensible quality” (1994, p. 32)

According to the phenomenal principle, if one experiences a table with the visible shape of a rhombus, then there is something that one experiences which possesses the property of rhomboid shape. If the principle is non-trivial, then it implies some degree of reification with respect to the experience itself. Broad effectively states the principle, and its presumed implication, in reference to another common example:

When I look at a penny from the side I am certainly aware of *something*; and it is certainly plausible to hold that this something is elliptical in the same plain sense in which a suitably bent piece of wire, looked at from straight above, is elliptical. (1927, p. 240)

The “*something*” is baptised by Broad as a “*sensum*” (1927, p. 240) and called by Russell (probably following the terminology of G. E. Moore) a *sense-datum* (1912/1959, p. 12).

1.3. Indirect perception

Sensa and sense-data are both signs of their time as much as Hume’s proposed images in the mind. Nevertheless, both have been posited as the necessary mediators of perception. Thus, for instance, Hume claims that once the supposition that “the very images, presented by the sense [are] the external objects” is demolished, it is evident that the diminishing table is “therefore nothing but its image [...] present to the mind” (1777/1975, §XII, Part I, pp. 151 - 152) Russell claims in summary that “the real table, if there is one, is not the same as what we immediately experience by sight or touch or hearing” and names as sense-data “the things that are immediately known in sensation: such things as colours, sounds, smells, hardnesses, roughnesses, and so on” (1912/1959, pp. 11, 12). Indeed, a number of influential figures in early twentieth century British philosophy held that perception involves some form of non-trivial mediation. And many held this view on the strength of the observation that careful description of the direct object of perceptual experience ought not to refer to the real objects perceived; rather in describing the experience itself one ought to only talk of sense-data, e.g., variously patterned colour patches, of particular size and two-dimensional shape (e.g. Broad, 1927; G. E. Moore, 1953; Russell,

1912/1959). These writers are collectively known today as the inaugurators of the *sense-datum theory (SDT)* of perception. Although few accept the tenets of SDT today, the view is notable as it forms a clear effort (though perhaps not the first effort) to systematically distinguish the direct object of perceptual experience from the ultimate objects of perceptually based judgement. It is this focus on the direct object of perceptual experience that makes SDT of interest, in particular where the perceiver's relation to the ultimate objects of perceptual judgement is thought to be composite, *qua* mediated by the direct object of perceptual experience.

Sometimes advocates of SDT describe the mediatory process itself as an *inference*. For instance, at one point Russell claims that the real table "if there is one, is not immediately known to us at all, but must be an inference from what is immediately known" (1912/1959, p. 11). The pressing issue here is that of the epistemological relation between the perceiver, the sense-datum, and the real table (or any other object the perceptual judgement takes). In this connection, SDT is infamously associated with an indefensible theory of knowledge, known as *foundationalism*. Briefly, there are two classes of beliefs in a standard foundationalist system: one class consists of beliefs that are self-justifying; another class consists of beliefs which gain justification by recursive inferential links to the self-justified class. The canonical motivations for a foundationalist epistemology are the sceptical scenarios that frame René Descartes' method in his renowned *Meditations* (Descartes, 1642/1984). Perhaps we can always go wrong about how things are beyond our immediate experience, but (the thought continues) we cannot go wrong in our beliefs about how things seem to us. Correspondingly, it was often thought that beliefs about sense-data might thus serve as the constituents of a self-justifying class of beliefs, sometimes called 'the given'. And here lies the point of tension. For on a favoured conceptual analysis of 'knowledge', knowledge involves (at least) a relation to a proposition: *sense-data* are not propositions (as we will see in the next section, most likely, they are particulars); beliefs about sense-data seem to be beliefs about the wrong kind of thing to serve as the basis of knowledge (Roderick M. Chisholm, 1982; M. Williams, 2001, pp. 94 - 102).

Whether or not sense-data can be theoretically useful posits in a viable epistemology, it is notable that many proponents of SDT nevertheless believe that reality is the ultimate object of perceptual judgement. Indeed, positing sense-data need not necessarily divorce genuine perception from the world. If one assumes, for instance, that perception is often veridical precisely because a regular causal relationship holds between sense-data and objects in the local environment, one is not then required to eschew the reality of what is perceived. And one could still maintain that perception of reality is only ever indirect: in the first place what the subject perceives is something else than the object; the subject perceives *something causally*

related to the object. Any view that holds that reality is perceptible, but only ever *indirectly* perceived is aptly dubbed a form of *indirect realism*.⁴ By contrast, any view which holds that reality is *directly* perceived is a form of direct realism (hereafter, DR). Direct perception is often defined negatively in contradistinction to indirect perception (see, *e.g.*, Pappas, 1989, pp. 156 - 157). One means of defining it thus is by adopting *Jackson's schema* (adapted from Jackson, 1977, pp. 19 - 20):

- *S* indirectly perceives *x* if and only if *S* perceives *x* in virtue of perceiving *y*, and *x* and *y* are distinct.
- *S* directly perceives *x* if and only if *S* perceives *x*, and *S* does not indirectly perceive *x*

Jackson's schema is useful in that it provides a framework for discussing the issue of whether or not perception is direct, whilst avoiding the unhelpful connotations of mediation by inference (Jackson, 1977, pp. 7 - 11).⁵ For Jackson, the issue of whether

⁴ SDT need not necessarily be formulated as committed to realism. If, for instance, one holds not only that the objects of experience possess the properties that they are perceived to have, but also that no objects have a distinct existence from their perception (perhaps broadly construed), then one moves towards a form of idealism such as that associated with Bishop George Berkeley (see Berkeley, 1710/2008, Part 1, §3, p. 84, for the canonical textual support). Alternatively, one could hold that the existence of the objects perceived depends upon their possible perception; thus one arrives at a modified form of idealism, known as phenomenalism (see Roderick M. Chisholm, 1948 for critical analysis). Despite the fact that idealists ground the existence of external objects in a peculiar manner, existence beyond the subject is nevertheless vouchsafed. In the typical case they posit a Judeo-Christian deity as an ultimate in their ontology (see Foster, 2008, pp. 220- 236 for discussion of both Berkeley's views and Foster's own phenomenalism in this regard). So at a certain granularity, a broad similarity between all these views is that "an antecedently fixed fact [either of the mind of God, or of reality otherwise conceived] determines truth and falsity in the world as it presents itself" (Lewis, 1955, p. 239).

⁵ Robert Schwartz provides a more extended deflationary treatment of debates over the immediacy of perception framed by the issue of whether visual perception involves inference (1994, pp. 84 - 124). Perhaps somewhat embarrassingly, he finds no less than five different disputes in the philosophical and psychological literature that appeal to the notion of inference. In light of these crosscutting debates he claims "the question of whether vision depends on inference is multiply ambiguous", largely because "claims that vision does involve inference are often vague and/or devoid of empirical content" and accordingly he concludes that "no single "yes" or "no" answer to the question of visual inference is likely to prove satisfactory" (R. Schwartz, 1994, p. 111). For an alternative discussion of the various senses of "direct perception" (not all of which appeal to the notion of inference) in contemporary and historical debates, which concludes far more optimistically, see Snowdon (1992).

and how one knows x on the basis of perception is orthogonal to determining the nature of perception. As he puts it: “If I see the friendly-looking dog and the friendly-looking dog is about to attack me, then I see the dog who is about to attack me, whether or not I am fortunate enough to know the fact” (1977, p. 5). I am inclined to agree. But this does leave the question of what the expression “in virtue of” means in Jackson’s schema. Jackson’s suggestion is that the expression “in virtue of” is favourable because it expresses an asymmetric relation, according to which the direct object of perception can be construed as having a primary status. True to his preferred methodology, Jackson proposes that the asymmetry of the relation is best explicated as a particular instance of *analysability*. Hence, one can perceive x in virtue of perceiving y , but not vice versa, because perceiving x is analysable in terms of perceiving y , but not vice versa.⁶ However, as Thomas Baldwin (1990, pp. 240 - 241) and José Luis Bermúdez (2000, pp. 356 - 357) note, the concept of indirect perception requires a kind of asymmetry that captures the sense in which indirect perception is *dependent* upon direct perception. And if that is right then an alternative is needed, for there seem to be dependency relations that are not captured by analysability (e.g., the relation between education and career path). Baldwin opts for explanation as the genus, of which the “in virtue of” relation is a species (*op. cit.*, 241). But given famous cases of *non-explanatory* dependency, such as supervenience (for a review see Horgan, 1993), Bermúdez opts for the more general and opaque notion of “objective dependency” (*op. cit.*, 357).

As general and opaque as it is, the idea that perceiving x is objectively dependent upon perceiving y , but not vice versa, gives a lot of leeway that can account for a variety of theoretical stances. It can encompass both Jackson’s and Baldwin’s formulations: the objective dependency relation between x and y might be such that perception of x is definable in terms of perception of y ; or it might be that perception of x is explained by perception of y . Indeed, perhaps it can encompass any theoretical stance on indirect perception whatsoever, wherever an objective dependency relation (or its lack) can be established between perception of x and perception of y . SDT included: perception of x is objectively dependent upon perception of y , where y is a sense-datum and x is the direct object of perceptual experience.

⁶ More fully:

An A is F in virtue of a B being F if the application of ‘_ is F’ to an A is definable in terms of its application to a B and a relation, R, between As and Bs, but not conversely. This gives us an account for the indefinite case. We obtain an account for the definite case as follows: This A is F in virtue of this B being F if (i) an A is F is true in virtue of a B being F (as just defined) (ii) this A and this B are F, and (iii) this A and this B bear R to each other. (Jackson, 1977, p. 18)

This can be filled out *mutatis mutandis* for all adjustments of the schema discussed.

1.4. The metaphysics of sense-data

Although it may be simple enough to establish a relatively uncontroversial framework for SDT as an account of indirect perception, a key question remains: What are these ‘sense-data’ that the theory posits? In this section and the next, I will argue that the abject failure of SDT in providing a satisfactory answer to this question reveals an inherent instability in equating sense-data with the proposed direct object of perception. A moral that I will draw from the discussion is that sense-data are better thought of as ontologically neutral posits that serve as place-holders for a commonly agreed structural aspect of perceptual experience: namely, that perceptual experience has a direct object.

In the examples of perspectival variation, visual sensory properties are held to be distinct from the actual properties of the object seen. The table is experienced as trapezoidal though it is not; it looks smaller than it did when standing three feet closer, yet its size remains the same. The properties of sense-data seem so closely tied to sensory experience that they might be thought of as sensations. But the major proponents of the theory showed clear resistance to identifying sense-data with sensations. Hence, we find Russell offering some terminological legislation:

We shall give the name ‘sensation’ to the experience of being immediately aware of [things]. Thus, whenever we see a colour, we have a sensation of the colour, but the colour itself is a sense-datum, not a sensation. The colour is that of which we are immediately aware, and the awareness itself is the sensation. (1912/1959, p. 12)

This legislation provides an initial indication of what sense-data are supposed to be, and reveals a significant theoretical move made by certain proponents of SDT. Sense-data are the objects of sensation, where these latter are understood as the objects of sensory experience. The significant theoretical move is then to identify the direct objects of perception with the objects of sensory experience, by means of, *e.g.*, the argument from perspectival variation presented in §1.2.

This move rests upon what has come to be known as an *act/object metaphysics of sensation*. In this Russell is almost certainly following G. E. Moore, who urges a distinction between (indisputably mental) “acts” of consciousness from their “objects” (whose mental or non-mental status could be disputed):

[W]hatever be its nature, *the entity which is experienced* must in all cases be distinguished from *the fact or event which consists in its being experienced*; since by saying that it is experienced we mean that it has a *relation* of a certain kind to something else [*viz.*, the act of experience]. (1922, p. 169 emphases mine; see also 1903, p. 444)

Hence, both Moore and Russell (the latter, at least, at one point in his career) see the need for a distinction between something being experienced and the something which is experienced.⁷ This distinction is deemed necessary to unmask a conflation of arguably distinct *relata*, a conflation that might occur in employing the blanket term “sensation” (see A. D. Smith, 2002, pp. 54 - 60 for discussion).⁸ According to this act/object metaphysics, sensations and their cognates are facts or events that are not to be reified. They are certainly not the objects of sensory experience. Thus, if sense-data are meant to be the objects of sensory experience, then sense-data are not sensations.

But this only clarifies that sense-data, *qua* objects of sensory experience, are not sensations. As yet there is no positive indication of their ontological status beyond this negative claim. If one were looking for some positive indication of what it is that sense-data are, such that the direct objects of experience can be identified as sense-data, then one would be still be left wanting. Another (perhaps obvious) construal is to regard sense-data as entities; and given that the properties of sense-data seem so closely tied to the properties of experience, they might naturally be conceived as mind-dependent entities. But this is certainly not the only conception of their ontological status entertained by those who fostered the theory. Broad, for instance, seems unconvinced by this simple inference. He writes that the objects he terms *sensa* should be thought of as “particular existents of a peculiar kind”, *peculiar* in so far as “they are not physical” and on his view “there is no reason to suppose that they are either states of mind or existentially mind-dependent” (Broad, 1925, p.

⁷ Russell later relaxed his stance:

According to some authors—among whom I was formerly included—it is necessary to distinguish between a sensation, which is a mental event, and its object, which is a patch of colour or a noise or what not. If this distinction is made, the object of the sensation is called a “sense-datum” or a “sensible object.” [...] If it is not valid, the sensation and the sense-datum are identical [...] I have come to regard the distinction as not valid. (1914, p. 83)

Suffice to say, this hardly helps in discerning the metaphysical status of sense-data.

⁸ Russell famously expressed this relation as one of “acquaintance”: the *relata* being “a subject and object which need not have any community of nature. The subject is ‘mental’ and the object is not known to be mental except under introspection” (1913/1984, p. 5; as cited in A.D. Smith, 2002, p. 55); see also, Russell (1910-1911).

181). Though, he also notes that if one takes the phenomenal principle as support for the existence of sense-data, then one seems logically bound (at least) to endorse their “qualitative mind-dependence”, in that the properties that qualify a particular sense-datum would seem to depend upon the properties of a particular experience (Broad, 1927, pp. 107 - 108).

Let us recap on the somewhat mixed results here. Sense-data are apparently particular entities, but they seem to be neither mind-dependent, nor obviously mind-independent. Even if one is clear that they should be construed as one or the other, it is not then entirely clear which. Perhaps this lack of a clear ontological status for the centre-piece of the theory is its deepest trouble. Take the case of Moore, perhaps the first to employ the term “sense-data”, in his winter lectures of 1910 - 1911 (published as G. E. Moore, 1953). In extensive writings throughout his career, Moore engaged himself in a complex and largely inconclusive dialectic, over whether and how sense-data ought to be construed as (anything other than) parts of the surfaces of mind-independent objects, and the consequences this might have for DR (Baldwin, 1990, pp. 233 - 250). Indeed, Thomas Baldwin speaks of “Moore’s utter failure to develop his sense-datum theory into a satisfactory philosophy of perception” (ibid., p. 261). In his eyes, Moore’s struggle seems maddeningly sisyphian:

[H]e found himself trapped within a conceptual treadmill which condemned him to move from direct realism, to indirect realism and thence to phenomenalism and then back again to direct realism and on through the cycle, without any sign of a synthesis that would enable him to *aufheben* any stage of this dialectic. (ibid., p. 261) (ibid., p. 261)

1.5. The neutrality of the direct objects of perceptual experience

To say the least, these oscillations indicate that the metaphysical implications of positing sense-data are unclear. Indeed, there is an inherent ambiguity in the arguments with which they are associated:

These notorious arguments sometimes play a categorical, and sometimes a hypothetical role. Sometimes they are employed to show that there are sense-data, and sometimes to show that if there are sense-data then they are not identical with the surfaces of material objects. (Jackson, 1977, p. 107)

As Jackson (1977, pp. 108 - 109) notes, this distinction is not always observed either by advocates or dissenters of the view. But it ought to be observed, as it enables the distinction of the contentious claims of sense-datum theorists from their mere speculations.

The contentious claims stem from the phenomenal principle. Here it is once again:

- “If there sensibly appears to a subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that sensible quality” (Robinson, 1994, p. 32)

In the context of the argument from perspectival variation, the phenomenal principle functions as a *sense-datum inference*. For once it is accepted, the question of whether or not sense-data exist has already been given a positive answer (A. D. Smith, 2002, p. 25). Accordingly, in making this inference one might be accused of what Place calls (in a slightly different context) the *phenomenological fallacy*:

[...] the mistake of supposing that when the subject describes his experience, when he describes how things look, sound, smell, taste, or feel to him, he is describing the literal properties of objects and events on a peculiar sort of [...] ‘phenomenal field’. (1956, p. 49)⁹

Place is implicitly rejecting the consequent of the sense-datum inference. Perhaps the most basic defence of the inference is stated simply by Broad, when he writes of seeing a penny on his desk: “If, in fact, nothing elliptical is before my mind, it is very hard to see why the penny should seem *elliptical* rather than some other shape” (Broad, 1927, p. 240). The question of whether this presumed difficulty supports an ontological conclusion (and which) is a vexed issue, one which SDT ought to address; in the last section, we saw just how much trouble the proponents of SDT had in addressing it.

⁹ A similar worry is that the “something” in the phenomenal principle is an instance of what William Lycan calls the “Banana peel”: the tendency (of closet anti-materialists) to tacitly describe sensory experiences as objects, rather than as events (1987, p. 17 ff.). If this the case, one ought to be more frank and admit that in claiming that there are sense-data one is claiming that “*there bloody well are phenomenal individuals*” (Lycan, 1990, p. 115).

For some, however, the historical lesson is that sense-data ought to hold a more speculative status.¹⁰ This would be to take the following remarks entirely seriously:

Thus the term sense-datum is meant to be a *neutral* term. The use of it does not imply the acceptance of any particular theory. The term is meant to stand in for [...] something from which all theories of perception ought to start, however much they diverge later. (Price, 1932, p. 19)¹¹

Consider, in this regard, Moore's attempt at a theory-neutral statement of sense-data. First, he asks the reader to "look at his [sic.] own right hand", and suggests that at minimum he "will be able to pick out something" (G. E. Moore, 1925/1960, p. 276). Now with regard to that something he runs through two possibilities. One is the possibility that "it" is a part of the surface of the hand, saying of a reader's positive judgement of this, that "it is a natural view to take that that thing is identical, not, indeed, with his whole right hand, but with that part of his surface which he is actually seeing" (ibid., pp. 276 - 277). Another possibility is that sense-data are something else, though he admits that they are only likely to be judged as anything else on a little reflection. Perhaps, in considering the phenomena of perspectival variation, Moore's reader would "be able to see that it is doubtful whether it can be identical with the part of the surface of his hand in question" (ibid., p. 277).

But this is not quite theory-neutral enough, as it masks what is essentially just a further specification of the claim at the heart of the act/object metaphysics of sensation, that an act of experience stands in a relation to its object (Baldwin, 1990, pp. 246 - 250; Crane, 2000, pp. 174 - 177). What ought to be left open is whether there is, in any resolutely metaphysical sense, an object of sensory experience. It is not enough to leave it an open question as to whether or not a sense-datum might be a part of a seen hand or something else; for that begs the question as to whether a sense-datum is really something at all, i.e. whether or not sense-data *exist*. Firth's gloss clearly illustrates this residual tendency to pre-emptively reify sense-data:

¹⁰ See, e.g., Tim Crane (2000, pp. 172 - 177).

¹¹ A part of the text that I have omitted runs as follows: "The term is meant to stand for something whose existence is indubitable (however fleeting)" (Price, 1932, p. 19). If the line of argument pursued in the next few pages is correct, then Price ought to have omitted this passage as well.

[Sense-data] are what we feel, sense, intuit, or immediately or observe, they are what is given to us, or what we are directly aware of, in perception. And once we understand the meaning of sense-data as so defined, we can presumably decide [...] just what *kinds* of entities are properly called “sense-data” (Firth, 1949, p. 437)

What is exactly wrong about this, *qua* theory-neutral conception, is that it simply does not hedge enough on the *existence* of sense-data. It is still prematurely assumes that they are “entities” of some kind, and this should be a claim established by a substantive theory.

Moore is a little closer to the mark later on in the passage lately cited, but makes the same familiar mistake. Still speaking of the man asked to look at his hand, he explains:

Things of the sort (in a certain respect) of which this thing is, which he sees in looking at his hand, and with regard to which he can understand how some philosophers should have supposed it to be the part of the surface of his hand which he is seeing, while others have supposed that it can't be, are what I mean by 'sense-data'. (op. cit., p. 277, italics removed)

Although again there is a reificatory bias, I think Moore comes closer to expressing something correct: whatever sense-data might be, they ought to be whatever is neutral between the two possibilities he describes for the objects of direct perception. However, these possibilities should not be thought as jointly exhaustive; the range of possibilities is as massively disjunctive as there are theories of perception with differing metaphysical commitments. Indeed, according to some, the bare nature of sensation does not force one to posit any relation to an object. A clear instance of this is the *adverbial theory of perception*. Adverbialists deny that it is a necessary truth that, when a subject experiences certain properties, any object (mind-dependent or independent) possesses the properties in question. On their view, the properties of sensations themselves are modifications of one's sensory experience. The idiom they suggest to capture this is obtained by transforming any construction such as '*a* appears *f*' into a passive form such as 'being appeared to *f*-ly'. Hence, an adverbialist about visual sensation would hold that one does not have a visual sensation of something square; one senses *squarely* (R. M. Chisholm, 1957).¹² This is es-

¹² In scaling up to a theory of perception, adverbialism famously has trouble with grouping properties; in particular, it has trouble with the instantiation of properties that are incompatible, and thus required to be separately grouped in one differentiated perceptual event (Jackson, 1975). I leave these issues aside, as the point is simply to identify a theoretical option that does not analyse sensations as necessarily taking an object.

essentially a denial of the act/object analysis of sensation characteristic of much of the work on SDT. More to the point, if sense-data are intended to be *neutral* between theories of perception, then positing sense-data must not rule out a theory of perception that employs an adverbial analysis of sensation. In order for that to be ensured, sense-data cannot be the objects of sensation; indeed, they cannot be objects at all in any metaphysical sense. Under this guise, the struggles of the SDT do not stem from the difficulty of moving from an entirely innocent premise to a controversial conclusion (*viz.* the existence of sense-data). The troubles stem from finding the correct characterisation of the innocent premise itself (*viz.* the pre-theoretical status of sense-data).

To taking stock once again: Either sense-data are the categorical posits of SDT, in which case their ontological status must be clarified (and perhaps cannot be). Or sense-data are theory-neutral posits from which discussions of perception ought to be begun, in which case their ontological status cannot be prejudged. In closing, I suggest grabbing the second horn of the emerging dilemma. A natural way in which sense-data might serve a theory-neutral role is by simply being a place-holder for the objects of perceptual experience, where their status as objects, *viz.* their inclusion in a particular ontology, remains unspecified and essentially neutral. Nevertheless, the claim that sensory experience *qua* perceptual experience ought to be described as having an act/object structure would be consistent with a limited vindication of the act/object analysis of sensation. This would be to claim that perceptual experience ought to be described as an experience of being related to something. A commitment to this basic structure need not be accompanied by a commitment to a specification of what this something is; an open question can remain as to whether it is indeed really *something* at all in a metaphysically weighty sense. The appeal of this stance on the objects of perceptual experience is that it is, as it were, a free assumption. It can essentially be accepted by any theory of perception, and thus it enables a discussion of perceptual experience that remains neutral on theories of perception. However, a remaining point of interest and contention is that SDT claims that, under the correct description, the (neutral) objects of perceptual experience differ in significant ways from the objects that are putatively perceived. Indeed, this is the point from which the discussion began, and it is the point at which the discussion will continue in the next chapter.

Chapter 2 Disputing perceptual experience

2.0. Introduction

A positive result that I take from the last chapter is the claim that the direct object of perceptual experience ought to be construed as being ontologically neutral. This clears the way for us to address controversies over the correct description of the direct objects of perceptual experience, whilst leaving open their possible distinction from the (direct or indirect) objects of perception.

One question that I will address in this chapter and the next is whether perceptual experience involves a dependency of the kind posited by accounts of indirect perception. That is, I will address the question of whether *perceptual experience* seems indirect. Given the way in which indirect perception was defined in the previous chapter, the very idea might strike the reader as somewhat perverse. It would involve a rather odd iteration: one perceptually experiences x in virtue of perceptually experiencing y ; or so the story would go. However, my aim in this chapter (and indeed the next) is to provide a fair trial for claims such as these. In order to do so, I will approach (in §2.1) by extracting an account of perceptual experience, not as indirect, but as impoverished with respect to the spatial dimensions of the objects of perception. Only after considering two ways in which this view can fail to find adequate justification (in §§2.2 & 2.3) will I consider ways of conceiving of perceptual experience as indirect *per se*. The first of these is found in the writings of the influential visual psychologist Irvin Rock (§2.4). After showing the ways in which that account also fails, I will examine a second strategy (in §2.5) that will receive more detailed discussion in the next chapter.

2.1 *The planar projection view*

2.2 *The appeal to depiction*

2.3 *The visual field*

2.4 *Indirect perceptual experience*

2.5 *Prosthetic perception*

2.1. The planar projection view

Sense-datum theorists held that careful description of our visual experience ought to be rather austere, involving only talk of shaped, patterned, coloured patches (see e.g. Firth, 1949, p. 438). Characteristically, Moore holds up an envelope in one of his lectures, and says with confidence afterwards that whilst all must agree that they saw an envelope, there is a sense in which they did not all see the same thing: “Those of you on that side of the room will have seen a rhomboidal figure, while those in front of me will have seen a figure more nearly rectangular” (G. E. Moore, 1953, p. 33). And he volunteers a description of his own sense-data during the exhibition: “I saw a whitish patch of colour, of a particular size and shape” (p. 32).

One can reconstruct the claims of the previous chapter in the same vein. For instance, the sense-datum theory (SDT) claims when we indirectly perceive a coin, the neutral description of our perceptual experience is of an elliptical patch; we *visually perceive* a disk (the coin) in virtue of *visually experiencing* an elliptical shape. There is an obvious relation between these two shapes, as Eric Schwitzgebel points out:

There are several ways to transform [the outline of a coin] into an ellipse, but the most natural in this context seems to be to project it obliquely onto a two-dimensional plane – presumably a plane perpendicular to the line of sight [...] The coin “looks elliptical” or has an “elliptical apparent shape” because projecting it along the line of sight onto a plane perpendicular to that line produces an elliptical figure. (Schwitzgebel, 2006, p. 591)

Talk of “projection” can be taken as a device for picking out a claim about what we directly experience in a given sense modality. The projections are planar in that they retain only two dimensions of the three attributable to the objects (indirectly) perceived. And they retain spatial organisation along only these dimensions, forming a two-dimensional field or manifold of sensory properties (Firth, 1949, p. 436, also see Figure 2). Assuming that these considerations have application in a sensory mode, they would generalise to the perceptual experience involved in perceiving three-dimensional spatial properties within that mode.

I will compress the above remarks into a simple claim that I will refer to as *the planar projection view (PPV)*:

- A subject indirectly perceives three-dimensional objects by perceptually experiencing properties arranged along only two spatial dimensions.

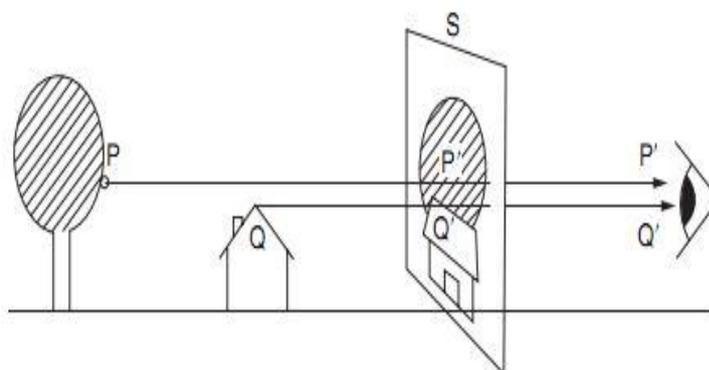


Figure 2 – Planar projection in vision

P & *Q* possess spatial properties in three dimensions.
P' & *Q'* possess the same spatial properties in two of these dimensions, arranged according to a plane *S*.
 Adapted from O'Shaughnessy (1980/2008, p. 209), © 2008 Brian O'Shaughnessy.

Several authors either reject PPV explicitly or would certainly be liable to do so. For instance, when Strawson discusses the “ordinary non-philosophical man” (see §1.1) he is denying the premise that a careful yet pre-theoretic description of perceptual experience yields anything less than reference to real objects (commenting on Ayer, 1973; Strawson, 1979/2002, pp. 93 - 97). U.T. Place makes a similar point:

We describe our conscious experience not in terms of the mythological ‘phenomenal properties’ which are supposed to inhere in the mythological ‘objects’ in the mythological ‘phenomenal field’, but by reference to the actual physical properties of the concrete physical objects, events and processes which normally [...] give rise to the sort of conscious experience which we are trying to describe (Place, 1956, p. 49)

Others outright reject that the description, austere or not, tracks anything like our experience. Gilbert Ryle, in setting up a discussion of claims now familiar, makes a parenthetical aside, “(though round plates, however steeply tilted, do not usually look elliptical)” – as if reminding the reader that he is cognisant of the oddness of the description in that regard (1949/2000, pp. 205 - 206). Similarly, A.D. Smith remarks sternly that “the suggestion that pennies, for example, look elliptical when seen from most angles is simply not true – they look round” (2002, p. 172). And Schwitzgebel, an indefatigable sceptic, expresses unsurprising difficulty:

For what it's worth, as I stare at the penny now, I'm inclined to say it looks just plain circular, in a three dimensional space – not elliptical at all, in any sense or by any effort I can muster [...] I discern no elliptical “apparent shape”. (Schwitzgebel, 2006, p. 590)

But the scepticism can run both ways. One can equally balk at the claim that the immediate object of visual sensory experience is anything more than a planar projection. The authors cited above are troubled by the suggestion that the immediate object of sensory experience can even seem to be less than what they intuitively claim to perceive, or indeed, less than what they attribute explicitly to the common-sense conception of perceptual experience. In violating this intuition, the most natural way of understanding the PPV is as corrective: ordinarily, perceptual experience is taken to be of three-dimensional objects; but (perhaps) one ought to take it to be of properties arranged along two dimensions.

2.2. The appeal to depiction

As regards the spatiality of sight, PPV has an astonishing pedigree.¹³ Most famous amongst its progenitors are the British Empiricists. As a first instance, consider the words of John Locke:

When we set before our eyes a round globe, of any uniform colour, *v.g.* gold, alabaster, or jet, 'tis certain, that the idea thereby imprinted in our mind, is of a flat circle variously shadowed, with several degrees of light and brightness coming to our eyes... [T]he idea we receive from thence, is only a plain [*sic.*] variously coloured, as is evident in painting (Locke, 1690/1997, Book II, Chapter IX, §8, pp. 143 - 144)

Locke's reference to “painting” as “evidence” is conspicuous. In a similar vein, the reader might also remember Russell's remark that “as we all have to learn if we try to draw, a given thing looks different in shape from every different point of view” (1912/1959, p. 10). An initial response, offered by Strawson, is that “[the] frame of mind in which we enjoy, if we ever do enjoy, this kind of experience is a rare and sophisticated, not a standard or normal, frame of mind” (1979/2002, p. 99). However, nothing in Locke's remarks suggest he should be read as describing the mere possibility of taking the painterly attitude. Rather he seems to be a claim about what is actually experienced even when such an attitude is not taken, whenever we set

¹³ For a compact yet comprehensive critical and historical survey see A.D. Smith (2000, pp. 481 - 482, 486 - 493).

something “before our eyes” so to speak. If so, then Locke would be one of the philosophers Hume speaks of when he writes that it is “commonly allowed by philosophers that all bodies which discover themselves to the eye, *appear* as if *painted* on a plain surface” (Hume, 1739 - 1740/1960, Book I, Part II, §5, p. 56, emphasis mine). Interpretive issues aside, Hume’s reference to a *painted* appearance naturally invites the question: what support could the appeal to painting provide to the idea that visual experience is two-dimensional?

First a brief point of clarification. There is a natural distinction to be made between two senses of distance: absolute distance and relative distance (Grush, 2007a, p. 426). When I say that the cup is about half a meter away from my hand I am talking about absolute distance. When I say that the handle of the cup is about five centimetres *further away* I am talking about relative distance. If I say that an object is at some absolute distance, and upwards to the right of my hand, I imply that the object is embedded in a three-dimensional space. If I say that the handle of the cup is further away than its facing surface, I imply that the object embodies three-dimensions. In more common parlance, absolute distance is simply ‘distance’ and relative distance is simply ‘depth’; both of these are tied to the third spatial dimension ruled out by the PPV.

The distinction clarifies that Locke and Hume, if they are indeed making claims about perceptual experience when they speak of the objects “before our eyes” or “discovered to the eye”, then they are claiming that the objects are experienced as having no depth. But this leaves open the question of whether they are experienced as being at some (absolute) distance away. In short, merely denying the experience of relative distance would not amount to support for PPV, as it does not rule out the third-dimension entirely (A. D. Smith, 2000, p. 487).

A more comprehensive denial is indicated by Bishop George Berkeley’s remarks:

Suppose, for example, that looking at the moon I should say it were fifty or sixty semidiameters of the earth distant from me. Let us see what moon this is spoken of. It is plain it cannot be the visible moon, or anything like the visible moon, or that which I see, which is only a round, luminous plane of about thirty visible points in diameter. (Berkeley, 1732/2008, §44, p. 21)

In effect, Berkeley makes two claims here: the “visible moon” that he sees is “only a round, luminous plane”; and this “visible moon” cannot be identical with the moon which he might judge to be a certain distance away from the earth. The first thing to note is that there is no *argument* here. Berkeley does offer arguments for claims such as these, but elsewhere; I will examine them in depth in the next chapter. A second point (more to the present issue) is that any appeal to painted media in sup-

port of this more comprehensive denial cannot provide *exclusive* support. For certain artistic techniques have precisely the goal (and perhaps the effect) of producing appearances of depth. Consider encountering an expertly drawn *trompe-l'œil*, such as J.D. Hillberry's piece, *A String of Memories* (Figure 3). The expression *trompe-l'œil* conveys an aim of the piece. It is intended to be indiscernible by sight alone that certain aspects of the picture, such as the curl of the paper, the hanging string *etc.*, do not have the depth that they would if they were not mere depictions.¹⁴

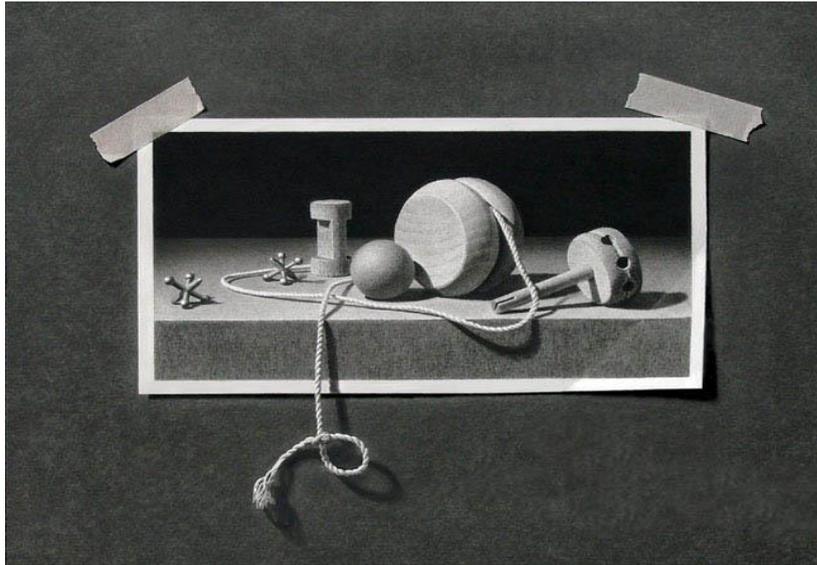


Figure 3 – *A String of Memories* by J.D. Hillberry

In charcoal and pencil.

Adapted from:

http://www.jdhillberry.com/string_of_memories.htm

© 2008 J.D. Hillberry.

Accordingly, an appeal to painting cannot provide distinctive support for either a two-dimensional or a three-dimensional account of visual experience. For there would be “no more call to postulate an immediate level of awareness of two dimensional objects” when seeing a *trompe-l'œil*, than there would be if the direct objects of visual experience really seemed three dimensional, “since the world, by hypothesis, *looks the same* in the two cases” (A. D. Smith, 2000, p. 487 emphasis mine).

The issue can be usefully thought of this way. A proponent of PPV might claim that all visual experience involves a trick of the eye. Here the appeal to works like *A String of Memories* might serve as a valid illustration. But a dissenter, who claims that visual experience genuinely involves the experience of depth and distance, can

¹⁴ Or at least, to approach such a state of affairs, see §5.1 for further discussion.

(equally validly) appeal to the very practice of *trompe-l'œil* as an attempt to mimic ordinary visual experience of objects, in which the objects do seem to have depth and seem to be some distance away. If the appeal provides support either way, it can hardly provide conclusive support.

2.3. The visual field

One way of interpreting the appeal to depiction is as a metaphorical description of the *visual field* (VF). In his famous work, *The Analysis of Sensation and the Relation of the Psychical to the Physical*, Ernst Mach writes: “Thus, I lie upon my sofa. If I close my right eye, the picture represented in the accompanying cut [see Figure 4] is presented to my left eye” (1896/1959, p. 18).

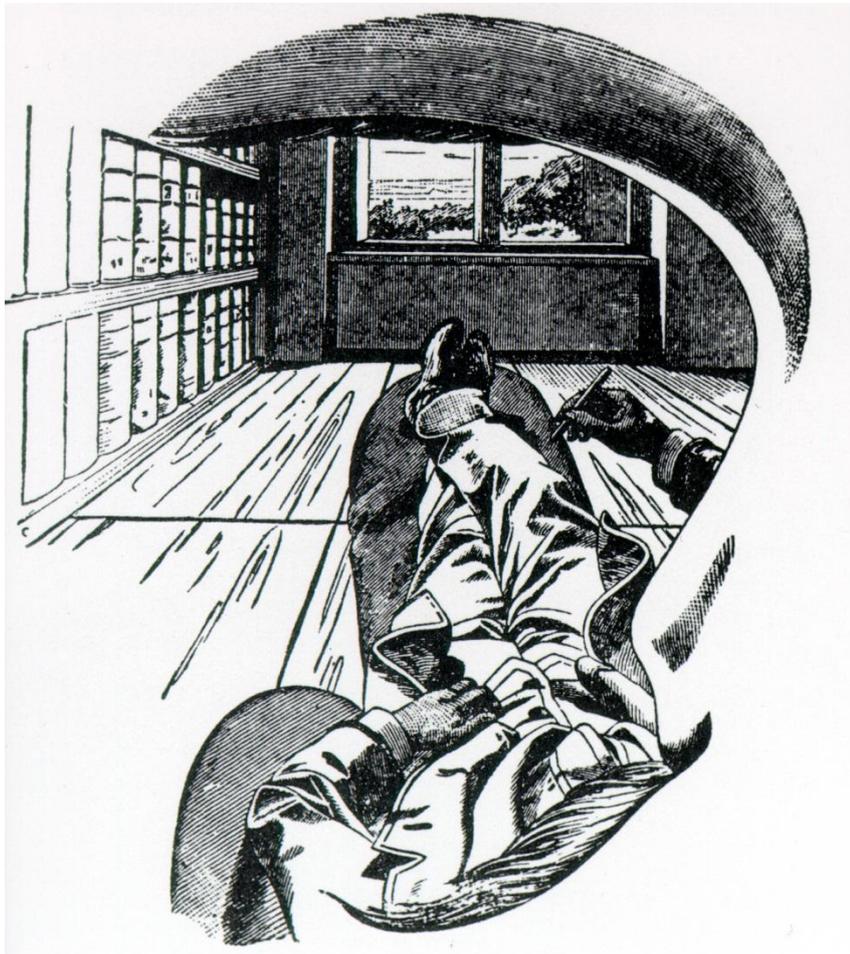


Figure 4 – Mach's rendition of his left visual field

From Mach (1896/1959, p. 18), © 1959 Dover Publications Ltd.

Although Mach is a widely read author in what might be termed the history of philosophical psychology, there is an ostensibly different sense of the term ‘visual field’ that is used in contemporary psychological science. Consider Figure 5, and the following entry from the *Oxford dictionary of psychology*:

In humans, the visual field of each eye subtends a visual angle of about 170 degrees in the horizontal plane [and about 130 degrees in the vertical] and there is almost complete [horizontal] overlap between the visual fields of the two eyes. The part of the visual field to the left of the point on which gaze is fixated is called the *left visual field (lvf)* and the area to the right the *right visual field (rvf)*, each of these areas being a *hemifield*. (Colman, 2003, p. 781)

In modern clinical psychology, there is an established procedure used to plot VFs known as *perimetry*. In static perimetry, the patient fixes her gaze upon a target while stimuli are presented on the vertical or horizontal plane. The patient reports detection of the stimulus either verbally (in ordinary clinical settings) or by the push of a button. By employing conventional algorithms and psychophysical methods, detection thresholds can be determined for stimuli of various intensities presented at various points, and at various degrees of removal from the central fixation point. In kinetic perimetry, the patient is also required to fixate a central target. But in this procedure, motion sensitivity at the boundary of a VF (and hence the boundary itself) is determined, by slowly moving stimuli from an extreme peripheral point towards the focal point of gaze fixation (O. H. Schwartz, 2010, pp. 57 - 59).

Diagnoses of certain visual deficits seem to *essentially* require the notion of a (perimetrically determined) VF. For instance, some of the earliest articles in the study of hemianopia (see Figure 5, H, I & L) define it as a selective deficit of form, colour and/or lightness acuity in the left and/or right hemifield of each eye (Mackay, 1888; Veasey, 1904). Today the range of hemianopic deficits are more varied and nuanced, and though their organic bases are still unclear, the practice of using the VF in defining and diagnosing visual deficits is no different today (Kerkhoff & Schenk, 2010).

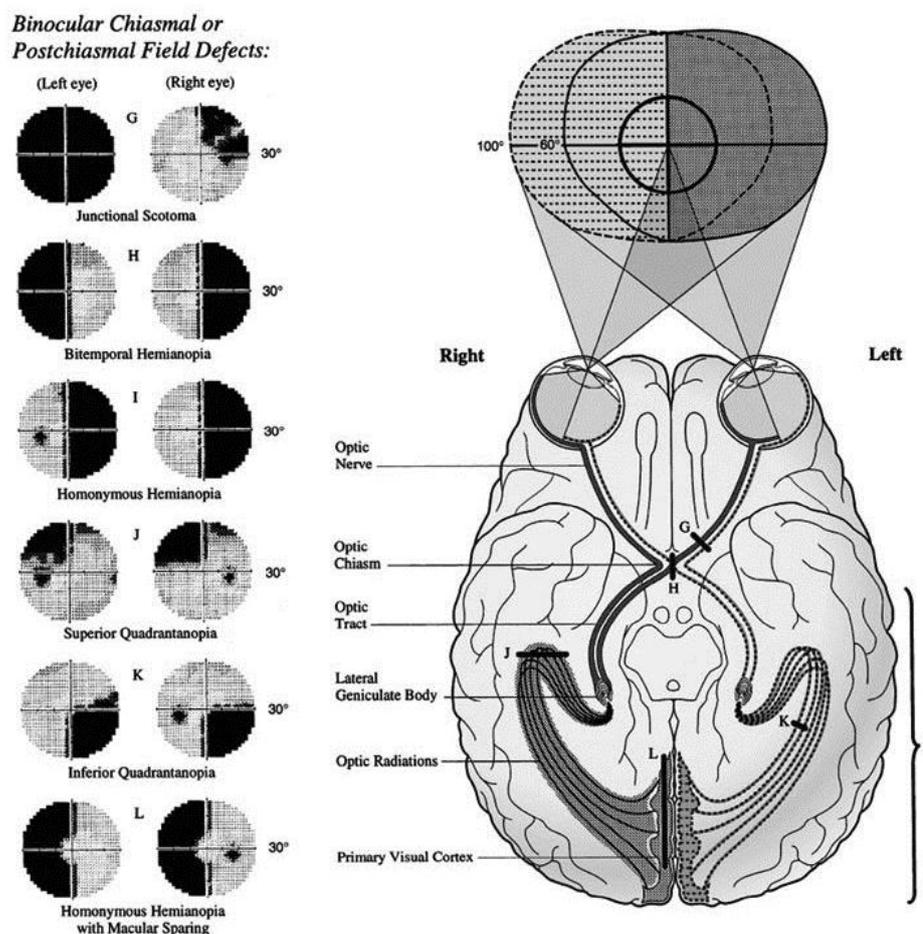


Figure 5 - The binocular visual field: deficits and neural correlates

The left and right visual fields (top, right) overlap partially to create a 120° central binocular field, flanked on either side by a (conservatively estimated) 40° monocular crescent, creating a total binocular visual field of 160°.

Particular lesion sites within the visual pathway (G - L, right) are correlated with particular field defects (G - L, left). Thresholds (left) are indicated by shading; darker shading indicates higher thresholds and thus lower stimulus sensitivity.

Reprinted from (Fauci et al., 2008, p. 184)

So what is the relationship between the VF and visual perceptual experience? To get clear on what is being asked: Call VF_1 the spatial extent of the frontoparallel plane in which stimuli can elicit appropriate psychological responses in perimetric tests.¹⁵ VF_1 is clearly essential to a range of neurological, ophthalmological and optometric

¹⁵ Cf. the “external stimulus field”, or “field of view” in Smythies (1996, p. 369). I am suppressing the fact that the notion of the “visual field” has raised some controversy in the history of psychology (see Boring, 1952a; 1952b; Gibson, 1950, 1952). If my discussion is correct, the controversy stems from a failure to distinguish VF_1 from VF_2 .

contexts. Call VF_2 a description of visual experience limited to the horizontal and vertical dimensions. VF_2 is clearly what the PPV claims of the structure of visual perceptual experience. It is perhaps illustrated by a literal apprehension of Mach's drawing, depicting the objects of his visual experience as seeming to be as flat as presented on the page.

There are ways in which VF_1 and VF_2 are comparable; there is also a key sense in which they are not. A paradigm that vividly illustrates a comparison has been developed by Stephen Kosslyn (1978). Kosslyn asked his subjects to walk towards fronto-parallel positioned rectangular shapes of between 2 and 20 inches in height and breadth, fixing their visual focus at the centre, and to stop walking when the "edges were no longer sharply in consciousness" (1978, p. 383). With both size of and distance from the object known, the angle of the visual field could be determined. Hence, the possibly indeterminate bounds of VF_2 (*cf.* Mach's picture) could be rendered (at least more) determinate as VF_1 .

But this does not help the PPV. It is not a significant point in the PPV's favour to establish that visual experience involves the experience of planar properties within certain bounds. Indeed, the fact that VF_1 is determined in perimetric tests on a regular basis has no bearing on whether or not PPV is correct. This ought to be clear by noting the manner in which VF_1 is determined. What is conspicuously absent in perimetry (*apropos* the PPV) is any test of sensitivity along the *sagittal* plane. The lesson here is that the PPV requires a positive thesis about the absence of experiencing properties and relations along the sagittal plane – or indeed, the absence of any experience of objects as having depth or seeming to be some distance away.

2.4. Indirect perceptual experience

One way of constructing a positive thesis would be to limit the claim to certain forms of perceptual experience and claim that they are actually composite. The basic structure of the composition proposed could be along the lines Jackson's schema, adjusted to provide a framework for potential accounts of *indirect perceptual experience (IPE)*:

- S indirectly perceptually experiences x if and only if S perceptually experiences x in virtue of perceptually experiencing y , and x and y are distinct.

The following assertions offered by the eminent vision scientist, Irvin Rock, are poignant in this regard:

[W]e cannot properly describe sensory experience without including reference to the proximal mode of perception [...] Consider again the circle seen at a slant [...] We do perceive the circle at a slant as circular, but we also are aware that its projected extensity relations are “elliptical”. The point is that we would be seriously distorting the phenomenal facts if we chose to speak only of the constancy aspects of perception [...] even when constancy is present a distant or slanted object does not look exactly like a near or unslanted object of the same size and shape (Rock, 1981, p. 263)

It ought to be relatively clear what Rock means by the “proximal mode of perception”. The “projected extensity relations” are the (problematically) variable relations motivating the argument from perspectival variation in §1.2, but under a description that ties the variation to a specific physiological basis. As Steven Palmer (a student of Rock’s) puts it in his influential textbook “the proximal mode reflects mainly the properties of the retinal image, or proximal stimulus” (Palmer, 1999, p. 313).

The “constancy aspects” to be contrasted with the proximal mode are (in this case) spatial properties that are experienced as remaining constant; or rather, they are the spatial properties that are not experienced as varying, such as an object’s perceived size, shape, position and orientation.¹⁶ These properties are discerned by means some fixed standard. Hence, E.G. Boring asks “What is perceptual size constancy?” and answers: “It is the rule that perceived object size is invariant under the transformation of tape-measured distance” (1952b, p. 145); *mutatis mutandis* for other spatial constancies. Perceptual constancy is thus thought to be a reflection of an individual’s capacity to experience the features of an object that actually are invariant. And since antiquity, such experience has been thought to be the basis of an individual’s capacity to judge that she perceives the *same object* through the course of some change in the relation between the object and the individual. As Thomas Reid relates:

¹⁶ There are other (non-spatial) constancies of less obvious concern here. In vision for instance, there is also lightness constancy and colour constancy. See Palmer (1999, pp. 125 - 136) for an introduction to both. For differing philosophical accounts of colour constancy see Noë (2004, pp. 125 - 132) and Kelly (2004, pp. 82 - 88).

Let one look upon any familiar object, such as a book, at different distances and indifferent positions: is he not able to affirm, upon the testimony of his sight, that it is the same book, the same object, whether seen at the distance of one foot or of ten, whether in one position or another; that the colour is the same, the dimensions the same, and the figure the same, as far as the eye can judge? This surely must be acknowledged. The same individual object is presented to the mind, only placed at different distances, and in different positions. (1764/1997, chapter VI, §3, p. 83)

In modern psychological science these constancies provide a rich puzzle that motivates perceptual theory, both in their objective status and in the fact that they are presumed to be experienced. A popular way of framing the issue sees the initial challenge as one of understanding the mapping relations between optical events and objects in the environment. For although each projection of light on the retina maps to a unique point in the projected environment, the same does not hold *vice versa*; as Palmer explains: “The inverse mapping from image to environment goes from two dimensions to three, and this is not a well-defined function: Each point in the image could map into an infinite number of points in the environment.” Consequently, “for every 2-D image on the back of our eyes, there are infinitely many distinct 3-D environments that could have given rise to it” (Palmer, 1999, p. 23, emphasis mine).¹⁷

Broadly similar issues arise when turning to the mapping of optical events and the perceptual experience of constancy. In part, the structure of this problem is already familiar, for many of an object’s actual properties will typically remain constant, despite a potentially vast range of minute changes in the properties of the array projected onto the retina. However, as noted earlier, a key motivation here is the assumption that constancy is *perceptually experienced*. Thus, as William Epstein describes:

¹⁷ This is a nice statement of what Fodor and Pylyshyn have dubbed the “establishment perspective” (see e.g. 1981, pp. 162 -163). Such insights motivate the view that stages of visual processing require inbuilt assumptions, constraining the range of possible environments inferred as giving rise to the immediate stimulus. J.J. Gibson famously dissents on this point, seeing the basic issue as misconstrued and the puzzle (that I describe above) as an otherwise avoidable result. On his view, the misconstrual is facilitated primarily by ignoring the possibility that visual systems evolved to process information through movement. For critical discussion of Gibson’s views (and those of the establishment) on the implications of retinal projection, see Schwartz (1994, pp. 128 - 133).

Changing conditions of viewing, for example, viewing distance, vantage point, lighting, bring with them changes in the local optical input that is correlated with a distal object or event. Yet everyday experience and laboratory evidence demonstrates that perception is constant over a wide range of optical variations that result from changes of viewing conditions. (Epstein, 1995, p. 14)¹⁸

Now, when Rock says that “we would be seriously distorting the phenomenal facts if we chose to speak *only* of the constancy aspects of perception” (emphasis mine) he is claiming that these optical variations correspond to an indispensable part of our “everyday experience”. That is to say that on his view, these proximal properties are not merely part of the process of *perception*, they are *perceptually experienced*. Indeed, Rock argues that these “proximal mode experiences are fundamental” (op cit., p. 264). On his view, it is (at least partly) in virtue of these experiences that we indirectly experience the constancy of the object, as “constancy perception is based on a stage of prior detection of a feature directly correlated with the proximal stimulus” (op cit., pp. 264 - 265).¹⁹ The perceptual experience of constancy, according to Rock, is indirect insofar as there is prior (if perhaps very brief) stage at which perceptual experiences of proximal properties occur, and it is upon these prior experiences that the experience of constancy depends.

Rock hinges his case for the primacy of the proximal mode on the fact that there is a temporal stage at which the perceptual process can be disrupted, resulting in judgements that conform to projected properties. As an illustration he cites work by Epstein and Hatfield (1978a, 1978b), who found that judgements of the orientation and shape of pieces of card (presented at a slant) could be disrupted by briefly presenting a randomly patterned black and white board (at frontoparallel orientation) between presentations of the target shapes (also see Epstein, Hatfield, & Muise, 1977). The recorded responses suggested to the authors that, for their subjects, “the targets all appeared to conform to projective shape” and further, that the “targets,

¹⁸ The notion of “constancy” makes most sense in application to situations where viewing conditions *change*. But it is sometimes used to denote simply a tendency towards veridical perception of size, shape, orientation *etc.* For instance, Epstein and Hatfield (1978b, p. 501) report “nearly perfect constancy” judgments of shape following a static and arrested viewing condition (described in their 1978a, pp. 138 - 139), reflecting a rather common extended usage in which *actual* optical variations do not matter. For ease of expression I will employ this extended usage.

¹⁹ “Partly” because, on the kind of theory Rock proposes, perceptual systems take into account several other cues that inform logical inferences at later stages of perceptual processing (Rock, 1981, pp. 240 - 282).

which were rotated in depth as much as 65°, tended to appear to have a frontoparallel orientation” (Epstein & Hatfield, 1978b, p. 501).²⁰

The effect of the interposed “mask” (the randomly patterned board) certainly supports the claim that *perceptual processing* can be analysed as *information processing*. The information required for visual perception of shape and orientation takes time to process; proceeding through stages of integration, storage, and retrieval *etc.* (cf. Sperling, 1963; Turvey, 1973). It is also likely that the mask interferes with the process sometime after the crossing of the two optic nerves in the middle of the head, at the optic chiasm, *i.e.* it interferes with later *binocular* vision of the target. But one can accept this and yet deny Rock’s inference. That is, one can deny that it follows from the fact that the judgements conformed to projection information (which is all that is available at the *monocular* stage of the process) that therefore the subjects must have been very briefly conscious of such projections prior to the (binocular) processing required for constancy.

A.D. Smith, also unconvinced, points out that masking can be employed to demonstrate subliminal perception (2000, p. 507). In his dissent he draws on work by Tony Marcel (1983, pp. 202 - 207, 223 -231) in which words like “bread” facilitated recognition of words like “butter”, despite being presented at so brief a time before a disrupting mask as to fall below an established threshold for conscious detection (cf. Eriksen, 1960). Smith sees this as setting up a *reductio ad absurdum* of Rock’s view, saying that: “If Rock were correct, one could equally argue from the fact that masking can prevent conscious experience of an object altogether that the first conscious stage of perception is subconscious!” (2000, p. 507).²¹ Unfortunately, Marcel’s study is not comparable to Epstein & Hatfield’s in the way that Smith believes it to be. After all, in Epstein & Hatfield’s study, there is little reason to think that the *stimuli* were not consciously seen *prior* to the mask. Indeed, the effect of the masking might well have been to influence the processing of stimuli received *after* the mask (Epstein & Hatfield, 1978a, p. 143).

But there is equally little reason to endorse Rock’s interpretation, especially in its generalisation. Remember the thought was that perceptual experience involves two sequential stages, first we perceptually experience the proximal mode, and then we

²⁰ Incidentally, in Smith’s discussion of Rock’s appeal to these studies, he claims that Rock goes well beyond the sentiments of the authors he draws upon (see A. D. Smith, 2000, p. 508, n.30). The quotation cited above makes that somewhat doubtful.

²¹ This dispute does seem a little reminiscent of a puzzle elaborated by Dennett & Kinsbourne, over the difficulties of choosing between “Stalinesque” and “Orwellian” accounts of *the* stage of consciousness (Dennett & Kinsbourne, 2002, p. 158).

perceptually experience the shape, orientation *etc.* of the object itself. To this there are at least two viable alternatives.

One asserts that both stages, the proximal mode and the experience of constancy, are perceptually experienced simultaneously. This is compatible with Epstein & Hatfield's results as it might be that the mask eliminates an experience of constancy that occurred *at the time of the original presentation*. Such an account seems to be a natural consequence of Alva Noë's conciliatory treatment of the debate between proponents of SDT and their opponents (2004, pp. 75 - 84). Noë argues, in sympathy with Strawson (1979/2002), that we do not go beyond what we see when say that an object appears to have roughly the three dimensional properties it does (*op. cit.*: 81). Yet he also holds that "one and the same experience" of a plate, *e.g.*, "must contain within it the possibility" of being described as the experience of something elliptical and as the experience of something circular tilted away from one (*op. cit.*:165). On this view, the Epstein & Hatfield setup merely disambiguates an experience which is otherwise ambiguous.

Another account removes any mention of stages. So either:

- (a). The subject experiences the shape and orientation of the stimulus.

Or:

- (b). The subject experiences the proximal projection.

But never:

- (c). Both (a) & (b) at the same time.

This would treat Epstein & Hatfield's results as cases in which (b) occurs because (a) is *prevented from occurring*. Such an account seems to be a natural consequence of Sean Kelly's views on perceptual constancy (see *e.g.* his 2004). Consider how he contrasts his account with Noë's:

I agree with Noë that it is possible to experience the circularity of the plate, and I agree also that it is possible to experience its apparent ellipticalness. What I disagree with him about, however, is that we always experience both of these at once. Try it yourself. (Kelly, 2008, p. 685)²²

²² Despite this final encouragement to the reader to see (what he believes to be) the manifest truth of his view, Kelly does admit that the difference between him and Noë might well have reached "the real foot-stomping impasse that is the bane of all phenomenology" (2008, p. 685). He also expresses a hope that the issue will be resolved by a shape-priming study, which apparently he was running at the time he wrote the article (*ibid.*, pp. 687 - 689). Sadly, as far as I can discern, the results have yet to be published.

As stated neither of these alternatives leads to the kind of indirect account of perceptual experience that Rock proposes.²³ And both can accommodate the results that he sees as supporting his view exclusively. There is, then, no compelling reason to endorse the model of perceptual experience he proposes. The potential dispute between his view of perceptual experience and its alternatives is *underdetermined* by the psychophysical phenomena that he appeals to.

Before moving on, I want to note another interesting aspect of Rock's discussion of the proximal mode. At one point, he insists that "[p]roximal mode experiences are best thought of as perceptions rather than as sensations" (Rock, 1981, p. 264). This was instrumental in my construal of him as an advocate of an indirect account of perceptual experience. But it would also be possible to construe proximal mode experiences as sensations, with the caveat that they are not sensations only, in that they are (*ex hypothesi*) perceptually experienced in the course of indirect perceptual experiences.²⁴ The significance of this strategy will be borne out in the next section and the following chapter.

2.5. Prosthetic perception

It is worth asking whether the planar projection model fits other senses. Denial can come from unexpected sources. For instance, O'Shaughnessy, a self-admitted sense-datum theorist, claims that in the sense of touch there is "no analogue of the visual field of visual sensations which mediates the perception of the environment" (O'Shaughnessy, 1989, p. 39). However, there seems to be a potential counter example in the perception of distance through vibration. This might bring to mind the hackneyed example of a blind man tapping his way around the world with a cane. But there is a greater generality to the capacity. And it serves as an illustration of

²³ Actually, there are at least two readings of Noë's view. For instance, in his book *Action in Perception* he states explicitly that "[l]ooks, sounds, feels – appearances generally – are perceptually basic" (Noë, 2004, p. 81), which suggests more than sympathy with the sense-datum theory (see e.g. Overgaard, 2010, pp. 274 - 277). But a contrary theme that also runs through that book is expressed in his earlier work, namely that "looks [...] are not mental intermediaries or sense-data, but are themselves features of the environment, features of how the space one occupies is structured around one" (Noë, 2002, p. 61). It is presumably on this basis that, in his response to Kelly, he claims "it is no part of my view that our awareness of appearances is basic or primitive" (2008, p. 692); at least, not *more* basic or primitive than perceptual experience of the constant properties of objects.

²⁴ Needless to say, sensation would not be understood in the way that Moore and others might prefer.

how touch can figure in forms of perception that might also fit the planar projection model of perceptual experience.

The earliest general statement of the phenomenon came from the psychologist David Katz. He is worth quoting at length:

By its nature the pressure sense is a proximal or near sense, that is, the object must be in direct contact with the skin to be perceived. Although we obtain certain information on the shape, hardness, and other properties of objects not directly in contact with our body when we touch them with a stick or a probe, that is most certainly based on acquired associations in these and similar cases that are exceptions to the rule. The vibration sense is not a proximal sense in the same sense. When we perceive vibrations on the floor of a room from a tuning fork several meters away, or from a machine at a far greater distance under some circumstances, then here, too, just as in audition, oscillations serve as a mediator between us and the source of stimulation. (Katz, 1925/1989, pp. 203 - 204)

So it is through this oscillatory mediation that “the vibration sense enables touch to free itself from its confinement, and to begin to conquer distance” (*ibid.*, p. 204). But still, initially, it might be thought that the model of planar projection has limited application here. For instance, A.D. Smith argues that the very depth and mobility of the body’s parts makes *planar* projection the exception rather than the rule: “with four movable limbs it is easy, if we experience a sensation in each one, to be aware of four sensations occupying positions that cannot be located in a plane” (2002, p. 134). Similarly, Katz suggests that in considering the events when vibrations might be experienced, such as a train ride, it is rather more typical to experience vibrations the way that Smith suggests – presenting a complex of sensations at assorted bodily locations such as “the soles of the feet, the thigh, the buttocks, the back, and perhaps even the resting hands and arms” (Katz, 1925/1989, p. 205).

But then again, equally applicable cases would be resting one’s hand on a washing machine, holding a power drill or a sander *etc.* To use cases such as these for support, the PPV would need to distinguish between the experience of vibration on the skin, and the experience of a body part (or indeed, the several parts or the whole body) vibrating. The distinction is useful because the skin can be conceived as a sheet wrapped over the contours of the body, and thus a plane that only contingently has curvature in the third dimension. Thus delimited surfaces of the body such as the pad of the finger, the palm and back of the hand, the back, chest, stomach and tongue could be construed as sufficiently planar.

Controlled vibrations on such delimited surfaces are natural candidates for exploitation in creating *prostheses* for perceptual systems.²⁵ The blind man's stick is perhaps an example, but more advanced technologies stem from the basic principles laid down in the auditory sensory mode, by Kazimierz Noiszewski's invention of the Elektroftalm (probably in 1889, see Spirkovska, 2004, p. 7). Noiszewski's device used a substance called selenium, disposed to increase in electrical conductivity when exposed to light, a cell of which is placed on the forehead. By exploiting changes in the conductivity of the selenium cell (under the influence of varying light intensities) by means of a basic coupling system, the graded presence of light could be converted to sound. Although acuity was limited, the device apparently helped the visually impaired to discriminate light and dark areas on the basis of varying sound intensities resulting through movement.²⁶

By the second half of the twentieth century, developments in electronics enabled these principles to be extended. Most famously, since the sixties Paul Bach-y-Rita has been engaged in the ongoing development of a series of devices exploiting the possibilities of vibratory sensation. His basic design couples a low-resolution camera to an array of stimulators, producing mechanical or electrical energy on the surface of the skin. Through coordination of intensity, the array (placed on the back, stomach, or tongue) produces a vibratory "image" projected from the camera via the coupling device (Bach-y-Rita, 2002, 2004; Bach-y-Rita *et al.*, 1969). After a crucial learning phase of exploratory movement, users of early devices were able to bat balls and perform assembly line tasks, though (disappointingly perhaps) not to the same

²⁵ I use the term "prosthesis" (cf. Dennett, 1991, pp. 338 - 341) in place of Bach-y-Rita's (perhaps more familiar) term "sensory substitution device" in my agreement with Lenay et al.'s sentiment that the latter term is doubly "misleading and in many ways unfortunate" (2003, p. 279). As they argue, it is unhelpful to call the devices merely "sensory" substitutions as it suggests that their function is merely sensory, rather than perceptual (and perhaps, in a more Gibsonian voice, masks the fact that all such devices require exploratory activity to be of any use). It is also naive to call such devices "substitutions". For that conveys the false promise of replicating an organic sense in all its glorious detail, and downplays the various distinctive possibilities afforded by the augmentation of extant sensorimotor capacities (see Lenay et al., 2003, p. 280 ff.).

²⁶ Fournier D'Albe developed a similar device later, called the "Optophone". According to a New York Times article, an early incarnation (a hand held cylinder containing selenium, connected to a telephone receiver by a clockwork mechanism) enabled a blind man to discern windows from walls, and count the number of people between himself and a wall (Marconi, 1912). Later versions apparently enabled users to read reasonably sized printed letters (D'Albe, 1921).

degree of competency individuals operating the task by sight. However, significant advances have been made over the years, as Bach-y-Rita reports:

In a very recent trial, within an hour [of use], a blind person was able to discern a ball rolling on the floor to him; he was able to reach for a soft drink on a table; and he was able to play the old game of paper, scissors, rock. Later, he walked down a hallway, saw the door openings, examined a door and its frame, actually noting that there was a sign on the door. (Bach-y-Rita, 2004, p. 86)

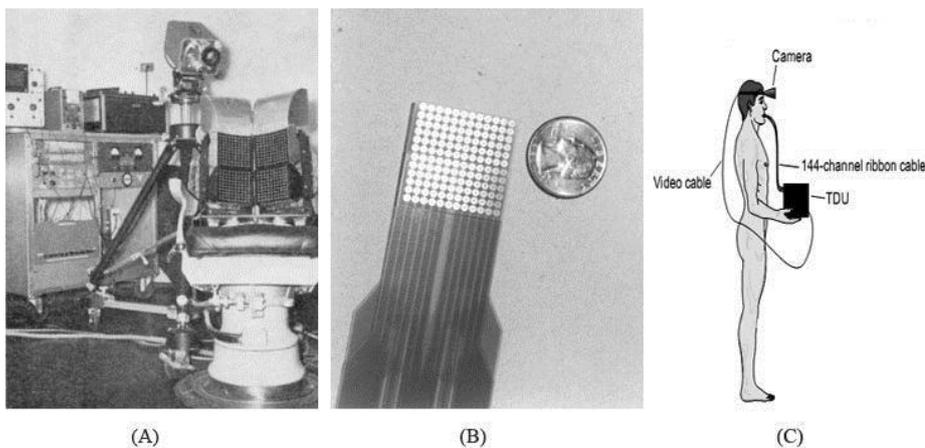


Figure 6 – Prosthetic perception through planar tactile stimulus arrays

- (A) An old dentist's chair with 400 vibrating solenoid stimulators on the back rest, coupled to a TV camera mounted on a tripod. Reprinted with permission from *Macmillan Publishers Ltd.* Bach-y-Rita et al. (1969, p. 963) © 1969.
- (B) A flexible 144-pixel array, with 2.13 mm electrodes, designed specifically for tongue stimulation. Printed with permission from Kurt Kaczmarek of the Tactile Communication & Neurorehabilitation Lab, University of Wisconsin-Madison.
- (C) Schematic of a prosthetic perceptual system using the same electrotactile array. Video data from the head-mounted camera are transmitted to the tongue display unit (TDU), which converts the video into a pattern of 144 low-voltage pulse trains each corresponding to a pixel of the video image. Adapted from Bach-y-Rita & Kercel (2003, p. 543), with permission from Elsevier © 2003.

These examples suggest the application of the PPV to other sensory modes than vision. And, in doing so, they make a better case for the proposed correction than a shaky appeal to painting. The suggestion would be that the subject perceptually experiences a three-dimensional environment around them, in virtue of perceptually experiencing changes in the two dimensions of vibratory sensation produced by the stimulus array. Certainly, those building and testing such prostheses typically

reject this kind of description. But the mere rejection of the description is not enough to show that it is wrong.

To clarify the strategy further, note certain *desiderata* for an account of IPE. There are at least three *desiderata* for such an account. Firstly, an account of IPE must motivate an internal structure to certain perceptual experiences, such that they can be considered as indirect. Call this the *structure desideratum*. Secondly, to ensure against an infinite regression, the structure claimed must pertain to a specific class or form of perceptual experience, for instance, experiencing certain properties or relations in a particular sensory mode. Call this the *specificity desideratum*. Thirdly, the structure claimed must be amenable to generalisations concerning all members of the specific class identified. Call this the *generalisation desideratum*.

The strategy would meet the both the structure and the specificity desiderata by claiming that perceptual experience involves sensation, and that sensation involves distinctive limitations. The specific class is sensations, though irrespective of sensory mode: visual sensations, auditory sensations, vibratory sensations *etc.* What these all have in common is both the fact that they are experienced and the fact that they are held to be impoverished with respect to the (*ex hypothesi* indirect) object of perceptual experience. In this way, the generalisation desideratum is met. For the thought is that, in each case, pointing to this limitation directly supports a corresponding claim about perceptual experience.

Accordingly, it is not enough to baldly assert that one really experiences something more rich, in the face of the claim that first and foremost one experiences something more sparse. One needs to provide *reasons* for one's claim, in response to the fact that reasons have been provided for its contrary. This strategy of appealing to limitations in sensation needs to be developed further to see why it ultimately fails. We will do just that in the next chapter with a focus on the work of Bishop George Berkeley.

Chapter 3 Berkeley & the limits of sensation

3.0. Introduction

In the last chapter I covered several unsuccessful attempts to attack the direct realist conception of perceptual experience. The lines of argument were twofold. One line of argument held that the properties and objects experienced in vision are organised two-dimensionally, in contrast to the assumed three-dimensional nature of the objects of perception. Another line of argument claimed that perceptual experience of shape and size is composite: on this view, *direct* perceptual experience of projected shape and size serves as a basis for *indirect* perceptual experience of actual shape and size. At the end, I broached a strategy that was *prima facie* more promising than any of those previously considered. It involved directly referring to the nature of the sensations involved in a given perceptual experience, and emphasising their limitations relative to what is perceptually experienced.

In this chapter, I will explore various ways of filling out the claim that sensation is limited, and the claim that perceptual experience might be resultantly indirect. To anchor the discussion in the views of an author who arguably held the relevant theses, I will proceed via a study of Berkeley's philosophy of perception. I will begin by introducing (in §3.1) a general form of argument attributable to Berkeley, which I will call a limitation argument. I will then show (in §3.2) why Berkeley's theory of vision requires limitation arguments, following up (in §3.3) with an examination of three different ways in which he evidently used a limitation argument to support the claim that we do not directly visually experience distance. As I will show (in §3.4), none of the proposals work because they exploit several misleading equivocations in their use of the notion of sensation. But their failures are revealing, for they allow one to clarify ambiguities in concept of sensation, and to further specify the manner in which a defendant of the common-sense conception ought to treat the relationship between sensation and perceptual experience (§3.5).

3.1 *Limitation arguments & the "one point" argument*

3.2 *Berkeley's ideas of sense*

3.3 *Three objects of immediate sight*

3.4 *Sensation, perception, & perceptual experience*

3.5 *Perceptual sensation*

3.1. Limitation arguments & the “one point” argument

Consider the following claims:

- (i). Visual sensations occur by means of the energetic impingement of light upon the retina.
- (ii). The only spatial properties one ought to attribute to the direct objects of visual sensation are those licensed by the means identified in (i).
- (iii). The only spatial properties one ought to attribute to the direct objects of visual experience are those licensed by the means identified in (i).
- (iv). Light travelling from any distance along a line perpendicular to the retina projects to one point on the retina.²⁷
- (v). One ought not to attribute relative or absolute distance to the direct objects of visual experience.²⁸

This is a prime instance of what I will call a *limitation argument (LA)*. LAs are defined by having a key premise (or premises) consisting in a claim concerning some manner in which sensation is limited. The significant difficulties with this particular LA come in considering the relationship between (i), (ii) & (iii). The argument, or something much like it, is often attributed to Berkeley. That is, he is usually charged with an endorsement of (iv) and (v), and implicitly (i) – (iii), in connection with passages such as the following:²⁹

²⁷ There is a sense in which the optical situation is (importantly) more complicated than this point suggests. What the static eye confronts is not merely a single ray of light, but a pencil of rays, sampled from a unique “ambient optic array” *i.e.* the total quantity of light converging from all directions on a given position (Gibson, 1966, pp. 12 - 14). The light itself is reflected off surfaces, such as the ground extending away from the observer, projecting rays to a variety of discriminable points on the retina (Gibson, 1950, pp. 59 - 62). The “one-point” argument can be generalised to accommodate this case (see Figure 5), which indicates the intractable nature of the problem when considering the optical situation of a static observer.

²⁸ All the “oughts” are intended to convey the kind of corrective or propaedeutic tone that provides the sense-datum theorists an answer to their dissenters (see §2.1).

²⁹ For a critical discussion of whether it is correct to attribute such an argument to Berkeley, see Atherton (1990, pp. 9 - 15, 61 - 88). For a prominent example of charging Berkeley with (v) see Armstrong (1960, pp. 2 - 22), and for a more recent case see A.D. Smith (2000 *passim*). And for a brief sample of the range of differing views on the matter see Schwartz (1994, pp. 4 - 6).

It is, I think, agreed by all that distance, of itself and immediately, cannot be seen. For distance being a line directed end-wise to the eye, it projects only one point in the fund of the eye, which point remains invariably the same, whether the distance be longer or shorter. (Berkeley, 1732/2008, §2, p. 7; see also Figure 7 below)

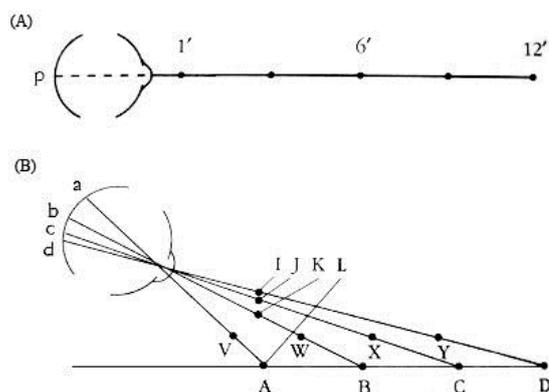


Figure 7 – Distance as a line directed end-wise to the eye

- (A) Light travelling from any point along the same line of sight will project to the same point in the retina.
- (B) Generalises from single rays to arrays: $ABCD$, $IJKL$, and $VWXY$ each project to $abcd$, respectively. *Contra* Gibson (1950, pp. 59 - 62). Both adapted from Schwartz (1994, pp. 21, 130), © 1994 Robert Schwartz.

The key premise of this “one point” argument would be the second sentence, which clearly corresponds to (iv) above. The conclusion comes in the first sentence. But whether it matches up with the conclusion (v) above turns on what Berkeley means by “immediately seen”. In particular, it depends upon whether the range of spatial properties one ought to attribute to the direct objects of visual experience is *limited* in the sense claimed by (iii); and that depends upon the relation between “visual sensations” in (i) and (ii) and “visual experience” in (ii).

In connection with (v), Berkeley is sometimes represented as endorsing the thesis that we do not see distance at all, or if we do, that it is some kind of illusion. But in fact, it is not at all clear he does hold that thesis in anything but a highly qualified form. Again, the issue turns on what Berkeley means by “immediately seen”. For the suggestion might be that distance is in fact seen, but in virtue of some mediation. The interpretive line that I will assume is this: Berkeley proposes a form of indirect visual perception. According to his theory, we do see distance, and the only manner in which the sight of distance is illusory is in the impression that we see distance immediately or by sight alone. But, to get an initial grasp on Berkeley’s particular

form of indirect perception, it is worth identifying the collective that Berkeley refers to when he claims that it is “agreed by all” that distance is not immediately seen. As Margaret Atherton clarifies, what was agreed by all in Berkeley’s time was that the immediate physical effects of light upon the eye could not be sufficient for various features of visual perception (Atherton, 1990, pp. 62 - 68). This was a lively point of interest in early modern perceptual theory, largely due to rapid advances in the theory of physical and physiological optics: in particular, refinement of geometrical principles and their application to the problems of mapping optical events with their environmental sources. These advances gave rise to another common consensus, one that Berkeley resisted, which was that the mind was innately disposed to make rapid and unconscious use of the very axioms found to be so successful in the optical theories of the time. This was also an account of indirect perception of sorts, but one on which the notion of inference would be indispensable. For at its core was the claim that “when we see, we demonstrate”, if perhaps unconsciously and automatically, but nevertheless in just the manner in which one would be able to “[geometrically] demonstrate how we see” (Turbayne, 1962, p. 161 see also pp. 159 - 171).

A key goal for Berkeley in writing his *New theory of vision* was to oppose the way in which, as Colin Turbayne writes, “geometry was imposed on the actual manner in which we see” (1962, p. 160) by a widely-read group of authors (Descartes and Malebranche being notable figures) holding this view, whom I will refer to as the *geometrists*.³⁰ In doing so, Berkeley’s intention was to create a rival account of how it is that we do see more than we seem to be licensed to in regard to (i), (ii) and (iv) (Atherton, 1990, pp. 76 - 77). Hence, on this reading at least, Berkeley is in agreement with his contemporaries on the claim that distance can be seen, though it cannot be immediately seen. However, it remains to be shown why it is that Berkeley required the use of LAs in supporting these claims.

³⁰ Not to imply that there was a uniform “geometrical theory”: Broadly speaking, a theory could employ geometry in an account of how we make judgements about spatial properties of an external world, or more basically in an account of how we perceive spatially. Berkeley’s target was the latter. For discussion of Descartes and Malebranche’s views in this regard, see (Atherton, 1990, pp. 16 - 57). William Molyneux is also cited by Berkeley in connection with his work on geometrical and physical optics (*e.g.* Berkeley, 1732/2008, §40, pp. 19- 20). Though it is not clear whether he is cited as an author giving an account of visual perception *per se* (see Atherton, 1990, p. 17; and Turbayne, 1955, pp. 341 - 342 for contrasting views).

3.2. Berkeley's ideas of sense

In Berkeley's view the mind is populated by ideas. These fall into three categories: "ideas actually imprinted on the senses, or else such as are perceived by attending to the passions and operations of the mind, or lastly ideas formed by help of memory and imagination" (Berkeley, 1710/2008, Part I, §1, p. 83). The first category is of present interest, and he immediately goes on to say more about it:

By sight I have the ideas of light and colours with their several degrees and variations. By touch I perceive, for example, hard and soft, heat and cold, motion and resistance, and of all these more and less either as to quantity or degree. Smelling furnishes me with odours; the palate with tastes, and hearing conveys sounds to the mind in all their variety of tone and composition. (*ibid.*, Part I, §1, 83)

Berkeley repeatedly flips between the terms "idea of sense" and "sensation". But clearly what he cares most about is this: whatever he is referring to with these terms, it is that which is directly perceived. As he explains in the voice of Philonous: "The things, I say, immediately perceived are ideas or sensations, call them which you will" (Berkeley, 1734/2008, Dialogue II, p. 196 - 197). At least, then, Berkeley seems unequivocal on two points: sensations are perceived; sensations are the direct objects of perception.

In fact, Berkeley's stance is more radical than this. He is famous for arguing that all objects of perception are ideas and no more. This distinctive element can be revealed in contrast to the traditional interpretation of Locke's view of perception. At the heart of which is the claim that the visible properties of the ideas we directly see resemble the visible properties of objects we indirectly see, in much the same way as the patches of paint on a canvas resemble the objects depicted (Lowe, 1995, p. 38). Crucially, this interpretation is bolstered by Locke's endorsement of a version of the primary/secondary quality distinction (1690/1997, Book II, Chapter VIII, §9 - 10, p. 135). Primary qualities are physical properties of the actual objects we indirectly perceive, such as solidity, extension, figure and mobility. And our ideas of them, on the traditional interpretation, veridically resemble their indirect causes. By contrast, ideas of secondary qualities deviate from their causes, as they are produced by powers of objects further reducible to their primary qualities. So, some ideas resemble objects and some do not. In his denial of this distinction, Berkeley asserted what is often called the *likeness principle*: that no idea could resemble some non-ideational

object, for “an idea can be like nothing but an idea” (1710/2008, Part I, §8, p. 85).³¹ In particular, it cannot be compared to something that is in essence distinct from an idea.

This claim is dialectically related to Berkeley’s famous dictum that the existence of ideas consists in instances of perception; but as George Pappas (1999, pp. 143, fn. 113) points out, it does not necessarily follow from it. For one could hold, as Locke might have, that the existence of ideas of sense is dependent on acts of perception, and still hold that they resemble objects which are not ideas. This gives further significance to Berkeley’s assertion of the likeness principle. For in doing so, Berkeley motivates something like the following disjunction: that either all perceivable objects are ideas of sense, or no idea of sense resembles a perceivable object.

Berkeley accepts the first disjunct as what he sees to be the only alternative to the sceptical implications of the second. Thus he asserts that all possible objects of perception, not only the direct objects of perception, are collections of ideas. That is, on his view, all possible objects of perception are collections of sensations and no more:

“I see this cherry, I feel it, I taste it; and I am sure nothing cannot be seen, or felt, or tasted. It is therefore real. Take away the sensations of softness, moisture, redness, tartness, and you take away the cherry.”
(1734/2008, Dialogue III, p. 229).

More to the point, they are a mass of associations between sensations, such that “ideas are united into one thing (or have one name given them) by the mind, because they are observed to attend each other” (ibid., Dialogue III, p. 229) (ibid., Dialogue III, p. 229). Call this the *association principle*.

Reflection on the association principle provides crucial insight into Berkeley’s philosophy of perception. The key thought is that these associated ideas ought to be properly distinguished if one is to understand how their relations enable us to perceive.³² In particular, as regards our direct perception “we never see and feel one and

³¹ The argument for the likeness principle in the passage I cite is scanty. Though despite this, when considered with related remarks in Berkeley’s other writings, the argument admits of several different interpretations, for discussion of which, see Ryan (2006).

³² Though, this is certainly not his only reason for distinguishing them. As George Pappas points out, there are evidently stronger and weaker forms of the thesis that ideas of sense are heterogenous (2002, pp. 56 - 57). The weaker form is simply the claim that the direct objects of sight and touch are numerically distinct. An instance of this weaker claim is quoted in the main text. The stronger form is that the direct objects of sight and touch are distinct in kind (see Berkeley, 1732/2008, §121 - 123, pp. 52 - 53). This latter is related more directly to the doctrine of abstract ideas that Berkeley abhorred (see next note).

the same object. That which is seen is one thing, and that which is felt is another [...] the objects of sight and touch are two distinct things” (Berkeley, 1732/2008, §49, p. 23).³³ Moreover, he sees the point to be entirely general:

Sitting in my study I hear a coach drive along the street; I look through the casement and see it; I walk out and enter into it. Thus common speech would incline one to think I heard, saw, and touched the same thing, to wit, the coach. It is nevertheless certain, the ideas intromitted by each sense are widely different and distinct from each other; but having been observed constantly to go together, they are spoken of as one and the same thing. (Berkeley, 1732/2008, §46, p. 23)

Just as the sound that we directly hear is distinct in kind from the light that we see, so the “ideas, perceivable by touch” such as “distance, tangible figure, and solidity” are distinct from what we directly see (ibid., §45, p. 22).

If Berkeley is to be interpreted as having some use for an LA, here is a natural entry point. Distinct sensations, such as the touch, sight and taste of the cherry, are potentially correlated over time. This correlation could result in various associations that might explain our capacity to indirectly perceive properties which are *ex hypothesi* beyond the range of a given sense, in virtue of perceiving properties associated with other senses that are not limited in that respect. The most pertinent case would be in the association of sight and touch, where in perceiving certain ideas of sight we anticipate which “tangible ideas are, by the wonted ordinary course of nature, like to follow” (ibid., §45, p. 22) (ibid., §45, p. 22). And recognition of such associations obtaining would provide principled reason for saying that there are “two sorts of objects apprehended by the eye, the one primarily and immediately, the other secondarily and by intervention of the former” (Berkeley, 1732/2008, §50, p. 24). And if this were right, we should correct our description accordingly: “Whenever we say an object is at a distance, whenever we say it draws near or goes farther off, we must always mean it of the latter sort, which properly belong to the touch”

³³ In *De Anima* Aristotle drew a distinction between *special sensible* properties, perceptible exclusively within individual senses such as colour and heat, and *common sensible* properties, perceptible between senses, such as motion, rest, number, shape, size and unity (Aristotle, 350 BCE/2002, Book II, Chapter 6, 418a, pp. 25 - 26, Book III, Chapter 1, 425a - b, pp. 46 - 47). Berkeley is essentially denying that the latter exist. In Locke’s view most of the common sensibles are primary qualities (Locke, 1690/1997, Book II, Chapter V, p. 128). In particular, the objects of sight and touch might share a primary quality, like extension. And this could be an empirical basis for abstraction to the idea of extension. Thus, in banishing common sensibles, Berkeley is not only pre-empting a basis for a certain kind of abstract idea, but he is also blocking any evidential ground for a primary/secondary quality distinction (Pappas, 2002, pp. 68 - 69) .

(*ibid.*, §50, p. 24) (*ibid.*, §50, p. 24). So for instance, when looking at an object, what I directly see is “a certain visible figure and colour, with some degree of faintness and other circumstances”. But in seeing an array of faint light I anticipate, “from what I have formerly observed [...] that if I advance forward so many paces or miles, I shall be affected with such and such ideas of touch” (*ibid.*, §45, p. 22).

There is an equivocation in the reference of “ideas of touch” that ought to be clarified to properly understand the mechanics of the theory. Certainly, the suggestion is that when I see an object at a distance, I anticipate a sensation of bodily contact with that object. That is a relevant meaning of the term “touch” today, and Berkeley certainly held such sensations to fall into that category. But in Berkeley’s idiom touch includes a range of bodily sensations, including *e.g.* the sensations of bodily movement resulting throughout an approach to the object (Berkeley, 1732/2008, §45, p. 22).³⁴ And these are of equal importance in the theory’s general application.

On a modern view, these sensations would correlate with the organic registration of the speed and extent of changes in muscle length, and perhaps with additional cues from the stretching of the skin, the effort of generating movement, and the presence of a motor signal (Proske & Gandevia, 2009).³⁵ And given Berkeley’s proclivities, he would likely prefer the thought that the primitive signals generated from these organic sources would be the basis of “tangible ideas” of bodily movement, rather than geometric abstractions based upon primitive signals. Similarly, by association with the sensation of accommodating the lens of the eye and/or turning the eyes inward, blurriness could serve as a cue to seeing an object as (too) close (Berkeley, 1732/2008, §16 - 21, pp. 9 - 11; §27, p. 12; §36, p. 18). In this case, blurriness would be correlated with registration of activity in the ciliary muscles affecting pressures in

³⁴ Armstrong speculates that: “Perhaps he is under the misleading influence of the doctrine of the five senses, and so has to fit kinaesthetic experience under touch” (1960, p. 71, n.13). Actually, broader considerations suggest it is no accident that Berkeley conglomerates a variety of sensations under “touch”. For if, *e.g.*, kinaesthetic sensation is thought of as genuinely different in kind from tactile sensation, then given Berkeley’s aversion to common sensibles (see the last note) he would need to assign distinct ideas assigned to distinct modes, in order that there are no remaining ideas available to multiple sense modes (cf. also Grush, 2007a, p. 427, n.32; Pappas, 2002). For argument’s sake (though I do hold some doubts) I will assume that either the conglomeration is innocent or that a suitable decomposition can be executed.

³⁵ Also in extensive locomotion approaching the object, non-visual sensory consequences of bodily movement would not merely register changes in the configuration of one’s body, but also ongoing changes in spatial position, nowadays known as “path integration” (see *e.g.* Klatzky, Loomis, & Golledge, 1997).

the tissue surrounding the eye lens, concomitantly affecting its roundness (Drake, Vogl, & Mitchell, 2004, p. 853). And eye turning would be correlated with the relative lengths of extra-ocular muscles, primarily the medial and lateral recti that respectively control the adduction and abduction of each eye (ibid., pp. 839 - 840) (ibid., pp. 839 - 840). Again, the sentiment is that sensations derived directly from these sources could be associated with the distance of objects. Arguably, this would also be a reliable process, given that what essentially occurs are changes in the monocular and binocular angular relations to the light reflected from the object. And in this regard, the interpretation would reflect the parity of Berkeley's reasoning. For it would allow for the very same relations that the geometrical model might posit as enabling the explicit computation of distance, to play an implicit role in the association of distance with very minimal cues in visual sensation (op. cit., §22- 26, pp. 11 - 12; §38 - 39, pp. 18 - 19) (op. cit., §22- 26, pp. 11 - 12; §38 - 39, pp. 18 - 19).³⁶ Furthermore, this account gives the simple visual sensations posited a powerful function in guiding behaviour, simply by serving as cues to associated movements, and ultimately contact that one might wish to facilitate or avoid (see e.g., Berkeley, 1732/2008, §59, p. 27; §87, p. 40).

I will not go any further in demonstrating how Berkeley could put LAs to use. Now it remains to show that Berkeley in fact ought to do so. As Rick Grush notes, there is certainly another kind of argument that Berkeley uses, which focuses on the *contingency* of the associations formed on the basis of sensation:

[I]t might easily have been the case that faintness would correlate with distance differently from the way in which it does [...] Similarly, the correlation between specific felt lengths of the muscles controlling eye orientation and eye angles and the distance of seen objects is also a contingent one. That having my eyes oriented such that their angle to the foveated object is θ degrees feels like *this* rather than like *that* is surely contingent, and could have been otherwise. (Grush, 2007a, p. 428)

Call this a *contingency argument*. Contingency arguments and LAs are not unrelated. For once it has been established that visual sensation is limited, the significance of the limitation needs to be demonstrated. In the context of an associative theory of perception like Berkeley's, one way of doing that would be to show that the cues

³⁶ Berkeley also suggests that he could avail himself of "divers other circumstances" that might "contribute to frame our idea of distance". Thus, perhaps he would accept that various pictorial cues and shading gradients could provide associative prompts for the perception of relative depth (see Palmer, 1999, pp. 229 - 249 for a summary of modern work in this area), in supplementation to the other cues discussed.

that do enable the perceiver to transcend said limitations could have done so in a different way (or might not have done so at all). This is to say that an LA is sufficient to at least motivate, if not justify, a contingency argument. On the other hand, the very nature of such a contingency argument seems to rest upon there being no *prima facie* connection between what we mediately perceive and the media of our perception, *viz.* sensations. The consequence of this is that it *relies* on an LA demonstrating that there is no *prima facie* connection. For if sensation is not limited, then the contingency argument either asserts something false: in assuming that there are limitations to be transcended; or it asserts something trivial: that certain cues could enable the transcendence of limitations, if sensation were limited, and if they did then they could have been otherwise. This is to say that limitation arguments are necessary to justify contingency arguments.

Grush rightly complains that Berkeley continually conflates these two arguments when discussing visible size (or what he calls “magnitude” 1732/2008, §52 - 87, pp. 24 - 40), position and orientation (or what he calls “situation”, *ibid.*, §88 - 120, pp. 40 - 52).³⁷ In all these cases, only contingency arguments are provided, arguments that depend upon unstated and potentially untenable LAs (Grush, 2007a, pp. 428 - 440).³⁸ Again, what this shows is the necessity of LAs for Berkeley’s theory of perception. To further see this, consider Berkeley’s use of a familiar philosophical tool, the thought experiment.

In his *New Theory of Vision* Berkeley employs two kinds of thought experiment: the “man [*sic.*] born blind”, throughout; and, towards the end, “the case of an unbodied spirit, which is supposed to see perfectly well, *i.e.* to have a clear perception of the proper and immediate objects of sight, but to have no sense of touch” (Berkeley, 1732/2008, §153, p. 64). The “man born blind” thought experiment finds its origin in correspondence between Locke and Molyneux, where the former published a question posed to him by the latter: whether a man born blind, able to distinguish cubes from spheres by touch, would be able to distinguish them by sight, when made to

³⁷ The perceptive reader might have noticed that shape is not on this list. Actually, Berkeley seems to assimilate two-dimensional shape (or “figure”) to size, by treating its shape as its boundaries on breadth and height dimensions. Thus, “figure is the termination of magnitude” (Berkeley, 1732/2008, §105, p. 46). His stance on three-dimensional shape *viz.* relative depth is not quite as clear (but see last note).

³⁸ For sympathetic accounts of Berkeley’s views on situation and magnitude, see Atherton (1990, pp. 108 - 171) and Schwartz (1994, pp. 58 - 83).

see (Locke, 1690/1997, Book II, Chapter IX, §8, p. 144)³⁹ Molyneux's suggested answer was negative, evidently (according to Locke at least) because the man born blind could not have learnt "that what affects his touch so [...] must affect his sight so [...] or that a protuberant angle in the cube, that pressed his hand unequally, shall appear to his eye, as it does in the cube" (ibid., p. 144). The conditions of the test vary under interpretation: Must the man be able to tell the difference at an instant or over time? Might the man see a difference but be unable to express any judgement of a difference? Respective answers from various eminent scholars were a lively issue of dispute in the eighteenth century (see Degenaar, 1996, pp. 25 - 52 for a review). And although the issue in the question that Locke published concerned visuotactile relations (or their lack) in shape perception, similar questions could be posed for any variety of sense modalities, and the perception of any spatial property.

Indeed, Molyneux's *first* letter to Locke includes questions concerning the perception of distance, such as whether the congenitally blind man could know "by his Sight, before he stretchd out his Hand, whether he Could not Reach them, tho they were Removed 20 or 1000 feet from him" (as reproduced in Degenaar, 1996, p. 17). Berkeley's answer is (of course) negative: "a man born blind, being made to see, would at first have no idea of distance by sight" (1732/2008, §41, p. 20); and he takes this to further imply the falsity of the geometric theory, given its predilection for positing an innate geometry. But note that we only have cause to believe Berkeley if we accept the crucial premise that sensation is limited. For it is this and only this that makes it false that "one blind from his birth, being made to see, should stand in need of no new experience in order to perceive distance by sight" (§42, p. 21). To put the point another way, even if the geometrical theory were false, there could be

³⁹ Opinions differ on the relevance and conclusiveness of actual cases of reverted congenital blindness. For instance, Armstrong condemns any such actual and potential cases as having a tendency to either "beg the question, or else to be capable of being interpreted to the satisfaction of both [and presumably any] parties in the dispute" (Armstrong, 1960, p. 64). By contrast, Gallagher is rather more optimistic, claiming that recent work in developmental psychology and neuroscience suggest a definitively negative answer to the question, though for slightly different reasons than Locke (and Molyneux) supposed (2005, pp. 153 - 172). During Berkeley's lifetime there was a famous case in which a boy who suffered from either congenital or very early blindness had his cataracts removed by the innovative surgeon William Cheselden (Degenaar, 1996, pp. 53 - 56). Cheselden's report to the Royal Society was subsequently cited by many (including Berkeley) as evidence in favour of an associative theory of perception; but the sentiment was far from unanimous, and scepticism abounded as to what the report did or indeed could actually demonstrate (Degenaar, 1996, pp. 87 - 88; von Senden, 1932/1960, pp. 219 - 221). I will treat the man born blind as a thought experiment, as Berkeley seems to have done in his *New theory of vision*.

some brute fact about visual sensation (*i.e.* a hitherto unexplained fact) such that we ought to hold that the congenitally blind man would see.⁴⁰

Similarly, when Berkeley claims later that “such a one, if we suppose him made to see, would not at first sight think that anything he saw was high or low, erect or inverted” (§95, p. 43), the very same constraints apply. It is of no consequence whether or not, in this instance, either his associative theory or the geometrical theory is correct. What matters is whether visual sensation is limited such that, *e.g.*, neither up nor down can be seen (cf. also Grush, 2007a, pp. 137 - 139). In this way, assessments of the case of the “unbodied spirit” follow suit. When he describes the poor being as “not having any idea of distance” (Berkeley, 1732/2008, §154, p. 64), again, this can only be the correct assessment if visual sensation is thus limited.

In sum, a brief survey of Berkeley’s philosophy of perception reveals the fundamental importance of direct objects of sight, *sc.* visual sensations, being limited. Upon the assumption that this condition holds, Berkeley provides a parsimonious positive account able to explain how we see spatial properties that *ex hypothesi* we are unable to immediately see, through the mediative process of association with distinct ideas of touch.

Throughout I have relaxed my qualms about the potential conflation of perception and perceptual experience in the treatment of sensation. Now is the right point at which to begin demonstrating that such conflation is rampant in Berkeley’s work on vision.

⁴⁰ As Schwartz notes (1994, pp. 125 - 152), most modern work on vision amounts to a development of Berkeley’s ideas, a development of the work of the geometrists, some selective amalgamation of the two, or a descendent of Gibson’s “ecological optics” as an alternative to both Berkeley’s view and the geometrists (see *e.g.* Gibson, 1961, pp. 261 - 262). The contrast in Gibson’s work in this regard is in the claim that visual sensation is not limited (see *e.g.* A. D. Smith, 2000, pp. 490 - 491). His essential insight was to note that as the point of observation moves, the optic array exhibits constant change, resulting in a *linear optic flow field*, where the bases of various optic cones (with apexes on the eye) will systematically expand or contract. When two optic cones on the same visual plane are expanding at different rates, the faster expanding cone will envelop the other, and if the corresponding features are opaque, one perceived object will occlude another. See Lee (1993, pp. 44 - 47) for an introduction and illustrations.

3.3. Three objects of immediate sight

If what Berkeley means by “immediately seen” is merely the stimulation of light on the eye, then this is the kind of physiological consideration that sets up problems to be solved by an account of visual perception.⁴¹ This seems to be what Berkeley aims to bring to his reader’s attention when referring to what is “agreed by all”. After Gary Thrane (1977, p. 246), let us make this explicit and call Berkeley’s famous one point argument, *the physiological argument*. Here it is again for the reader’s convenience:

It is, I think, agreed by all that distance, of itself and immediately, cannot be seen. For distance being a line directed end-wise to the eye, it projects only one point in the fund of the eye, which point remains invariably the same, whether the distance be longer or shorter. (Berkeley, 1732/2008, §2, p. 7)

As David Malet Armstrong points out: “The argument seems to be valid only if we assume that the immediate object of sight is the fund of the eye” (1960, p. 9). Assume, for argument’s sake, that it is valid on the physiological reading; could this provide any support for claim (v) above, namely that one ought not to attribute relative or absolute distance to the direct objects of visual experience?

In this connection one might also seek to vindicate all the talk about painting in the last chapter. For example, Molyneux wrote in his *Dioptrica Nova*: “[T]he rays from each point of the object [...] determine [...] on the retina, there *painting* distinctly the vivid representation of the object” (Molyneux, 1692, pp. 104 - 105; as cited in Turbayne, 1955, p. 346, emphasis mine). One could reformulate those earlier remarks, as saying simply that “the pictures of external objects are painted on the retina or fund of the eye; that we can see nothing which is not so painted” (Berkeley,

⁴¹ Though, this emphasis blurs a broader issue. In ordinary viewing conditions, light sampled by the eye is itself structured and distorted by the surfaces and media of the environment in lawful ways (Gibson, 1966, pp. 208 - 220; 1986, pp. 65 - 93). As a consequence, there are limits in what can be discovered about the immediate input to the visual system through mathematically modelling the projection of rays to the back of the eye (Palmer, 1999, pp. 15 - 21).

1732/2008, §88, p. 40) But are the “pictures” or “paintings” on the retina the direct objects of visual experience?⁴²

The relationship between visual experience and the retinal image is obviously complicated by the inversion of the latter.⁴³ And Berkeley seems acutely sensitive to this (ibid., §88, p. 40) (ibid., §88, p. 40). These two facts make the exegetical situation rather fuzzy. For instance, according to Turbayne, Berkeley only grants that retinal images could be objects of experience (of any sort) for the sake of argument (see Turbayne, 1955, p. 345ff.). On this reading, the only sensible construal of them as such would be as derived from seeing the eyes of another body:⁴⁴ “When we think of the pictures in the fund of the eye, we imagine ourselves looking on the fund of another’s eye, or another looking on the fund of our own eye, and beholding the pictures painted thereon” (Berkeley, 1732/2008, §116, p. 50).⁴⁵ The image would be seen as an inversion of what it depicts. But this also sets up a contradiction when it comes to the issue of whether we directly experience such an image, putatively projected to the back of our own eyes. For if we do experience the retinal image (directly), and if it is in virtue of this that we see an inverted image in the others’ eye (indirectly), then the image that we experience cannot be inverted at all. Hence, on the assumption that retinal images are inversions, and we do not directly experience

⁴² Hatfield and Epstein (1979) provide a nice history of the concept of a “conscious state with the phenomenal properties of *the retinal image*” (emphasis mine), which they dub the “sensory core” (p. 363). According to them, Descartes work on vision is the earliest explicit instance of a distinction between perception of the world and a sensory core. But the notion seems operative in Kepler’s writings (though he did not employ such a distinction) and may in essence be traced back to the Islamic philosopher Alhazen (p. 367 ff.).

⁴³ The inversion of the retinal image should not be confused with the “inverse problem” of recovering the specific layout of the environment from the retinal projection (see §3.4 below).

⁴⁴ Admittedly plausibility here is judged in the context of various of Berkeley’s theoretical commitments, such as his distinction between proper and improper ideas of sight, his strongly held position on the heterogeneity of the senses, and the exclusive availability of tangible ideas (amongst which ideas such as ‘up’ and ‘down’, and magnitude are included) to the sense of touch. See Turbayne (1955), and §3.2 above.

⁴⁵ Gibson provides a nice description of how this might occur:

The formation of an image on the retina can be observed directly. If the excised eye of an albino rabbit is fixed into a hole in a card and pointed toward a scene, by holding it in front of one’s own eye, we can actually see the inverted image on the curved rearward surface, looking something like a miniature photographic transparency. (1950, p. 48)

anything inverted, we do not directly experience retinal images (*cf.* Berkeley, 1732/2008, §116, p. 50).⁴⁶

Turbayne cites textual evidence suggesting that such an argument would be available to Berkeley. That is, on his interpretation Berkeley could deny that we visually experience retinal images. But as Armstrong points out, this seems to lump Berkeley with a *prima facie* contradiction of his own. For if Berkeley were to entertain such an argument, he would no longer be in a position to run the physiological argument. And if that is correct, then he would no longer be able to claim that distance cannot be immediately visually experienced (Armstrong, 1956; 1960, pp. 45 - 52). Assuming that is indeed Berkeley's aim, then the contradiction could be avoided only if he can avoid making recourse to retinal events. Indeed, he seems to be running a more direct version of the argument in the following dialogue:

Philonous: [I]s not distance a line turned endwise to the eye?

Hylas: It is.

Philonous: And can a line so situated be perceived by sight?

Hylas: It cannot.

Philonous: Does it now therefore follow that distance is not properly and immediately perceived by sight?

Hylas: It should seem so. (Berkeley, 1734/2008, Dialogue I, p. 185)

Thrane (1977) calls this the *phenomenological argument*, for the purposes of exploring a reading of "perceived" in this passage as "perceptually experienced". It would serve as an alternative route to (v), on the key assumption that the construal of distance as a line perpendicular to the eye is adequate to describe the experience of depth.

A powerful attack on this assumption finds its source in some remarks made by Maurice Merleau-Ponty. In characteristically ironic style, he remarks that we cannot see the line because it is constituted by a series of points that one is perpetually "badly placed to see" (Merleau-Ponty, 1945/1962, p. 255). The thought is presumably based on the following passage: "For by the distance between any two points nothing more is meant than the number of intermediate points. If the given points are visible, the distance between them is marked out by the number of the interjacent visible points" (Berkeley, 1732/2008, §112, p. 48). Merleau-Ponty comments that this concession, that the distinction between points could be seen if they were viewed in profile, reveals that depth is being treated "as it is presented to a spectator standing

⁴⁶ The retina is also concave. For contrasting views on the putative phenomenological implications of projection onto a concave surface see Lehar (2003, pp. 39 - 42) and Schwitzgebel (2006, pp. 591 - 592).

at the side, in short as breadth” (op. cit., p. 255; see also Armstrong, 1960, p. 15). What needs to be demonstrated, if this construal is to do any work in the service of the phenomenological argument, is that visible depth is not a *suis generis* visual experience. The situation is reminiscent of the discussion of VF_1 & VF_2 in the last chapter. A dissenter can admit that it is possible to restrict a description of the visual field to two dimensions, as when describing a star as just to the left of a treetop (Grush, 2007a, p. 425). But it is a step further to somehow reduce all phenomena of visible depth to two dimensions, and Berkeley’s proposal at least is unable to deliver.⁴⁷ When faced with Merleau-Ponty’s objection, one might retreat slightly and claim that the conception of distance as a line is an abstraction that is not meant to be experienced *per se*, but merely feature in an explanation of one’s experience. But such a retreat would be unavailable to Berkeley, as he repeatedly insists that all features of one’s psychology should be at least potentially available to direct perception (Berkeley, 1732/2008, §9 - 10, p. 8, and *passim*). And if perception here means perceptual experience then the incompatibility is manifest.

In fact, reading ‘perception’ as ‘perceptual experience’ is crucial in Berkeley’s rejection of the “geometricians” explanation of how vision is able to transcend the limits of visual sensation. According to this received view, the operations of the mind in computing distance from an impoverished sensation are like those of a blind man computing distance by holding two crossed sticks in contact with an object. By means of an innate, God-given capacity, the mind is supposed to achieve estimates of absolute distance in part by determining the distance between the eyes (hands) and the degree of each eye’s (stick’s) vergence angle. Berkeley’s dissent on this point is simple. He is willing to accept that this description might adequately describe the optics of the situation, but not the psychology. In staunch opposition, he declares: “In vain shall any man tell me that I perceive certain lines and angles which introduce into my mind the various ideas of distance, so long as I myself am conscious of no such thing” (, §12, p. 9). Though (no party claims that these reasoning processes need to be conscious or attributable to the perceiver herself, Berkeley’s issue is the fact that they cannot be. His worry is that “brutes and children” could not even in

⁴⁷ The account gets along fine if objects are separated at a certain breadth. But, for instance, when two objects occupy the same positions by breadth and are yet seen as distinct, in most cases this is naturally described as experiencing one object occluding another at a visible depth. Similarly, distinct objects *revealed* through dynamic changes in the environment are also rather difficult to account for, such as the accretion and deletion of visible surfaces through changes in vantage point and/or object location (Gibson, 1966, pp. 203 - 204; 1986, pp. 82 - 83).

principle be conscious of the operations that supposedly constituted their psychology (Atherton, 1990, pp. 79 - 83).⁴⁸

To further underline the point, consider Berkeley's treatment of the Barrow illusion. According to an account of monocular vision strongly tied to early modern optics, a distant object will project rays closer to convergence than a nearer object. This suggests the following prediction: the greater the convergence of the reflected rays striking the eye, the further the object reflecting that light will appear to be. But apparently in the Barrow illusion exactly the opposite happens: as the object is drawn away, it appears closer (Berkeley, 1732/2008, §29, pp. 12 - 15). In one version of the illusion, a double convex lens is interposed between the eye and the object, causing the rays reflected from the object to converge and come to a focus before the retina, resulting in a broad distribution of rays on the retina (see Figure 8).⁴⁹ This result is some ways similar to the optical situation when objects are very close, the rays that they reflect are broadly distributed on the retina, though in these situations this is because the rays come to a focus behind the retina (§34 - 35, pp. 16 - 17) (§34 - 35, pp. 16 - 17).⁵⁰ As Berkeley recounts, the Barrow illusion is described as a puzzle by the geometric theorists because despite the differing optical facts, in both cases the psychological outcome is a blurry visual experience. He then takes this as an opportunity to demonstrate the superiority of his associationist theory, claiming that the usual and thus associated distal cause of a blurry visual experience is an object that is very close. Hence it is no wonder that despite the fact that the object is

⁴⁸ If this sounds strange to the reader it is because what Berkeley rejects is close to common practice today. A number of conventions have been developed for attributing psychologically salient states that are not required to be constrained by the conceptual repertoire of the subject, or any distinctive vocabulary that picks out their behaviour *qua* rational agents. And interestingly several principles of Descartes' psychology have clearly been inherited in at least the orthodoxy of these (otherwise) more modern forms of psychological explanation (see Wheeler, 2005, pp. 21 - 54). For a view which requires mental states to be connected to the conscious states of a subject to which they are attributed, see Searle (1990, 1991). See Ludwig (1996) for a refinement, and similar considerations directly applied in the context of modern vision science.

⁴⁹ The other setup of the illusion uses a concave mirror, such as a shaving mirror, and places the object behind the head of the viewer. So, upon retreating one's head away from the image, one in fact moves closer and closer to an object that also appears closer and closer. For a rich discussion of this version and a variety of historical insights, see Lennon (2007).

⁵⁰ Naturally, this is resolved by adjusting the curvature of the lens to refocus the pencil of rays on the retina, known as accommodation (Palmer, 1999, pp. 203 - 205). The need for this arises less frequently (if at all) in small and primitive eyes. For discussion of the relevant anatomy and physiology from an evolutionary perspective, see Gibson (1966, pp. 171 - 173).

being moved further and further away, by dint of the associations with its blurry look, it is experienced as nearer and nearer (§36, p. 18) (§36, p. 18).⁵¹

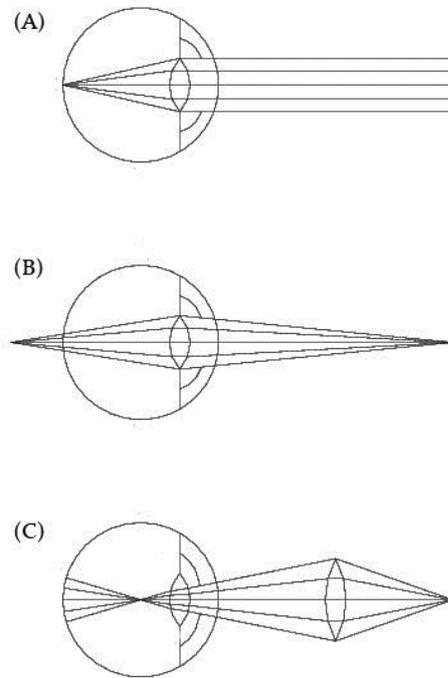


Figure 8 – Berkeley's treatment of the Barrow Illusion

(A) Rays from a distant object come to a focus on the retina.
 (B) Diverging rays from a near object come to a focus behind the retina (before accommodation).
 (C) The Barrow illusion produced with a double convex lens: converging rays to come to a focus in front of the retina.
 Adapted from Berkeley (1732/2008, §35, p. 17), © 2008 Desmond M. Clarke.

Berkeley's relationship with the phenomenological argument is then somewhat unstable. For on the one hand, a conception of visual depth experience as a line turned endwise to the eye lacks motivation. And on the other hand, Berkeley cannot appeal to the optical context where a conception of depth as a line turned endwise is well motivated, as he rejects geometrical descriptions of vision as limited in their explanatory reach, specifically with respect to visual experience.

Thrane (1977) helpfully uncovers yet another variant of the form of argument we have been considering. This one is again in the form of a dialogue, and found in one

⁵¹ This point holds whether it might be admitted that it does not provide incontrovertible support for his campaign against the geometrists (see Lennon, 2007, p. 39 ff.).

of Berkeley's later works, *Alciphron*. It also incorporates several claims we have discussed already. First there is the claim that we do visually perceive distance, embodied in Alciphron's prompted report:

Euphranor: Look, Alciphron, do you not see the castle upon yonder hill?

Alciphron: I do.

Euphranor: Is it not at a great distance from you?

Alciphron: It is. (Berkeley, 1752/2008, Dialogue IV, §8, p. 278)

Then there is the claim that distance is a line perpendicular to the eye, and that such a line would not project to more than one point on the retina, and that the appearance of any distance will involve projection to the same point:

Euphranor: Tell me, Alciphron, is not distance a line turned end-wise to the eye?

Alciphron: Doubtless.

Euphranor: And can a line, in that situation, project more than one single point on the bottom of the eye?

Alciphron: It cannot.

Euphranor: Therefore the appearance of a long and of a short distance is of the same magnitude, or rather of no magnitude at all, being in all cases one single point.

Alciphron: It seems so (*ibid.*)

Finally, there is the claim that the preceding claims together motivate an indirect account of the perception of distance:

Euphranor: Should it not follow from hence that distance is not immediately perceived by the eye?

Alciphron: It should.

Euphranor: Must it not then be perceived by the mediation of some other thing?

Alciphron: It must. (*ibid.*)

In the voice of Euphranor, Berkeley seems to move from an optical fact to a conclusion that perception is indirect, via a claim about the optical basis of perceptual

experience. Thrane (1977, p. 246) accordingly refers to it as the *physico-phenomenological argument*.

This argument has a disputed status amongst Berkeley scholars. For instance, Armstrong thinks that it is absurd to think that we visually experience retinal images, and therefore that Berkeley's argument is invalid (Armstrong, 1960, p. 9). But Turbayne seems to think that, because it is absurd to think that we see retinal images, Berkeley must be only assenting to this claim for the sake of argument (Turbayne, 1955, p. 345ff.). Turbayne dubs this absurdity an instance of "the psychologists' fallacy". A putative error in reasoning that "involves the supposition that we may be directly aware of things which we can only know about", a paradigm case of which would be what occurs on the retinas of the optically and physiologically ignorant (p. 351). To the contrary, though, one might think that both the above are guilty of what Thrane coins the "philosopher's fallacy", namely, "the view that what we do not know about cannot happen or exist". To illustrate he suggests that whilst we do not know "by seeing the retina that we see light impinging there [...] it scarcely follows from this that we therefore do not see the light that (as it happens) does impinge on the retina" (Thrane, 1977, p. 259).

In fact, the interpretive disagreements and accused fallacies can all be seen as the product of Berkeley's conflation of perception and perceptual experience. For even if retinal events are a far cry from visual experience, one might still accept that perception involves seeing light. And if that is true then the light that that hits the retina is the light we see. In essence, the discussion reveals that Berkeley might have a variety of intentions, and it is not clear which, when he says that "what we immediately and properly see are only lights and colours in sundry situations and shades and degrees of faintness and clearness, confusion and distinctness" (Berkeley, 1732/2008, §77, p. 35). One is not particularly ambitious: he might mean simply to point out that it is only light that hits the photoreceptors in the retina with varying degrees of intensity and focus. But perhaps he means something less bland than this. Perhaps he means to persuade us that *because* light is all that hits the retina, all that we immediately visually perceive is light. Indeed, he might intend to imply this and more. He might intend to persuade us that because all that we immediately visually perceive is light, all that we immediately visually experience is light. This would be exemplary of the strategy described at the end of the last chapter.

3.4. Sensation, perception, & perceptual experience

In providing the grounds for his account of visible depth, Berkeley provides a variety of LAs, and these arguments have their ambiguities. It is not clear whether Berkeley means to persuade us that:

- (a). all we immediately visually perceive is light;

or that:

- (b). all we immediately visually experience is light;

or indeed:

- (c). both the above.

It is also not clear whether Berkeley's intention is to persuade us of anything more than the merely incidental fact that:

- (d). all that hits the retina is light.⁵²

However, limiting Berkeley's purposes to (d) is certainly implausible. Berkeley's intentions must accord to at least option (a), and more likely (b) and (c); and this is the source of the trouble.

As I conveyed at the beginning of §3.2, a Berkeleian object is a collection of sensations, the existence of which is dependent upon perception. Indeed, "[t]he things [...] immediately *perceived* are ideas or sensations" (Berkeley, 1734/2008, Dialogue II, pp. 196 - 197, emphasis mine). This is a thesis that contrasts his view from one Locke might have held, in claiming that sensations are the *only* objects of perception. But it would be the most basic of logical errors to conclude from that the claim that all sensations are perceived. It is still possible that, *e.g.*, a visual sensation is merely the unperceived event of light hitting the retina, in which case the existence of objects would depend solely upon other ideas of sense that are perceived. However, what gives us reason for thinking that Berkeley wishes to assert more than (d) is the architecture of Berkeley's theory of visual perception. For if Berkeley does not identify the immediate object of visual perception with the light that hits the retina, then he cannot provide requisite motivation for his theory. Furthermore, discussion of the

⁵² Berkeley is certainly not the only one to equivocate on these matters. In more recent times, O'Shaughnessy provides a discussion of the visual perception of light unhelpfully equivocated with the visual experience of light (1984, compare pp. 193 and 200).

phenomenological version of the one-point argument gives reason for thinking that Berkeley is being more ambitious than stating a brute physical fact. For apparently, an explanation that posits operations upon lines and angles (in virtue of which perceivers putatively compute distance) is offered in vain so long as Berkeley himself is “conscious of no such [lines and angles]” (1732/2008, §12, p. 9). Similar examples abound.⁵³ Unless Berkeley is employing a double standard, he is committed to something like (b); and given reasons for attributing (a), then (c) seems equally likely.

In fact, very early on Berkeley’s ideas of sense were given such an interpretation. In an essay critically reviewing Berkeley’s “Sentiments of Ideas” Thomas Reid describes an idea of sense (sensation by another name) as “the act, or feeling of a sentient being”, the “very essence” of which “consists in its being felt” (1785, Essay II, Chapter XI, p. 179). And in doing so, he explicates the claim that their *esse* is *percepti* as the claim that their *esse* is *sentiri*: “As there can be no notion or thought but in a thinking being, so there can be no sensation but in a sentient being” (ibid., pp. 178 - 179) (ibid., pp. 178 - 179).⁵⁴ This explicit appeal to sentience marks a phenomenological reading of “sensation”, for which I will use the term *sensory experience*.

Reid uses the word “feeling” to mean the same as “sensation” in some cases (such as above), but not in others. When feelings are not simply sensations, they denote “the *perceptions* we have of external objects, by the sense of touch” (ibid., Essay I, Chapter I, p. 34, emphasis mine). For instance, when “feeling a body to be hard or soft, rough or smooth, hot or cold; to feel these things, is to perceive them by touch”

⁵³ E.g., he is “convinced” of the falsity of the geometrical theory’s postulation of judgements concerning the convergence and divergence angles of the eyes by his “own experience”, since he is “not conscious” of employing the turn of the eyes to make such judgements (Berkeley, 1732/2008, §19, p. 10).

⁵⁴ By “sentience” Reid refers to what people today might call qualitative experience or consciousness (cf. Nichols, 2007, p. 83). This latter term means something closer to introspection for Reid, namely “that immediate knowledge which we have of our present thoughts and purposes, and, in general, of all the present operations of our minds [...] and not of external things” (1785, Chapter I, Essay I, pp. 17 - 18). Hence it is “improper to say I am conscious of the table which is before me. I perceive it, I feel it, but do not say I am conscious of it” (ibid. p. 18). So he certainly has his own reasons for not using the word “conscious” here, but none that conflicts with the interpretation. Sensations can be objects of consciousness (in his sense) though not objects of perception (in his sense).

(*ibid.*, p. 34).⁵⁵ But in contrast to a perception, a sensation proper is an act of mind “distinguished from all others” by the fact that it “hath no object distinct from the act itself” (*ibid.*, p. 33). In short, Reid claims that the act/object analysis of sensation, exemplified in Berkeley’s insistence in changing “ideas into things” (Berkeley, 1734/2008, Dialogue III, p. 225) is simply not applicable to sensation.⁵⁶ If the analysis were applicable, then sensation and perception would be on a par in possessing objects, and indeed here lies the central difference between Berkeley’s view and Reid’s. Reid ventures: “Suppose I am pricked with a pin [...] Is the pain I feel, a sensation? Undoubtedly it is”, and then asks “Is the pin a sensation?”, to indicate that “undoubtedly” it is not (Reid, 1785, Essay II, Chapter XI, p. 180). On Reid’s view, the pin and every property it instantiates is necessarily independent of any sensation and any property it can instantiate. For a sensation cannot have “length and thickness, and figure and weight” *etc.* (*ibid.* p. 180). But for Berkeley a sensation can instantiate all these properties. If objects are collections of sensations then by Leibniz’s Law the properties of objects are the same as the properties of sensations. On his view, any “act” of sensation just is an “act” of perception.

Keeping in mind the ontological neutrality of the direct object of perceptual experience (see §1.5 above) can help focus on the fact that Berkeley and Reid propose contrasting accounts of both sensory experience and perceptual experience. On Reid’s analysis a pain sensation itself is all feeling and no object, whereas the perceptual experience of a pin is most definitely that of an object. On Berkeley’s analysis the experience of pain and the experience of a pin *qua* ideas of sense are on a par *qua*

⁵⁵ Just as realism is superficially congruent with idealism, so Reid’s treatment of perception is superficially congruent with Berkeley’s: there is room for the reality of objects in Berkeley’s system, albeit an immaterial reality. For when Reid asserts that in sensation “the feeling and the thing felt are one and the same” (1785, Essay I, Chapter I, p. 34), Berkeley could reply (in agreement) that “those immediate objects of perception, which according to you are only appearances of things, I take to be the real things themselves” (1734/2008, Dialogue III, p. 225). Hence, the difference that makes a difference is not found in the metaphysics of perception *per se*, but rather in the metaphysics of sensation; and, in the end (for our purposes at least), the implicitly proposed phenomenology of sensation.

⁵⁶ Berkeley’s equivocation between sensations and ideas of sense is a little frustrating here: Are the sensations objects (*qua* ideas)? Are there objects (*qua* ideas) of sensation? Thankfully, Reid would answer both in the negative. Admittedly, in an earlier work, Reid (1764/1997) does occasionally seem to say that sensations are perceived. But plausibly in those cases he is merely “falling in with familiar Berkeleyan [sic.] language” in emphasising their mind-dependent nature (Pappas, 1989, p. 158).

sensory experiences.⁵⁷ The issue between the two views then, is whether we both perceptually experience the pain and the pin, in the same way at the same time.

To claim that we do perceptually experience both the pain and the pin, in the same way at the same time, is the kind of bold statement characteristic of an account of perceptual experience as indirect. But it is not clear now how it could be motivated. The difficulties Berkeley would have on this count can be brought out by attention to some of his equivocations. Hold judgement for a moment on whether Reid's interpretation of Berkeleian sensation is correct; that is, entertain a reading of sensation that does not necessarily mean sensory experience. A key motivation for the kind of theory of perception Berkeley provides is the proposal that visual sensation is limited (see §3.2). In particular, the motivation is to show the need for an account of the ways in which visual perception is not limited. We do see distance, and this is a psychologically interesting fact that needs explaining (see §4.1). The claim that sensations are perceived is a complication that can be transformed into a positive aspect of the theory. To keep from claiming that sensations are both limited and not, Berkeley needs to draw a distinction between sensations that are directly and indirectly perceived, in which case the latter need not be limited in the same way as the former. But one can accept all this, and still claim that

- (e). Sensations of light on the retina are not sensory experiences

As I noted at the beginning of the section, and at more length in the last section, there are reasons for thinking that Berkeleian visual sensations are sensory experiences. But then, given that the objects of perception are sensations, and given that the perception of depth is an *explanandum* for the theory, Berkeley seems to head into a contradiction in his use of LAs: visual sensory experience is claimed to be both limited and not so limited. Again, Berkeley could be rendered consistent here, by marking a distinction between direct and indirect visual sensory experience. But although that is reasonable as an account of visual perception, grounded in optical and perhaps physiological facts, it has little to no motivation as an account of perceptual experience. For why should we accept the premise that visual sensory experience is limited?

In fact, one is led to the claim that visual sensory experience is limited by accepting the assumption that all sensations are perceptually experienced. To be maximally charitable to Berkeley, in the course of a dispute over the correct description of per-

⁵⁷ One way of making Berkeley's view more sensible would be to take a perceptual model of bodily experience (cf., Ayers, 1993, pp. 162 - 163). But in that case, it is still arguable that it is the body part that is perceptually experienced rather than the sensation itself.

ceptual experience, perhaps the appropriate question is: Why should one not think that sensations are perceptually experienced? More plainly: Is there even a contrast between sensation and perceptual experience? It is to this issue that we now turn.

3.5. Perceptual sensation

At this point, it is worth explicitly stating the common-sense conception of perceptual experience as the *direct perceptual experience (DPE)* thesis. Stated as the negative of the indirect perceptual experience thesis (IPE), DPE is as follows:

- *S* indirectly perceptually experiences *x* if and only if *S* perceptually experiences *x* in virtue of perceptually experiencing *y*, and *x* and *y* are distinct.
- *S* directly perceptually experiences *x* if and only if *S* perceptually experiences *x*, and *S* does not indirectly perceptually experience *x*.

To ground the dispute between IPE and DPE, consider: What could the case of the man born blind imply about visual sensory experience in general? A defender of DPE might argue that it implies nothing. She could accept Berkeley's account of the man's visual experience and still claim that it has no bearing upon ordinary visual sensory experience. What Berkeley provides, and what his equivocations (and occasionally his argumentative strategies) unhelpfully blur, is a powerful account of the visual perception of depth and other spatial properties. Part of its power stems from its ability to account for the visual experience of depth. And part of its intrigue is appeal to the body, *qua* organ of "touch". She could accept all this and yet deny that there is (ordinarily at least) a form of visual sensory experience that involves anything less than that which Berkeley's theory so elegantly explains, *viz.* the visual experience of depth.

To further clarify, recall some earlier claims (from §4.1.):

- (i). Visual sensation occurs by means of the energetic impingement of light upon the retina
- (ii). The only spatial properties one ought to attribute to the direct objects of visual sensation are those licensed by the means identified in (i)
- (iii). The only spatial properties one ought to attribute to the direct objects of visual experience are those licensed by the means identified in (i)

The defendant of DPE above holds that (iii) is false in all cases excepting those similar to the man born blind, at that at any rate (iii) does not follow from (i) and (ii).⁵⁸

In a last gasp effort, a proponent of IPE could exploit an implicit concession. For implicitly, the DPE advocate admits that if visual sensation is limited then it is limited as a form of sensation that is not usually conscious. And *prima facie* this seems to trivialise the role of sensation in perceptual experience. For instance, consider Reid's example of smelling a rose. Roses have a light fragrant odour, and smelling the odour just seems like smelling a rose. Reid used this as an example of a case in which a sensory experience (of an odour) is inextricably interwoven with a perceptual experience (of a rose), and he intended to be an illustration of what is generally the case. Now consider Berkeley's account of visible depth as mediated by tactile sensations. A critic of the account might say that it is a wonder why visible depth seems visual rather than tactile. But a ready response is that the occurrence of visual sensations makes the sight of "visible" depth a visual experience rather than a tactile experience. And in fact, the point has an even broader application. For it would enable a distinction between perceptually experiencing an object and conceiving it, in that in the former case but not the latter there is a specific sensory character to the experience.

There is a very obvious constraint here operating here, call it the *sensory mode constraint*:

- A perceptual experience can only be a perceptual experience of a given mode in virtue of the occurrence of sensations distinctive of that mode.⁵⁹

⁵⁸ In fact, she need not even concede the point about the man born blind. She could concede that the man born blind, upon first being made able to "see", would certainly perceive light (say, upon being placed in front of a sunlit window), and have a sensory experience of illumination. But she would not need to make the further concession that the man would perceptually experience anything in sight; *i.e.*, she could argue that this would be a case of perception without perceptual experience. See A.D. Smith (2006, pp. 420 - 421) for a discussion along these lines. Presently, I will construe the DPE theorist's position as more generous, as the way in which an IPE theorist might attempt to exploit the concession turns out to be useful and illustrative.

What this shows is the need for the DPE advocate to clear up some further ambiguity in the role of sensation in perceptual experience. First consider what I will call a *perceptual sensation*:

- A sensory experience of a given mode, in virtue of which a perceptual experience occurs and is an instance of that mode.

Perceptual sensations bridge sensory and perceptual experience. There are two points of note here. One is that it is in virtue of perceptual sensations that sensory experience seems perceptual. I will say a little more about this shortly and a lot more in the next three chapters. A second is that it is in virtue of perceptual sensations that perceptual experience seems sensory.⁶⁰ This extends the sensory mode constraint to state a further condition on perceptual experience, which translates to

- Perceptual experience in mode x iff. perceptual sensation in mode x

If something like the sensory mode constraint is true then any adequate description of perceptual experience ought to embrace perceptual sensation. And in doing so the DPE theorist can resist the IPE theorists attempts to exploit the concession that there is a form of sensation that is usually not conscious.

In fact, the concession can be turned into a positive claim by denying that the occurrence of perceptual sensation is a brute fact. Centuries of research on the psychology and neuroscience of perceptual systems throw considerable doubt on that. More to the point, insisting that the occurrence of perceptual sensation is simply a brute fact rules out these avenues as a source of possible explanations. To accommodate the idea that perceptual experience has a deep structure, what is needed is an ap-

⁵⁹ An alternative would be fine, like: “A perceptual experience can only be a perceptual experience of a given mode in virtue of the occurrence of sensory experiences in that mode”. Here the necessary connection between such sensory and perceptual experiences is just bluntly stated, rather than being suggested by the fact that sensory experiences can be distinctive of a mode. This has the virtue of avoiding the controversy over whether to distinguish the senses phenomenologically (after Grice, 1962/2002) or by their “proper object” (perhaps after Aristotle, see Sorabji, 1971), or by some other means. But it does not make the point as simply.

⁶⁰ These comments are merely a reflection of a consensus in the literature. For instance, O’Shaughnessy uses the term “perceptual sensation” to illustrate the first point (though not with the same strength that I hold it) when he marks a distinctive “type of sensation that is involved in such perceptual experiences as seeings and hearings” (1980/2008, p. 204). It is also used in reference to the second point by A.D. Smith when asserts that perceptual experience “is sensuous in a way that mere thought is not because it involves perceptual sensation” (2002, p. 61).

appropriately neutral way of characterising the enabling conditions for perceptual sensation. Consider in this regard the notion of a *mere sensation*:

- A sensory event that is necessary for the occurrence of a perceptual sensation

This provides enough room for a variety of architectures of perceptual experience: Mere sensation is one of potentially many individually necessary and jointly sufficient conditions for perceptual sensation. Furthermore, the notion of mere sensation *qua* sensory event is general enough to accommodate the various notions of visual sensation (VS) that we have discussed so far. By way of summary:

- VS_1 : energetic impingement of light on the retina
- VS_2 : unconscious sensation of light
- VS_3 : sensory experience of light

All these could be mere sensations, and all these could be involved in ordinary visual experience. And significantly, they are all forms of sensation that we have seen invoked in the course of LAs (see §3.3). What the distinction between mere and perceptual sensation unmasks is a fallacy of equivocation inherent in this kind of argument as applied in account of perceptual experience. In particular, the inference from the limitation of mere sensations to the limitation of perceptual experience is invalid. For what is required is an inference from the limitation of *perceptual sensation* to the limitation of perceptual experience.

The equivocation is understandable, as it is buried amongst a lot of cross-talk about the immediate object of perception. Claims might be reasonable or trivial when concerning perception. The same claims might be *unreasonable* and *non-trivial* when concerning perceptual experience (and vice versa). But the dissociations are sometimes subtle and easy to miss. Indeed, if what I have said above is correct, then Berkeley does fail to note the relevant subtleties. And the reason is likely because he fails to distinguish between mere and perceptual sensation. The visual sensations of the man born blind and the unbodied spirit are not perceptual sensations. Sensations (of light) with the same organic bases might in some contexts be mere sensations and in other contexts be perceptual sensations. The difficulty is to not confuse one for the other.

To illustrate, recall a discussion from the end of last chapter, where it was charitably suggested that an IPE theorist could draw upon prosthetic perceptual experience as a case in its favour. Paying attention to the distinction between perceptual and mere sensation provides the means for rejecting an IPE description of prosthetic perceptual experience. When the prosthesis is actively used by a practiced user, the vibratory stimuli are mere sensations that are *inter alia* necessary conditions for percep-

tual sensations. They are not perceptual sensations themselves, unless perhaps, the user of the device is immobile.

To demonstrate just this point, Lenay et al. (2003) provide a vivid example of a study by Lenay, Canu and Villon (1997) in which a single photoelectric cell with a receptive field roughly corresponding to a 20° cone was affixed to a finger and coupled to a single vibrator held in the other hand. Vibration was all-or-nothing according to a threshold in the photoelectric cell. After a short period of freely moving the photoelectric receptor and actively producing tactile stimulation, the authors claim that a blind-folded subject typically becomes “conscious of the presence of an object [sc., a light source] situated in the space in front of him. Apparently it seems to the subject that the temporal succession of sensations derive from different “contacts” with a single distal object” (Lenay et al., 2003, p. 282).

Moreover, this provides a direct illustration of the double province of sensations, in this case sensation of vibration:

[A]rtificial stimuli produced independently of the movements of the finger on which the photoelectric cell is placed are not associated with a distal perception, but continue to be perceived proximally at the level of the skin. Similarly, if the movements cease, the distal spatial perception disappears (Lenay et al., 2003, p. 282)

As seems to be intended, we should take “perception” here to mean perceptual experience. The contrast is between a case where a succession of vibratory sensations results in the perceptual experience of a distal object and a case where the *same* sensations result in perceptual experience of proximal object. In the former case, the vibratory sensations are mere sensations that in the context of associated sensations of movement yield perceptual sensations in a nondescript prosthetic sensory mode. Without the associated movement, they are perceptual sensations of vibration on the surface of the skin.

A further difference between the two cases, as described at least, is the object of the experience. This tracks the change between vibratory sensations being perceptual and mere sensations. But more to the point, it is conducive to the claim that perceptual experience always seems to be not merely direct, but directed. This is a familiar theme in defences of direct realism, namely, that “there clearly is *some* phenomenological distinction to be made between perceptual experience and mere sensation”, in that the “former does indeed appear to be, in some sense, object-directed in a way that the latter is not” (A. D. Smith, 2002, p. 58).

This chapter and the last two chapters have provided a defence of the directness of perceptual experience in the context of an assumed neutrality of the direct object of

perceptual experience. What we need now is a defence of the claim that perceptual experience can be described as seeming to be directed upon reality, whilst maintaining said neutrality. That is the aim of the next part of the dissertation.

PART II

The appearance of a thing (the experience) is not the thing that appears (that supposedly 'stands over and against us'). In the integration of consciousness we experience the appearance as being in the phenomenal world, things appear to us. The appearance itself does not appear, it is experienced.

(Husserl, 1900 & 1901, V, §2; as cited & translated by Hickerson, 2007, p. 79)

Chapter 4 The neutral intentionality of perceptual experience

4.0. Introduction

In §1.5, I drew a moral from the toils of sense-datum theorists: thou shalt remain ontologically neutral in giving an account of perceptual experience. At this point it is useful to make an addendum: making certain ontological assumptions is all well and good if you are in the business of doing metaphysics (provided that you argue for these assumptions at some point). I am not in that business, so I try and adhere strictly to the moral. Yet a number of contemporary philosophers discussing perceptual experience are really discussing its metaphysical status, and typically this comes in discussion of the intentionality of perceptual experience. In this chapter, I discuss the intentionality of perceptual experience with a view to clarifying my neutral stance on the metaphysics of perceptual experience.

I begin (in §4.1.) with an illustration of two instances of the move that I want to avoid. The first will be already familiar from the first chapter, namely, the phenomenal principle. The second will be discussed further in the next chapter; it is the claimed transparency of perceptual experience, of note here because it is typically appealed to in claiming that perceptual experience is an intentional state. I then (in §4.2) move on to discuss intentionality itself, giving brief overviews of disputes over the history of intentionality and the problem of intentionality as it is attributed to Franz Brentano. To make a start on relating intentionality and perceptual experience, I discuss (in §4.3) ways in which intentionality has been treated that are either inadequate for describing perceptual experience or inadequate for addressing the basic problem of intentionality. After that, I focus on more contemporary discussions (in §4.4), specifically a research programme that aims to solve the problem of intentionality by providing a naturalistic theory of representational content. I close (in §4.5) by distinguishing a neutral stance on intentionality from any stance that involves adherence to a metaphysic of content, distinguishing the stance from several notions of ‘phenomenology’ as I do so.

- 4.1 *Neutrality and perceptual experience*
- 4.2 *Intentionality*
- 4.3 *Intentionality and perceptual experience*
- 4.4 *The natural contents of perceptual experience*
- 4.5 *Phenomenology vs. neutral intentionality*

4.1. Neutrality and perceptual experience

There is a tendency in the philosophy of perception to run together issues concerning the description of perceptual experience and issues concerning the metaphysics of perception. As I mentioned at the beginning of chapter 1, this is essentially a matter of how the issues of the field are understood by those working within it. To give an example, here is how one author characterises the distinctive questions, and hence the distinctive problems, with which the philosophy of perception is concerned:

rather than asking about how the mechanisms of perception work, it asks what are the most general features of anything we could reasonably call ‘perception’ or ‘perceptual experience’, and tries to give a consistent and systematic description of them. It turns out that this is a harder task than it might initially seem: quandaries, conundrums, and tensions within our conception of perception arise. I claim that these problems are independent of the psychological/scientific questions about perception, and also of the epistemological questions. The problems are phenomenological: they arise from reflection upon perception as we experience it. (Crane, 2001a, p. 130)

But in fact these “phenomenological problems” are only problems because they lead to conceptual problems, and at root these are problems in discerning the metaphysical status of perception. To begin with an obvious example, take the phenomenal principle:

- “If there sensibly appears to a subject to be something which possesses a particular sensible quality then there is something of which the subject is aware which does possess that sensible quality” (Robinson, 1994, p. 32)

When placed in the context of arguments such as the argument from perspectival variation (see §1.2.), the phenomenal principle functions as an inference to the existence of sense-data. Stated on its own, it expresses a metaphysical thesis about perceptual experience. M.G.F. Martin calls this *actualism*, describing it as the thesis that “whatever qualities one senses, some actual instance of those qualities and the object which bears them must exist and be sensed” (2000, p. 218). Actualism shares its name with a more general metaphysical thesis, which denies that there are any things which merely possibly exist.⁶¹ What actualism about perceptual experience

⁶¹ At least: where the possible existence of x is in no way derivative of something actual, x cannot exist. In a slogan: everything that exists actually exists. For a useful review of the difficulties of unpacking this slogan (and similar) see Bennett (2005).

denies is that there are any things perceptually experienced that merely possibly exist. According to Martin's discussion, one way of making sense of why so many otherwise very sensible individuals were lead to believe in the existence of sense-data, is to understand them as attempting to do justice to the description of perceptual experience. As an example, he conveys a description of his experience as he looks at a lavender bush and a straggling rose on the street of his North London home:

[It] is evident to me that I am experiencing these things, and not merely thinking about them, or imagining or remembering them. The latter things I can do in the absence of the objects of perception, but it does not seem to me that I can be this way, actually experiencing, without the relevant objects or features present in my environment. This recommends Actualism to me, as defenders of the sense-datum tradition have observed (2000, p. 219)

From the context of Martin's discussion, it is clear that the sense in which things are "evident" to him is not meant to hold any epistemological force. What he intends to show is that direct realists and sense-datum theorists share an intuition, an intuition that "recommends" actualism to them. In short, by embracing actualism is being true to the way the experience seems. But it is still a substantial issue whether actualism is true. And relatedly, it is certainly controversial to claim that such observations can establish that Martin *perceives* a lavender bush and a straggling rose. For one might deny that it follows from the fact that Martin perceptually experiences a lavender bush and a straggling rose that there *is* a lavender bush and a straggling rose which Martin perceives.

Another way in which a description is thought to "recommend" a metaphysical thesis is by reflection upon what has come to be known as the *transparency* of perceptual experience. Conveying the typical description, Martin writes:

When I stare out of the window I can see the lavender bush at the end of the street, the straggling rose on my fence, and I can hear the sound of traffic in nearby roads. When I reflect on what it is like for me so to experience, these very same objects and features remain the focus of attention as aspects of how I experience: this commits me to Transparency with regards to perception (2000, pp. 218 - 219)

In the next chapter, I will examine two variants of the thesis that perceptual experience is transparent. At present it need only be noted the phenomenological claim that perceptual experience is transparent has been taken to have implications for the metaphysics of perception. In particular, it is thought by many to reveal a fundamental fact about perceptual experience: that the key to its metaphysical nature

lies in understanding its *intentionality*. This is a concept I will discuss further very soon. But to give an initial grasp, what many of these authors have in mind is something along the lines that John Searle suggests (in appropriately vague terms) when he says that: “Intentionality is that property of many mental states and events by which they are directed at or about or of objects and states of affairs in the world” (1983, p. 1). In the hands of some, the idea that perceptual experience is transparent means both that introspection upon perceptual experience does not reveal any elements that are non-intentional and that this is to count against a theory that holds that there are such elements to be found. Gilbert Harman, for instance, suggests that insufficient attention to the intentional nature of perceptual experience as revealed in noting its transparency, leads sense-datum theorists to identify the properties of the object of experience with the properties of “something inner and mental” (2002, p. 665).

It is somewhat doubtful that the proponents of sense-datum theory in their adherence to actualism were insensitive to the notion of intentionality. For instance, Russell’s (1905) paper *On denoting*, is widely recognised as a seminal work in the intentionality of thought in the analytic tradition (see *e.g.* Jacob, 2010, §5; Siewert, 2008, §4). But my aim here is not to set the historical record straight.⁶² For all I mean to highlight is this: the idea that certain positions in the philosophy of perception are motivated by reflection upon perceptual experience, exhibits a tendency to move from claims about perceptual experience to claims about the metaphysics of perception that is of a rather general nature.⁶³ Indeed, the point of Martin’s (2000, pp. 218 - 219) discussion of actualism and transparency is to provide a straightforward characterisation of direct realism as the combination of both theses. My discussion in the two following chapters is an attempt to extract the phenomenological details of these theses from the metaphysics that they putatively “recommend”. Part of that requires a characterisation of perceptual experience as exhibiting intentionality, in an appropriate sense of this rather philosophically rich concept.

⁶² For a deeper discussion that places the concerns and motivations of sense-datum theory in the context of the dominant metaphysics of its heyday, see Martin (2000).

⁶³ For an article that exhibits this tendency somewhat rampantly, see Schellenberg (2010, *esp.* the “phenomenological problems” she raises on pp. 33 - 34).

4.2. Intentionality

The study of intentionality is a minefield of several crosscutting and occasionally orthogonal controversies.⁶⁴ It is perhaps unsurprising then, that one of these controversies is over the roots of the modern concept of intentionality, and indeed how modern it is; that is, how long the concept of intentionality itself has been the subject of intellectual enquiry.⁶⁵ Elisabeth Anscombe claims that the etymology of intentionality as understood in the 20th century is a metaphorical extension of the latin phrase *intendere arcum in*, which from *intendo* (to hold out, stretch or strain), *arcus* (an arc or a bow) and *in* (at or on) yields “to stretch a bow at”. The metaphor is applied by introducing *animus* (mind or soul) to yield *intendere animum in*. Hence, the directedness of intentionality is metaphorically described as a mind stretching towards something (Anscombe, 1965, p. 4). By contrast, Crane traces the noun *intentio* (a stretch or tension), derived from *intendere*, to the medieval scholastic translation of Aristotle’s term for thought, *νόημα*, as a product of their engagement with the writings of Aristotle’s Arabian commentators. In the hands of the scholastics, an *intentio* was a concept, and *prima intentio* and *secunda intentio* referred to concrete objects and logical categories of concrete object concepts respectively, the latter being the main topic of interest. Another line Crane identifies, runs through St. Thomas Aquinas’ extensions of Aristotle’s hylemorphic theory of sensory perception to an account of thought, according to which mind assumes the form of the object thought, but whereas the form of the object has an *esse natural*, the form of the object in the mind has an *esse intentionale* (intentional existence). A yet further line he identifies is René Descartes distinction between the formal reality of an idea, which consists in facts about its reality *tout court*, and its objective reality, which consists in facts about what the idea *concerns*; objective reality (in this sense) being closer to what is meant by intentionality in contemporary times (Crane, 2001a, pp. 8 - 10).

However, Victor Caston traces yet another alternative path between Aristotle’s philosophy and the scholastics, via St. Augustine’s supplementation of Aristotle’s dyad-

⁶⁴ For extensive bibliographic material (in German, but of mostly Anglophone texts), see Barz (2002) and the service sections in Metzinger (2010). Jacob (2010) and Siewert (2008) also provide general introductions, each with a comprehensive range of bibliographic material.

⁶⁵ For a collection of essays on the history of intentionality, see Perler (2001). For a dedicated monograph on the history of intentionality in the Brentanian tradition (particularly Brentano himself and two of his students, Twardowski and Husserl), see Hickerson (2007).

ic analysis of perceptual relations with a third relatum, the *intentio*, which he treated as the striving or willing of the mind in the perceptual act. This, Caston argues, is something of theme in Augustine's work. And as the theme is revealed in other areas, one discovers Augustine engaging with extromission theories of perception developed by the stoics at least as early as the third century B.C.E. One of these theorists, Chrysippus, describes vision as related to an object by the *έντασις* (tension, straining) of a visual cone. *Έντασις*, moreover, is derived from *εντείνω* (to stretch, strain tight) a cognate of the latin verb *intendo* that Anscombe claims to be the basis of a key metaphor operative in the modern understanding of intentionality (Caston, 2001, pp. 24 - 25; 2008, §1).

Whatever its actual roots may be, Franz Clemens Brentano is typically credited with introducing the concept of intentionality to modern philosophy in the following passage:

Every mental phenomenon is characterized by what the Scholastics of the Middle Ages called the intentional (or mental) inexistence of an object, and what we might call, though not wholly unambiguously, reference to a content, direction toward an object (which is not to be understood here as meaning a thing), or immanent objectivity. Every mental phenomenon includes something as object within itself, although they do not all do so in the same way. In presentation something is presented, in judgement something is affirmed or denied, in love loved, in hate hated, in desire desired and so on.

This intentional in-existence is characteristic exclusively of mental phenomena. No physical phenomenon exhibits anything like it. We can, therefore, define mental phenomena by saying that they are those phenomena which contain an object intentionally within themselves (1874/1973, p. 68)

There are three key theses to be found in this passage. In order of occurrence, they are:

- (i). Every mental phenomenon is characterised by the intentional inexistence of an object
- (ii). Every mental phenomenon is directed toward an object
- (iii). Mental phenomena are defined and distinguished from physical phenomena by the fact that they contain an object intentionally within themselves

Thesis (ii) is closest to my concerns. But a lot of the issues I hope to leave aside are due to the fact that much of the contemporary interest in intentionality concern the way in which (ii) is bound up with interpretations of (i) and (iii).

Begin with the basic lesson drawn from Brentano in mainstream philosophy of mind, aptly summarised by Dan Dennett:

Brentano's point about *direction upon an object* is this: One cannot want without wanting something, imagine without imagining something, hope without hoping for something, and yet the *object* in all these cases does not, or need not, exist in the fashion of objects of physical actions, such as lifting, touching, sitting upon. (1969/1983, p. 21)

Hoping, wanting, imagining, *etc.* are all states of mind that characterise a subject's attitude towards something. But the rub comes in the *contrast* with the fact that, whereas when I lift something, it ought to follow that there is something that I lift, if I want a wife:

it not only does not follow that there is a wife I want, but also does not follow that there is a woman whom I want to marry, any more than it would follow from the fact that I want a spaceship that there is a spaceship that I want. (*ibid.*, p. 21)

The peculiarity of intentionality is in the peculiarity of intentional relations, the *prima facie* absurdity of which is captured by Wittgenstein when he writes:

I can look for him when he is not there, but not hang him when he is not there.

One might want to say: "But he must be somewhere there if I am looking for him." – Then he must be somewhere there too if I don't find him and even if he doesn't exist at all. (1953/2001, §462, 113e)

Wittgenstein's quip and Dennett's rendition of the lesson to be learnt from Brentano both illustrate a reading of "inexistence" in thesis (i), and "containing an object intentionally within" in thesis (iii), which serves to construct what is often called the problem of intentionality. The problem of intentionality is the problem of naturalising the mind. In particular, the difficulty is the mind's putative relation to queer objects that seem to have either a diminished existence within the mind or no viable existence at all in their mere "inexistence", whilst nevertheless construing mind as a part of the real world and thus causally related to that world.

Brentano is often credited equally with introducing both the notion of intentional inexistence *and* the problem of intentionality to philosophy of mind. But some doubt that Brentano introduced the idea of intentionality at the same time as introducing the problem:

In Brentano's earlier interpretation of intentionality, he understood the intentional object to be a mentally immanent object and the intentional relation to be an immanent relation between the mind and its contents [treating] the intentional object as purely immanent and as non-real. (D. Moran, 2000, p. 49)

This reading draws support from early parts of Brentano's *Psychology from empirical standpoints* (1874/1973, see e.g. p. 19) that seem to express a view on which all objects of mind are phenomena, and all phenomena, mental and physical alike, are held to exist in the mind, the latter as appearances distinct from reality (Crane, 2006a, pp. 27 - 30; see also D. Moran, 1996, pp. 17 - 22). Thus, a thought about a physical phenomenon merely relates the mind to an object within the mind, an in-existent object, in so far as it is intentionally contained within the mind. No continuity with reality is assumed on this view. But later, upon the publication of the second edition of that work (now widely available in English translation) Brentano apparently came to change his stance, suggesting that in some cases intentionality is a relation to reality. If one bears in mind the notion of "inexistence" introduced in the context of his earlier views, then this simply states the problem of intentionality; certainly, it is of little worth in resolving it (Crane, 2006a, pp. 31 - 33).

For the sake of completeness, I ought to note that according to another exegesis, Brentano's real problem was the problematic implications of his empiricism, rather than the problem of intentionality as classically conceived. Ryan Hickerson (2007) notes that of the three basic concepts in the passage from Brentano above, physical phenomena have been given a conspicuous lack of attention. Drawing upon Brentano's publications previous to the *Psychology* Hickerson argues that Brentano's concern in demarcating the mental from the physical stems from his work on Comtean positivism. It is from Comte (on this reading) that Brentano inherits his concept of a

physical phenomenon, *qua* physical and *qua* phenomenon. Phenomena are the psychophysical causes of sensations according to Brentano, and all mental phenomena are thus presentations or based on presentations (1874/1973, pp. 63 - 65).⁶⁶ But mental phenomena include not only presentations, but also judgements and normative evaluations that are supposed equally to be based upon presentations. It is then something of a puzzle to see how Brentano could give an account of a wide range of judgements, for “[mental] phenomena are frequently about more than merely physical phenomena”, such as when one judges that a centaur does not exist (Hickerson, 2007, p. 41). Hence, Hickerson sees the following dilemma in the offing:

Brentano must either restrict himself to physical phenomena as physical facts revealed via sensations [...] in which case they cannot exhaust the contents of all judgements; or Brentano must expand his lists to include things like putative entities and fictional objects, in which case the contents of mental phenomena are no longer merely the physical facts revealed via sensations [...]. (ibid., p. 41)

I leave aside the question of which of these problems was the real problem that Brentano faced (if not indeed both), and the further question of whether focus on Brentano’s work can provide insight into the deepest problems posed by the concept of intentionality.⁶⁷ Suffice to say that these problems of intentionality are generated by the thought that intentional objects need not exist in the same sense as ordinary

⁶⁶ This involves him claiming that feelings (*e.g.* of pain) are based on presentations (*e.g.* of a body part), and later on, when he gets to the famous definition of mental phenomena as intentionally containing an object, he relies on his earlier remarks to defend that thesis from a potential criticism along the lines of Hamilton’s thesis that feelings do not have an act-object structure (Brentano, 1874/1973, pp. 68 - 69).

⁶⁷ For yet another problem of intentionality, see Barz (2008); and for arguments that a complete analysis of intentionality creates insurmountable problems for materialism, see Bealer (1996).

concrete objects.⁶⁸ This is effectively to treat inexistence as tantamount to possible non-existence, allowing the more general worry to be put in the form of a trio of inconsistent claims:

- (1) Intentional objects are ordinary existing entities.
- (2) Intentional objects are what intentional states are about.
- (3) Intentional states can be about things which do not exist.

(Crane, 2001b, p. 337)

Call this *the basic problem* of intentionality. Claim (2) can be seen as simply analytic and as setting up the problem, the relation between (1) and (3). In order to frame the basic problem and its relationship to accounts of perceptual experience, I will now examine two modern classic treatments of intentionality. Both aim to provide an answer to the problem; both desire to give an account of the intentionality of perceptual experience; neither is satisfactory.

4.3. Intentionality and perceptual experience

Elizabeth Anscombe made an early attempt to capture the intentionality of perception, suggesting that the “verbs of sense-perception [such as to see, to touch, to hear *etc.*] are intentional or essentially have an intentional aspect” (1965, p. 11). On such a view, seeing *x* (for example) often ‘takes’ a material object, such as in: “You can’t have seen a unicorn, unicorns don’t exist.” But this is merely derivative of the general case in which seeing ‘takes’ an intentional object. And *ex hypothesi* the intentional and material object need not coincide. Such claims are usually corroborated by reference to the possibility of hallucination; Anscombe’s rhetoric is a case in point:

⁶⁸ A related issue that incensed Russell (1905) (apparently upon his encounter with Alexius Meinong’s work (1904/1981)) is that of expressions which seem to refer to non-existent objects. I leave aside discussion of this issue, and indeed several other issues in the philosophy of thought and language (though for a useful reference, see Luntley (1999)). My omissions include developments of the work of Gottlob Frege (1892/1960), though I do discuss Gareth Evans’ and John McDowell’s ideas on the reference of singular terms. Although the latter saw themselves as ‘neo-Fregeans’, for the purposes of our discussion it will suffice to make a comparison and contrast with certain Russellian ideas that Evans draws upon. Similarly, although many representationalist (or sometimes ‘intentionalist’) views in the philosophy of perception draw upon the Fregean notion of a ‘mode of presentation’ (see Chalmers, 2004; and Crane 2010, §3.3 for a review), this feature of such views is not essential for the issues of interest here.

if a man aimed at that dark patch against the foliage, and that patch was his father's hat with his father's head in it, then his father was the material object of his aim; but if he aimed at some patch in a totally hallucinatory scene, and hit his father, you could not say that (1965, p. 17)

The suggestion is that *qua* hallucinatory, the patch in the scene does not exist. Assuming that it is only the class of intentional objects that are characterised by the possibility of their non-existence, the man therefore aims at an intentional object; *mutatis mutandis* for seeing, hearing, touching, *etc.*

Anscombe's suggestion gets us as far as it does by reducing the notion of an intentional object to the linguistic notion of an "intentional verb": a verb that exhibits intensionality (with an 's') and occurs transitively (cf., 1965, pp. 3 - 4). The hallmark of an intensional linguistic context is when either of the following two conditions hold:

- Failure of substitution of co-referring terms *salve veritate*:

e.g., I might believe that the former President of the United States was a man of sound judgement, but I do not thereby believe that of George W. Bush.

Or:

- Failure of existential generalisation:

e.g., I might believe that God can answer all my questions, but it does not follow that God exists.

Accordingly, these belief statements are intensional.⁶⁹ The features that they exhibit in this respect seem to provide a natural account of the possible non-existence of intentional objects. And the directedness of intentionality is then treated as a consequence of the fact that transitive verb phrases require direct objects. In this sense there is an object to my believing even when I say that, "I believe nothing of what you say".

⁶⁹ For a famous attempt to account for certain features of such contexts, such as the fact that the identity of the objects of co-referents can be informative, see Frege (1892/1960). For arguments to the effect that the "real" problem of intentionality lies in reconciling our intuitions about intentional contexts with our intuitions about Leibniz's law, see Barz (2008).

Despite its simplicity, there is a natural suspicion that Anscombe's proposal gets things somewhat backward. The suspicion, more plainly, is that "the intensionality of belief *sentences* is a consequence of the intentionality of the beliefs themselves" (Crane, 2003, p. 35, italics original). If that is right then Anscombe is guilty of "confusing properties of reports with [the intentionality of] the things reported" (Searle, 1983, p. 24).⁷⁰

One way of showing this would be to demonstrate that beliefs *qua* mental states can exhibit extensionality (the opposite of intensionality), by demonstrating that either co-referent substitution *salva veritate* or existential generalisation holds. Searle attempts the latter. On Searle's view, one can validly infer from the (unexpressed) belief that "King Arthur killed Sir Lancelot" to "there is a unique x such that $x =$ King Arthur, and there is a unique y such that $y =$ Sir Lancelot, and x killed y " (1983, p. 24).⁷¹ This approach captures directedness straightforwardly enough. But that comes at the cost of denying the possible non-existence of intentional objects.

More on that in a moment – suffice to say for now that one does not need to pay the cost of denying the possible non-existence of intentional objects in order to demonstrate the poverty of Anscombe's linguistic reduction. For an alternative (indeed, in the present context, better) strategy is to note cases of perceptual experience exhibiting directedness despite a perspicuous lack of apposite verbs of sense perception. One such is a case of prosthetic perceptual experience induced by extended use of a device called *feelSpace*, developed by the Magnetic Perception group at the University of Osnabrück's Institute of Cognitive Science (S. K. Nagel et al., 2005). Their prosthesis consists of a battery powered compass and CPU coupled to vibrating pads lining a belt worn round the waist (see Figure 9). The motors creating the vibration are individually and exclusively active in an all-or-nothing fashion, and the individual activity corresponds to magnetic north in every instance. After a six-week training period, users exhibit physiological responses consonant with altered interactions between visual and vestibular systems specific to rotation of the body, and are significantly more competent in basic navigation tasks in urban environments. Performance benefits are lesser and more variable for complex tasks in virtual environments (presumably because these deviate somewhat from training conditions). But interestingly, the most active users report dramatic (though individually vari-

⁷⁰ Searle's position on this point is unequivocal but not without subtlety, as his own framework for discussing intentionality is based upon the model of speech acts (1983, pp. 4 - 13).

⁷¹ It may not be true there is a unique x and y bearing that relation. But that is orthogonal to the point, as the validity of the inference is merely supposed to express the conditions under which the belief would be true iff. the conditions described obtain.

ous) changes in their experienced relation to spatial properties of their environment.

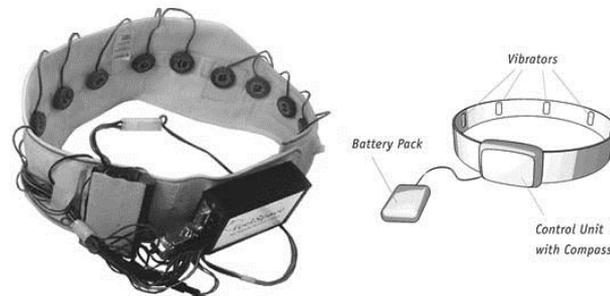


Figure 9 – The feelSpace prosthesis

The box at the front contains the main control unit and a 3DM-G compass. The belt is lined with flat vibratory motors, using Velcro® fastening for variable positioning. The CPU outputs to the vibratory motors and houses a socket for optional attachment to a personal computer.

Adapted from

http://feelspace.cogsci.uni-osnabrueck.de/en/technology_01.html

and Nagel, Carl, Kringe, Märtin, & König (2005, R15)

In some instances, these changes in the experience of spatial properties could be construed as enhancements of spatial thinking: increased spatial memory; increased capacity to order places on a two dimensional plane; all objects and landmarks become easily conceivable as relative to magnetic north *etc.* But the actual indication seems to be that all these changes are grounded on the development of a “spatial feeling” that is not identical to but enabled by the systematicity of the tactile stimulation (S. K. Nagel et al., 2005, R22). Hence, subjects report being “*spontaneously*” and “*intuitively aware*” of the direction of “*intuitively present*” but spatially distant places (*ibid.*, R22, italics specify subjects' reports, translated from German by the authors). Most poignantly, the authors of the study claim that the resultant experience is ineffable in an important respect:

Articulating the perceptual quality they accessed and the qualitative experience arising from the different kind of spatial perception was hard. The observer got the impression that they lack concepts for what happens, such that they could only use metaphors and comparisons to come closer to an explanation. (S. K. Nagel et al., 2005, R23)

Sometimes consciousness is held to be essentially ineffable, and constituted by “intrinsic” (*i.e.*, non-relational) and “primitive” (*i.e.*, unanalysable) properties called

qualia.⁷² But one need not claim the existence of *qualia* (defined as such) to understand why the experiences enabled by feelSpace are ineffable. The more austere observation is simply that natural languages (in this case English and German) do not have the requisite verbs of sense perception to describe their experience. Moreover, users of feelSpace seem subject to a range of experiences broadly describable as being perceptually directed towards their environment in new and interesting ways, their experience cannot be adequately described as touching our planet's magnetic field, or indeed seeing it.

Shedding the vestiges of Anscombe's linguistic reduction leaves one with a bit of a puzzle. At least on that view, the possible non-existence of certain intentional phenomena could be accommodated fairly innocently, as a feature of intensional contexts. And this sits happily with another central feature of intentionality, namely, that one who thinks must think *something*, one who touches must touch *something*, one who loves must love *someone*, etc. In each of these cases the italics denote the intentional object toward which the mind is directed. On Anscombe's analysis this metaphysical necessity is reduced to the structure of certain natural languages, as the direct object of transitive verbs. By contrast, Searle's account identifies intentional objects with material objects. Intentional objects are not features of language; they are material things.

[A]n Intentional object is just an object like any other; it has no peculiar ontological status at all [...] Thus, for example, if Bill admires President Carter, then the Intentional [*sic.*] object of his admiration is President Carter, the actual man and not some shadowy intermediate entity between Bill and the man. (Searle, 1983, pp. 16 - 17)

Although Searle is admirable in refusing any skeletons in his metaphysical closet, he does so simply by skirting the trilemma mentioned at the end of the last section:

⁷² Although I will not speak much of *qualia*, the reader is certainly owed reference material for this well-worn (some might say worn-out) concept. For a historical account of *qualia* as a philosophical concept, and a comparison to the history of sense-data, see Crane (2000). For general arguments against the existence of *qualia*, see Dennett (2002b) and Harman (2002). For an argument against the existence of the original referent of the concept, and an argument for its elimination from the study of consciousness, see Metzinger (2003a, pp. 83 - 86).

- (1) Intentional objects are ordinary existing entities.
- (2) Intentional objects are what intentional states are about.
- (3) Intentional states can be about things which do not exist.

(Crane, 2001b, p. 337)

Searle essentially glosses over (3). But in doing so he limits the notion of intentionality with questionable warrant. To adapt an example of Anscombe's: poems from the early ages of human history describe a king of the gods, a father of the sky, who (according to some) lived on mount Olympus, had a penchant for young ladies and throwing lightning bolts *etc.* He was worshipped in ancient Greece, under the name Zeus. Presumably, Zeus does not (and did not) exist in the way that President Carter did. In fact, the least hackneyed way of stating the matter is to say that Zeus has never existed at all. Yet, the Greeks built statues depicting the object of their worship, the god that they believed to be thus and so. So if believing and worshipping are intentional states, then intentional states can be about things that do not exist.

Denying that beliefs are intentional simply because they can be about things that do not exist (a consequence of Searle's view) seems to get things backward in its own way. It constitutes an attempt to make the phenomena fit the theory, rather than the other way round. The difficulties stem from the task of providing a theory of intentionality that meshes with the appealing metaphysical intuitions that objects both exist and do so as the ordinary concrete objects we are familiar with. Providing a theory that can meet this requirement is a difficult task; it is a worthwhile task, but it is not one to be attempted here. In fact, it is a task I attempt to specifically avoid, by appeal to the development of the concept of intentionality in the early work of Brentano's student, Edmund Husserl. But before I elaborate on that further I will convey the more common manner in which the intentionality of perceptual experience is treated in contemporary philosophy of perception.

4.4. The natural contents of perceptual experience

Something like Searle's view is often posited as an antecedent assumption in setting up the basic problem. Here is a representative passage:

When we think about a real object, such as Paris, it seems that the object of our thought is that real object, the city, with all its lights. Moreover, it seems that a mental state's capacity to relate in this way to real objects is important in the role that they play in the explanation of action [...] So it looks as though intentionality must involve a real relation among real-world objects. (Segal, 2005, p. 284)

As remarked earlier, thoughts can be directed at objects that cannot be real-world objects. In lieu of this, the tension comes in the second sentence. To see how it might be motivated in the context of perceptual experience, consider a case where "A friend shouts from behind. You turn. It looks as if a rock is flying at your face" (Sturgeon, 2000, p. 8). Assuming that you do not wish to be hit, the likely result of you seeing a rock flying towards your face would be an evasive manoeuvre. Crudely perhaps, this suggests that the object of your visual experience would play a causal role in your behavioural response. But presumably something can only bear causal relation to something else if both things exist. And as has been repeatedly suggested, if the object of your experience is an intentional object, then it need not exist.

The modern approach to the problem of intentionality is to reduce the notion of intentionality to a naturalised form of *content*. This latter term is certainly polysemic, in fact some go so far as to say that it is "deliberately vague" (Brown, 2007, §1). This is not to say that the philosophy of content is a sloppy enterprise, but rather that there are many and various accounts of content. Mere use of the term itself should not stack the deck in favour of one of these particular views. What holds for the general case holds for perception also:

A perceptual state might have the content that there is a green object in front of me [...] We can be neutral on just what sort of content this is: it might involve a set of possible worlds, a complex of objects and properties, a complex of Fregean senses, or something else again. (Chalmers, 2004, p. 155; see also, Siegel, 2010, §3. ff)⁷³

The "neutral" use of the term is neutral on what the metaphysics of content will turn out to be. But it is not metaphysically neutral *per se*. For what is agreed by all in discussion of the nature of content, is that contents have "*conditions of satisfaction*:"

⁷³ These remarks are certainly not idiosyncratic to Chalmers' work. Searle gives a clear statement of the canonical thought here:

The argument that visual experiences are intrinsically Intentional, in sum, is that they have conditions of satisfaction which are determined by the content of the experience in exactly the same sense that other Intentional states have conditions of satisfaction which are determined by [their] content. (1983, p. 40)

they are the sort of thing that can be satisfied or can fail to be satisfied by states of the world” (Chalmers, 2004, p. 155, italics original).

These conditions of satisfaction are sometimes called accuracy conditions. If a state has specifiable accuracy conditions, then that is often taken to suffice for claiming that the state is *representational*, and in this sense content is often just shorthand for *representational content*. Against the background of the problem of intentionality, the main issue in the study of perceptual experience might seem to be that of discerning the natural means by which perceptual states have representational content. That is, how do perceptual states naturally come to represent the contents of perceptual experience? The most popular answers to this question appeal in some way or other to causal covariation.

For instance, here is how Michael Tye defines the relation *S* represents that *P*: “If optimal conditions obtain, *S* is tokened in *x* if and only if *P* and because *P*” (1995, p. 101). In Tye’s work, the content “that *P*” is construed as a proposition; the content of perceptual experience is whatever would be expressed by whatever followed a “that-clause” in a sentence describing the experience. Nevertheless, the content is held to be a natural phenomenon, specified by causal covariation in optimal conditions. The content of the state is the state of affairs that would cause the state to occur under optimal conditions. It is in reference to the particular states of affairs expressed by the proposition, together with other factors, that the theorist is able to determine what the state in question represents (*cf.* Stampe, 1977).

This is a similar approach to one taken by Fred Dretske. In his (1981) Dretske develops an information-theoretic analysis of content, based roughly around the simple idea that every effect carries information about, and thus *indicates*, its cause (*cf.* Grice, 1971). But a crucial feature of the view is that the content of a state is not identified with the present cause of the state. Rather the content is identified with information about the conditions the state would indicate if the conditions that were present during learning obtained. Dretske’s thought on the nature of these learning conditions has seen some development. In his earlier work, Dretske describes these learning conditions as those which ought to eliminate any equivocation in the signal carrying the information (Dretske, 1981, pp. 194 - 195). In his later work, learning conditions are those that serve the purpose of “promoting” to representational status one of the many things indicated, in virtue of explaining a causal chain that leads to behaviour (*ibid.*, 1988, p. 84, n4). But in both cases, what is essentially required is either the right “soldering” by Mother Nature (*ibid.*, 1998, p. 98; *cf.*, Millikan, 1989a), or favourable ontogenetic conditions for associative learning (*ibid.*, 1998, p. 98 - 107). The existence of these two options, *i.e.*, favourable phylogenetic or ontogenetic history, becomes important when applying the view to an account of

perceptual experience. In his (1995) Dretske distinguishes between systemic representations, whose contents are fixed phylogenetically, and acquired representations, whose contents are fixed ontogenetically. He says the following of the distinction:

[Sensory] experiences are to be identified with states whose representational properties are *systemic*. Thought (conceptual states in general), on the other hand, are states whose representational properties are *acquired*. As a result, experiences have their representational content fixed by the biological functions of the sensory systems of which they are states (Dretske, 1995, p. 9)

Dretske thus endorses a version of the thesis that sensory perceptual experience has non-conceptual content.⁷⁴ However, the relationship between these two kinds of content is made clearer in his earlier work, in which he distinguishes between two ways in which information can be encoded. A particular passage is worth quoting at length:

The contrast between an analog and a digital encoding of information [...] is useful for distinguishing between sensory and cognitive processes. Perception is a process by means of which information is delivered within a richer matrix of information (hence in *analog* form) to the cognitive centers for their selective use. Seeing, hearing, and smelling are different ways we have of getting information about *s* to a digital-conversion unit whose function it is to extract pertinent information from the sensory representation for purposes of modifying output. It is the successful conversion of information into (appropriate) digital form that constitutes the essence of cognitive activity. (Dretske, 1981, pp. 141 – 142)⁷⁵

This develops a thesis, due perhaps originally to Gareth Evans (1982, p. 229), that is common amongst a number of recent attempts to specify the content of perceptual experience: that perceptual experience has a fineness of grain that outstrips our cognitive capacities.⁷⁶

⁷⁴ For different versions of the thesis that perceptual experience has non-conceptual content see Bermúdez and Cahen (2008), and Heck (2000).

⁷⁵ In case there are any doubts as to whether he is discussing sensory experience here, he then continues, to note that: “The traditional idea that knowledge, belief, and thought involve concepts while sensation (or sensory experience) does not is reflected in this coding difference” (Dretske, 1981, p.142).

⁷⁶ Held notably by Tye (1995) and Peacocke (1992), denied most notably by McDowell (1994) and Brewer (1999). See also Heck (2000) and Kelly (2001) for reflections on the debate.

Dretske's work reflects a research programme in modern philosophy of mind devoted to grounding the intentionality of the mind in non-intentional relations, whilst nevertheless attempting to recognise that which is not only distinctive of the mind, but distinctive about perceptual experience and consciousness more generally.

With respect to consciousness, Dretske motivates a familiar distinction between thought and sensation, or "sensory" and "cognitive" processing. By way of a link to the next section, let me mention another way of motivating the distinction: arguing that sensation is radically indeterminate in a way that thought is not. This would be exactly contrary to the staple of early modern empiricism, that the mind in part comprises simple and ostensibly identifiable sensory elements (*viz.* ideas of sense, or sensory ideas). In a contrary frame of mind, William James writes:

[The] view of these philosophers [the empiricists] has been called little into question, for our common experience seems at first sight to corroborate it entirely. Are not the sensations we get from the same object, for example, always the same? Does not the same piano-key, struck with the same force, make us hear in the same way? Does not the same grass give us the same feeling of green, the same sky the same feeling of blue, and do we not get the same olfactory sensation no matter how many times we put our nose to the same flask of cologne? It seems a piece of metaphysical sophistry to suggest that we do not; and yet a close attention to the matter shows that *there is no proof that the same bodily sensation is ever got by us twice.* (James, 1890/1950, p. 231)

If James is right that it is impossible to show that the same sensation is involved in a perceptual experience of the same object, this motivates a bifurcation of content in a different manner than suggested by the non-conceptualists. More radically, one might conclude that the stream of consciousness consists only in contentless sensations, perhaps only beliefs and other more cognitive states of mind have content. Most would not move to this conclusion.⁷⁷ In fact the more typical bifurcation in the contemporary literature is one that does not bifurcate between mental states that do and do not have content. But rather one that bifurcates between the kinds of content mental states can have. This will see further discussion in the next section.

⁷⁷ Siewert (2008, §4) ascribes this view to Putnam (1981), though without detailing any specific page or chapter. Accordingly, I am (sadly) unable to corroborate the reference.

4.5. Phenomenology vs. neutral intentionality

Studies in the metaphysics of perceptual content are rife with inferences from claims about perceptual experience to claims about metaphysics. But in order to see them clearly, we need some terminology. Consider, to begin, Martin Davies' statement that "perceptual content is a matter of how the world seems to the experiencer" (1992, p. 26). This seems to be a fairly innocuous notion of "content", hardly a substantive metaphysical position. He continues, explaining that "perceptual content is, in this sense, 'phenomenological content'" (*ibid.*, p. 26). Now, what does that mean? Dennett can offer a helping hand:

Philosophers and psychologists often use the term phenomenology as an umbrella term to cover all the items – the fauna and flora, you might say – that inhabit our conscious experience: thoughts, smells, itches, pains, imagined purple cows, hunches, and all the rest. (1991, p. 44)

Call this *phenomenology_U* (note the subscript, for "umbrella"). *Prima facie* phenomenology_U is metaphysically neutral enough, as long as one discharges the metaphor of "inhabiting". But then Davies carries on to reveal what he is really saying, which is that "where there is no phenomenological difference for the subject, there is no difference in perceptual content" (*op. cit.*, p. 26). This is to say that perceptual content *supervenes* on 'phenomenology'. To clarify, supervenience is an asymmetric dependency relation between some *A* and some *B* such that a difference in *x* with respect to *A* could not occur without some difference with respect to *B*. The concept is typically employed in thinking about which parts of the world can vary whilst some state or property of interest remains the same.⁷⁸ For instance, views that espouse *local supervenience* with respect to the content properties of states will hold that these states and/or their properties supervene on the intrinsic properties of an indi-

⁷⁸ The concept of supervenience originates in discussions of metaethics, where Moore held that a moral property such as goodness was a *suis generis* non-natural property *dependent* upon the natural. He construed this dependence as such that:

[I]f a given thing possesses any [property] in a certain degree, then not only must that same thing possess it, under all circumstances, in the same degree, but also anything exactly like it, must, under all circumstances, possess it in exactly the same degree (G. E. Moore, 1922, p. 261)

Later Hare apparently coined the term "supervenience" in print (in his 1952), for pretty much the relation Moore identified, though Hare was of the view that there are no moral properties (or indeed facts) to supervene. For reviews of the subtleties in the origins and scope of the concept of supervenience, see Horgan (1993) and Kim (1984).

vidual. Hence, for instance, if a state *A* of an individual *i* locally supervenes on its intrinsic property *B*, then a duplicate of that individual with respect to *B* would also be in state *A*. As a subvenient upon which the content depends, ‘phenomenology’ seems rather closer to indicating a metaphysics of content than the umbrella term that Dennett gestures at. Call all any view on which perceptual experience is tied to a metaphysical stance on content or anything else, *phenomenology_M* (again, note the subscript, for ‘metaphysical’). Phenomenology_M is the subject matter of several of the views of the relationship between perceptual experience and intentionality discussed in this chapter, and in many other chapters of this thesis.

One way of conceptualising phenomenology_M has been provided by Terence Horgan and John Tienson in their discussion of *phenomenal intentionality*: “a pervasive kind of intentionality which is determined by phenomenology alone” (2002, p. 524). Their move from description to metaphysics is most clear when they argue “by way of introspective description of human experience” that “any two possible phenomenal duplicates have exactly similar intentional states *vis-a-vis* such content” (*ibid.*, pp. 521, 524) (*ibid.*, pp. 521, 524). Phenomenal duplicates are identical with respect to their “total” phenomenology_M, where this can be as multisensory, cognitive and long-lasting as one likes (*ibid.*, pp. 521 – 524) (*ibid.*, pp. 521 – 524). The fact that their views on content are bifurcatory becomes clear when they start to talk about the correctness conditions that purportedly comprise phenomenal intentionality. One thing that they are very clear about is that a certain class of the accuracy conditions of phenomenal intentionality (which they call, according to convention, “narrow” correctness conditions) are not derived from the causal relations grounding naturally arising intentionality, such as in the theories developed and appealed to by Dretske (1981) and Tye (1995), and Millikan (1989a) (Horgan & Tienson, 2002, pp. 527 – 529). As an example, they suggest we think about the total phenomenology_M of perceptually interacting with a picture that seems to hang crooked on a wall. As I mentioned, they countenance two sorts of correctness conditions. One “narrow” sort is common between phenomenal duplicates, whilst they engage in the very same interactions. They are duplicates in so far as they experience seeing and doing the same things as they try to get the picture to look straight, and the manner (if any) in which their experiences are identical, is the manner in which their experiences share narrow correctness conditions. The other sort, “wide” correctness conditions, contrasts the duplicates, in virtue of both the fact that the pictures (presumably existent particulars) are themselves not identical, and that the phenomenal duplicates are numerically distinct. Thus the pictures, in virtue of being numerically distinct from one another, each determine the correctness of the respective phenomenology_M of the numerically distinct phenomenal duplicates interacting with them (*ibid.*, pp. 526 – 529) (*ibid.*, pp. 526 – 529). In sum,

There are thus two ways of thinking of truth conditions: as determined wholly by phenomenology, and as determined in part by items in the experiencer's environment that satisfy the experiencer's phenomenology. (Horgan & Tienson, 2002, p. 525)

The bifurcation assumes that the properties of the phenomenology_M that determine the status of phenomenal duplicates as such are general properties that are common between the two individuals.⁷⁹ This allows that, with respect to “narrow” accuracy conditions, one could have a phenomenal duplicate experiencing a (perfectly) hallucinatory (or perhaps dreamt) “Cartesian” world (Horgan & Tienson, 2002, pp. 524, 527). Narrow accuracy conditions are thus fundamentally distinct from the “wide” accuracy conditions which serve to determine which object in the world (if any) the subject experiences (*ibid.*, p. 529) (*ibid.*, p. 529).

According to Horgan & Tienson, proper consideration of phenomenology_M reveals a metaphysical barrier between perceptual experience and reality. Allowing for the possibility of the same phenomenology_M across radically different situations dictates that phenomenology_M must be characterised in a manner that distinguishes it from any real object existing in a certain situation. For it is precisely those objects that may not exist in certain situations in which phenomenology_M is held to be the same.

There are two main reasons for adopting the neutral intentionality thesis. The first is to avoid using the term ‘phenomenology’ in an ambiguous fashion. The second is to unambiguously adopt a neutral metaphysical stance on the issues in question. This stance is apt as my aim is to provide a neutral description of a certain conception of perceptual experience. This requires being impartial on the question of whether or not the same phenomenology_M could occur in radically different situations, finessing any need to mention the presence or absence of the objects of experience. To describe perceptual experience in this way is to describe perceptual experience *qua* experiential, *i.e.*, how an experience seems such that it seems perceptual. What discussions of phenomenology_M often rule out, by metaphysical fiat, is the

⁷⁹ An issue, which I leave aside here, is that these properties must certainly be determinable as somewhat specific. For instance the crooked picture can be such it instantiates a particular angular relation to the horizon, has a centre of gravity such that it swings to one side on the hook when poorly placed in just a certain way *etc.* That is, “*a specific general way, F, which such objects may be, and which infinitely many qualitatively distinct possible objects are*” (Brewer, 2006, p. 173). If the James passage presented at the end of the last section is taken to have any metaphysical implications, then any view which attributed such content to conscious sensations (as Horgan & Tienson, and a number of others seem to) would be in trouble.

possibility of making appeal to the object of an experience in explaining how it seems to be a perceptual experience. Such a restriction is not imposed upon an account which has no concern to demonstrate a stance on whether or not (and indeed how) the correctness conditions of experience changes in accordance with the actual presence or absence of an object.

There is a sense in which discussions of phenomenology_M are orthogonal to the motivations for attributing intentionality to perceptual experience. Certainly, if perceptual experience is a natural phenomenon, then a metaphysical analysis of perceptual experience might best proceed by understanding whether it has content, and if so then what that content is. And indeed, it ought to be noted, that an analysis of the content of perceptual experience is not limited to construing content as propositional. Content could plausibly be *e.g.* digital, analogue, pictorial, or a model of a limited range of possibilities.⁸⁰ But what I will argue at points in the next chapter is that it is mistaken to then assert that the intentional objects of perceptual experience seem like propositions, digits, analogies, pictures, models *etc.* If such assertions are made, it is likely because the “normal understanding” of the phrase “intentional object of experience” is effectively the representational content of experience (Crane, 2006b, p. 136). I make no claim as to what the normal understanding of an intentional object is. Likewise I offer no theory of intentionality, and thus no answer to the problem of intentionality. But it would be remiss to deny that describing the common-conception of perceptual experience appealed to by philosophers, requires appeal to some notion of intentional object. My remit is not to deny this, but to maintain an adherence to what I will call the *neutral intentionality thesis*, which amounts to the claim that one ought to treat the objects of perceptual experience as *neutrally intentional objects*, or simply *neutral objects* for short.

An appeal to neutral intentionality minimally involves a very literal appeal to the features of intentionality discussed in this section. The first is its directedness as expressed by Husserl when he says that “the word intentionality signifies nothing else than [...] to be conscious *of* something” (1950, p. 72; 1950/1999, p. 33). The second is an otherwise clumsy reading of the expression ‘inexistence’, as simply a denial of the claim that “*being an intentional object as such is being an entity of any*

⁸⁰ For a defence of the view that the content of perceptual experience need not be propositional, and could be (even on fairly orthodox contemporary principles) pictorial or otherwise, see Crane (2009). For an account of how the content of various (oft neglected) aspects of conscious experience might issue from modelling processes, see Metzinger (2003a, pp. 13 - 61). For an outline of a modelling approach to perception, see Grush (2004, pp. 390 - 393), and for applications to the spatial content of perceptual experience, see Grush (2007b).

kind” (Crane, 2001b, p. 340, italics original). Most pressingly, this last amounts to an abject denial of any need to identify intentional objects with representational content for the purposes of discussing perceptual experience.

It is worth saying a few brief words on using Husserl to provide an account of perceptual experience as conceived by proponents of direct realism. The worry might stem from passages like this:

The attempt to conceive the universe of true being as something lying outside the universe of possible consciousness, possible knowledge, possible evidence, the two being related to one another merely externally by a rigid law, is nonsensical. (Husserl, 1950/1999, p. 84 [117])

This kind of remark hardly sounds metaphysically neutral, and indeed, hardly friendly to a realist metaphysic. Furthermore, it suggests that Husserl was engaged in rather different project than mine. Call this project *phenomenology_T* (again, subscript, this time for ‘transcendental’).⁸¹

But then a look at Husserl’s earlier work, such his lectures of 1907, finds him saying things like:

To perceive a house means to have the consciousness, to have the phenomenon, of a house standing there in the flesh. How matters stand with the so-called existence of the house, with the true Being of the house, and what this existence means – about all that nothing is said (1973, p. 15; 1973/1997, p. 12)

Summarising *this* Husserl, one commentator writes along the lines of how I have been treating phenomenology and neutral intentionality, as follows:

⁸¹ For a comprehensive introduction to Husserl’s transcendental philosophy, see Zahavi (2003a, pp. 44 *ff.*). I also leave aside the complex issues surrounding the proper interpretation of Husserl’s reduction(s), but for a good introduction see Moran (2000, pp. 124 - 163).

the distinction between existent and non-existent objects is one that turns up within the intentions phenomenology describes: some objects, for example, those of our fictional imagination or fantasy, are intended as not existing, while objects of perception, say, are intended as existing. But this will be true whether or not these objects actually exist independently of the intentions in question [...] one can do complete justice descriptively to the experiences treated by phenomenology and drop all reference to actual existence—though not, of course, to intended existence. (Carr, 1999, p. 74)

However, the first quote (and many others of its kind) indicates that it would be pretty hard to make the interpretative case that Husserl intended the scope of phenomenology to metaphysically neutral (Zahavi, 2003b), or indeed that he was not a full-blown Idealist (A. D. Smith, 2003, pp. 71 - 110). I do not want to dispute this. The neutral intentionality thesis is probably closest to the descriptive phenomenology of the early Husserl and not at all to the transcendental (idealist) phenomenology that he arguably developed in the course of his later pontifications. That makes the exegetical situation sound awfully neat, which even the briefest encounter with Husserl demonstrates to be unlikely. So I ought to say flatly that in my exploration of Husserl's ideas below I read them all roughly in the light of the descriptive project.

It is worth noting that this descriptive project, call it *phenomenology_D*, is rather a different notion from Dennett's *phenomenology_U*. Actually, Dennett has two uses of the term, one we have already come across: "all the items [...] that inhabit our conscious experience: thoughts, smells, itches, pains, imagined purple cows, hunches, and all the rest" (Dennett, 1991, p. 44). Given the previous items on the list, and the metaphor of "inhabiting" I do not hold much confidence that "all the rest" includes *e.g.* "particular things perceptually experienced as immediately present, real and mind-independent". Dennett's second usage involves explicit reference to Husserl (and his teacher, Brentano) as "Phenomenologists" (with a capital P) who "propose that one can get to one's *own* notional world" (*sc.*, which in other places Dennett calls a *subjective world*), "by some special somewhat introspectionist bit of mental gymnastics – called, by some, the phenomenological reduction" (Dennett, 1987, p. 153). This he calls *auto-phenomenology*, as contrasted with his own project of *hetero-phenomenology*, "determining the notional world of another, from the outside" (*ibid.*, p. 153).

This might be roughly the right contrast if drawn against introspectionist psychology. But what Dennett's heavy-handed treatment misses is that the descriptive focus in the *phenomenology_D* is not simply upon the subject's experience but also the manner in which the world is experienced, *i.e.*, "the world just as experienced"

(Drummond, 2007, p. 61). This makes for a much larger and more difficult project than might be obvious:

Phenomenology is not, as certain analytical philosophers seem to think, just a matter of cataloguing how things seem to you. Phenomenological research is difficult because it is, in large part, a matter of “uncovering ... implicit intentionality”. (A. D. Smith, 2008, p. 324)

Here Smith is quoting and paraphrasing his own translation of a passage in which Husserl (alternately translated) describes “phenomenology” as “everywhere a matter of uncovering the intentionality implicit in the experience” (1950/1999, p. 64 [98]).⁸² On this gloss, phenomenology_D is something I have been arguing about since the beginning of the thesis. Indeed, sense-datum theorists, Berkeley, all the empiricists who made questionable comparisons between visual experience and painting, all those enthusiastic about the phenomena that “recommend” actualism (and in the next chapter) transparency, presence and the particularity of experience, might all occasionally count as doing phenomenology_D in this sense. Occasionally. But most often, they are doing phenomenology_M with respect to phenomenology_U. The result is a somewhat fragmented account of perceptual experience. My task is to bring together these fragments under the conception of perceptual experience traceable through the work of direct realists. The next two chapters constitute a culmination of that project.

⁸² Although Dennett’s description is fairly typical of those working in the philosophy of mind and cognitive science, there are some exceptions, *e.g.* Tim Van Gelder captures the point nicely when he says that ““phenomenological description” does not mean (as it sometimes does elsewhere) describing one’s own introspectively accessible ideas, but rather the careful study and description of [...] things that are usually somehow hidden from view” (1998, p. 135 n10).

Chapter 5 Seeming real

5.0. Introduction

In the last chapter I outlined the neutral intentionality thesis, the function of which is enable me to provide a description of the direct realist conception of perceptual experience without defending direct realism as such. Perhaps the most difficult task in this project is discerning the correct understanding of the claim that the objects of perceptual experience seem real. In this chapter, I will convey such an understanding by critically reviewing members of a family of concepts evoked in the literature that each has a bearing on the claim.

I begin (in §5.1) with an outline of the deeper philosophical motivations of direct realism and the explanatory role that perceptual experience is supposed to play in fulfilling those motivations. The central motivation is to maintain a simple connection between the subject and the world she experiences by appealing to perceptual experience as an instance of a *suis generis*, simple relation to the world. The recurring difficulty here is the assumption that there are possible states that are subjectively indistinguishable from perceptual experiences that might serve to confound this connection. I then (in §5.2.) provide a means of respecting both the claimed *suis generis* nature of perceptual experience and the claimed immediacy of perceptual experience, by distinguishing perceptual and theoretical belief. I then move on to clarify the implications of the claim that perceptual experience is transparent (in §5.3), and the claim that the objects of perceptual experience seem present (in §5.4). In the final section (§5.5.), I argue that in the hands of direct realists perceptual presence is best construed as the claim that perceptual experience seems to be of mind-independent particulars.

- 5.1 *Perfection*
- 5.2 *Immediacy*
- 5.3 *Transparency*
- 5.4 *Presence*
- 5.5 *Particularity*

5.1. Perfection

An obvious motivation driving direct realism (DR) is to do justice to the way ordinary perceptual experience is conceived to be, or rather, how it is claimed that ordinary perceptual experience seems to be. Strawson's pre-theoretic man is a case in point, and the need to frame sense-datum theory as offering a corrective account of perceptual experience is certainly suggestive. As I indicated in the introduction to this dissertation, I think that appealing to the opinions of non-philosophers on what are essentially matters of philosophical discussion is difficult, and more so than has been adequately recognised in discussions of perceptual experience. I also wondered whether people do have any opinions on these matters. This is perhaps an especially delicate point where a theory might like folk have an opinion in concordance (or in some cases discordance) with what it suggests.

But having said all that, I do not mean to claim that perceptual experience somehow actually does deviate from the DR model. At most, I mean to express the second-order distance that I have assumed. Indeed, if perceptual experience does conform to the DR model then this would be something that would seem rather strange to question, and the importance of the question in that case would be suspected to be elsewhere. This last is what I believe to be generally the case for disputes over DR. For what is philosophically at issue is not so much how perceptual experience seems to be (at least not since the heyday of sense-datum theory), but rather more general concerns about the relation between the mind and what is thought to be independent of it. As discussed in §1, DR is sometimes called *Commonsense Realism* and other times *Naïve Realism*. The labels are applied in part because a great deal is made of commonsense and theoretically naïve (*i.e.*, theoretically untutored) conceptions of perceptual experience. But the reason for all the fuss is not so much a defence of the apple-receiver's world-view so strangely brought into question in the introduction. It is a reaction to various assumptions built into theories of perception that are thought to have the result of making the relation between mind and world problematic, particularly when common-sense apparently suggests that there was never a problem here in the first place.

Amongst contemporary DR theorists, the common-sense preserving theme is most evident in the work of Bill Brewer (1999, 2006) and John Campbell (2002). Though both draw on themes from Evans (1982) and Strawson's (1959/2003) work, the latter being an explicit proponent of a DR theory of perception (see his 1979/2002). The preservation of commonsense principles about the mind's relation to the world was also a key motivation in Reid's (1764/1997, 1785) philosophy of mind, and the more contemporary work of Armstrong (1960, 1961), Searle (1983), Martin (2002a, 2002b), John McDowell (1994, 1998), Paul Snowdon (1980 - 1981, 1992, 2005), and A.D. Smith

(2000, 2002). In all cases the appeal to common sense is touted as the most plausible way to make sense of how we can think about mind-independent objects at all, precisely because it gives such a simple explanation of how we experience objects in our local environment. For if *ex hypothesi* “experience of an object is a simple relation holding between perceiver and object” then, as Campbell says (with some understatement) “it ought to be possible [...] to extract the mind independent world from an experience which has the mind-independent world as its constituent” (2002, pp. 115, 121).

Such a glib statement perhaps obscures the issue. To make it clearer, I will make a slightly slower approach at one of the more popular ways of establishing the claim. Then I will consider certain problems that are generated from principles that the DR conception accepts. These problems belong to the class of “phenomenological problems” broached at the beginning of the last chapter. They are of interest both because of their putative phenomenological_M consequences and because they seem to motivate the much more blunt approach bruited by Campbell above.

Consider, first, a programmatic but typical account of DR:

if an experience E is a genuine perception by subject S of object O then the occurrence of E places S in such a relation to O that were S able to entertain demonstrative thoughts [...] then S could entertain the true demonstrative thought ‘that is O.’ (Snowdon, 2005, p. 138)

Call a *perceptual demonstrative* thought any instance in which a demonstrative thought is yielded by perceptual experience. The significance of perceptual demonstratives according to DR is that they ground our capacity to refer to objects at all, precisely because they are held to be object-dependent. To say that demonstrative thoughts are object-dependent is to say that the thought

- that is O

involves O as a constituent. This is an idea that Gareth Evans accredits to Russell’s work on singular terms. Evans takes the consequence somewhat further than Russell might have been happy with, to express a kind of epistemic distance on the part of the subject as to what the nature of their own thought is. Such that “it may be, for a subject, exactly as though he were thinking about a physical object (say) which he can see, and yet that, precisely because there is no physical object he is seeing, he may fail to have a thought of the kind he supposes himself to have” (Evans, 1982, p.

45).⁸³ Hence, in order for such a thought to actually refer to O, at least two conditions must be met. The first is that O must exist. Any condition in which this were not met would be one in which demonstrative reference is impossible. For instance, consider a snippet from the famous soliloquy:

Is this a dagger which I see before me,
The handle toward my hand? Come, let me clutch thee.
I have thee not, and yet I see thee still.
(Macbeth, Act 2 Scene 1 of William Shakespeare's *Macbeth*)

Grant, for illustrative purposes, that demonstrative thought is object-dependent, and that the objects of sufficiently delusory hallucination do not exist. In this instance, in thinking the thought,

- that is a dagger

Macbeth fails to refer at all. Not even a demonstrative mode of reference can make it such that Macbeth is thinking about something in particular rather than nothing at all.

This brings us to the second condition, which is that if a thinker is to refer to a particular 'O' there must be some available means of discriminating 'O' from all other particulars. Evans refers to this as *Russell's principle*: "it is not possible for a person to have a thought about something unless he knows which particular individual in the world he is thinking about" (1982, p. 44). Pressure to meet this condition forms the basis of the argument for the primacy of perceptual demonstratives.

In fact, giving primacy to certain forms of reference is not a strategy unique to DR. Russell thought there to be two ways of meeting the condition embedded in the principle that Evans attributed to him. They are commonly known, due to an influential article, as *knowledge by acquaintance* and *knowledge by description* (Russell, 1910-1911). For Russell, a fan of sense-datum theory, the class of what is known by acquaintance is limited to sense-data and one's own mind (ibid., p. 109). In all other cases, indeed most cases, a subject knows which thing they refer to by means of some definite description (ibid., pp. 112 - 115). Though these descriptions may be at various stages of removal from knowledge by acquaintance, they must be composed of constituents that the subject is acquainted with, if the subject is to be said to properly understand the propositions that the thoughts express (ibid., pp. 115 - 117).

⁸³ Russell would not have countenanced such a conclusion on the basis that he restricted such thoughts to refer to a private language that labelled instances of sense-data (e.g., 1918/2010, pp. 29 - 30), a famous target of criticism in the later work of Ludwig Wittgenstein (1953/2001 §§239 - 277, pp. 74 - 82).

In forming the referential bedrock for thought about the mind-independent world, acquaintance plays much the same role for Russell as it does for DR. The clear difference is that for DR, perceptual demonstratives refer to the mind-independent world in the first place. A strong motivation for this is that if this connection is left to description alone, then thought about particular objects will not be possible. The key requirement is that one must be able to pick out one particular in contradistinction to all others. The difficulty is that certain metaphysical possibilities suggest that this condition cannot be met by description alone. Strawson describes such a situation as follows:

[O]ne may be very well informed about a particular sector of the universe. One may know beyond any doubt that there is only one particular thing or person in that sector which answers to a certain general description. But this [...] does not guarantee that the description applies uniquely. For there might be another particular, answering to the same description, in another sector of the universe [...] However much one adds to the description of the sector one knows about—its internal detail and its external relations—this possibility of massive reduplication remains open. (1959/2003, p. 20)

Such a dramatic situation clearly creates problems for a view that both requires thoughts to have a unique referent and requires said referent to be identified by description. But despite the drama, Strawson thinks that reference *sans* description can be secured in just a few steps. The first, is to assert (presumably with Russell) that: “All identifying description of particulars may include, ultimately, a demonstrative element” (Strawson, 1959/2003, p. 22). Second, is to assert a certain conception of the mind-independent world: “For all particulars in space and time, it is not only plausible to claim, it is necessary to admit, that there is [...] a system [...] of spatial and temporal relations, in which every particular is uniquely related to every other” (ibid., p. 22). Third, is to assert that reference to any particular is anchored by demonstrative reference to a particular at a point in space and time:

The universe might be repetitive in various ways. But this fact is no obstacle in principle to supplying descriptions of the kind required. For by demonstrative identification we can determine a common reference point and common axes of spatial direction; and with these at our disposal we have also the theoretical possibility of a description of every other particular in space and time as uniquely related to our reference point (ibid., p. 22)

This last step is the establishment of an egocentric conception of the world, involving essentially a co-construction of a subject of experience as distinct from a world that the subject experiences (Strawson, 1959/2003, p. 69). This solution is not quite

complete though. For what is needed is not just the construction of distinct *relata*, subject and world. What is needed is some final and clear conception of how it is that they are related. And given the previous steps this must amount to an explanation of how a subject can refer to the particulars in space and time. It is precisely here that DR gets its motivation. For what it urges, at least in its modern forms, is that “experience of objects has an explanatory role to play: it explains our ability to think demonstratively about perceived objects” (Campbell, 2002, p. 114).

This last point has to be taken with some care. In fact, there has been some in fighting in the vicinity of how it is exactly the perceptual experience can play this explanatory role. Consider certain problems with one such proposal, according to which the explanatory role is secured precisely because the content of perceptual experience is constituted by demonstrative concepts.⁸⁴ These would be expressed by sentences such as:

- that thing (there) is thus

Where, as Bill Brewer puts it, the content is “doubly world-dependent” in that it involves demonstrative reference to both the object and its properties (2006, p. 166).⁸⁵ Following Brewer’s terminology, I will refer to this as the *content view*. The content view might not help DR much; it obscures the putative explanatory role that perceptual experience is held to play. To see the difficulty, we need to consider certain cases of non-genuine or (as I shall call them) *faux perception*. A first such example can be approached by recounting Macbeth’s struggles further:

⁸⁴ I am sidelining a controversy here over whether the content of perceptual experience is exhaustively conceptual. For instance, McDowell (1994, esp. pp. 162 - 174) and Peacocke (1998) represent opposite sides of a controversy concerning whether demonstrative concepts can adequately specify the fine-grainedness required of the content of perceptual experience. Both of these authors see Evans’s work (1982, pp. 154 - 160, 229) as an important early instance of the idea.

⁸⁵ It ought to be noted that Brewer is speaking of his earlier view as developed in his (1999, esp. 184 - 215). His aim in the article cited in the main text is to confess that he now thinks “that all of this is too little too late, as it were: the whole framework [of assigning content to perceptual experience] has to be rejected” (Brewer, 2006, p. 166). His worry is that the view cannot describe perceptual experience adequately as related to *particular* objects (as opposed to some *general* way an object might be) as they are, *e.g.*, actually distributed in space (as opposed to how they are represented as distributed in space). At least, he argues, it cannot do so without making worryingly *ad hoc* assumptions about the determination of content, which suggests that it cannot do so at all.

Art thou not, fatal vision, sensible
 To feeling as to sight? or art thou but
 A dagger of the mind, a false creation,
 Proceeding from the heat-oppressed brain?
 I see thee yet, in form as palpable
 As this which now I draw. (*op cit.*)

Here Macbeth struggles to question how genuine his experience is. A step further is to remove Macbeth's struggle, or even his disposition to struggle, and have him perfectly convinced and liable to assert (for whatever insane purpose) the proposition:

- that is a dagger which I see before me

Both DR proponents and dissenters typically assume that one can build a lot into such a case. One could, for instance, follow Campbell's lead and suggest that the dagger seems heavy, substantial, does not shimmer unduly *etc.* (2002, p. 117). The point of these augmentations is to ensure that the experience corresponds in every detectable manner to how the dagger would seem would that it were there. Call this a *perfect hallucination*. Here perfection is judged according to its match with its counterpart, *i.e.*, the extent to which the hallucination is subjectively indistinguishable from ordinary perceptual experience. If the hallucination is subjectively indistinguishable from ordinary perceptual experience then Macbeth cannot tell, simply by being involved in the experience, that the experience is not an instance of perception.

Call such states as Macbeth's, *faux perceptual* states. As they are defined here, all that is required for a subject to experience a faux perceptual state is that they be in some sensory state that instantiates a grade at the apex of which is subjective indistinguishability relative to perceptual experience. Faux perceptual states are many, and variously found in discussions of perception and the nature of mind. When construed as perfect, they are often simultaneously construed as realistic. John Michael Hinton provides an obvious instance, when he suggests that a perfect illusion, would be "an illusion of [...] reality, such that if you are involved in the illusion then you cannot tell, simply by being involved in it, that it is not that [*sic.*] reality" (1973, p. 145). Perfect illusions are hard to come by. Indeed, J.J. Gibson even wrote once that "The illusion of reality is a myth" (Gibson, 1986, p. 281). Part of his point is that the actual cases where one might look for support, such as *photorealistic* painting or *trompe-l'œil*, do not cut the mustard. Strictly speaking, he would argue, the pictures only look real when viewing is subject to unnatural constraints, such as very brief, staccato viewing, often through an aperture, and these cases are exceptions that prove the rule that:

When no constraints are put on the visual system, we look around, walk up to something interesting and move around it so as to see it from all sides, and go from one vista to another. That is natural vision (Gibson, 1986, p. 1)

Despite the increasingly impressive work in virtual reality since Gibson's time of writing, it might be a bit much to suggest that even when natural vision is in play the virtual objects and environments are subjectively indistinguishable from the real thing. However, in the current context Gibson's reaction is overly harsh. For what is at issue here is not so much whether perfect illusions actually do exist, but rather whether they could not conceivably exist as a matter of metaphysical principle. In phrasing the issue that way I take Hume's dictum, that whatever is conceivable without contradiction is metaphysically possible, as a token standard of metaphysical principle (1777/1975, §IV, Part I, p. 25). After watching an episode of Star Trek that made extensive use of the 'Holodeck', I think it would be fairly easy to conceive of a situation that satisfactorily met the constraints of natural vision, but would nonetheless be an illusion on most counts.

Another faux perceptual state that has had significant discussion is that of dreaming. Famously, the claim that dreaming involves a realistic experience is the basis for the Cartesian sceptical scenarios that were the wellsprings of modern philosophy. Making perspicuous use of marginally exotic experiences potentially enjoyed by the reader, the scenarios envisaged by Descartes would "appeal to some version of the thesis that the experiences we take as dreams are (at their best) qualitatively similar to what we take as waking" (Newman, 2010, §3.1). In extending this qualitative similarity to its limit one arrives at the notion of a perfect dream.

Recent interdisciplinary work on dreaming has developed the idea that it is an immersive form of spatio-temporal hallucination (see Windt, 2010). Part of the motivation of understanding dreams this way would perhaps be their allegedly passive character (at least in pre-lucid cases). But the issue is certainly controversial, as other proposals have alternatively conceptualised dreaming as a species of imagination (Ichikawa, 2009; O'Shaughnessy, 2002). The idea of a perfectly imagined scene or object might seem to violate a classic Humean distinction between perception, memory and imagination, where perception (surely, *qua* perceptual experience) has a greater "force and vivacity" or "liveliness" than memory, and still greater than imagination (1739 - 1740/1960§2, p. 17).). But clearly this is a difference in degree rather than a difference in kind (cf. Reid, 1785 Essay I, Chapter I, pp. 28 - 30). "Force", "vivacity" and the like merely indicate the gradient along which the imagining must ascend. In order to count as perfect, imagining must be conceived as having at least the "force and vivacity" of perceptual experience.

The dispute over how to conceptualise dreaming turns largely on how one characterizes the metaphysics and mechanism of hallucination and imagination. Without passing judgement on these issues, it is sufficient for our purposes to conceive of dream experience as ambiguous when approaching perfection. Let me illustrate by stepping out of the arena of academic philosophical literature for the moment. It is precisely the ambiguity in question that the Portuguese writer Jose Luis Borges exploits in his *The Circular Ruins*, a fictional tale of a mystic who strove to dream a man into existence, “to dream him completely, in painstaking detail, and insert him into reality” (Borges, 1998, p. 97). Naturally, the very idea of dreaming an object as so real it becomes real is fantastic nonsense. But of present interest is the obstacle Borges places in the path of his protagonist. Initially approaching the task by assembling an audience of potential candidates, gradually the mystic whittles the fantasy group down to one promising individual. But, just when it seemed success was near, catastrophe ensued: “[he] realized he had not dreamed [...] He swore to put behind him the vast hallucination that had first drawn him off the track, and he sought another way to approach his task” (Borges, 1998, pp. 97 - 98). The alternative approach was to dream his subject part by part, beginning with the heart. Here Borges provides a compelling description of a perfect dream (perhaps *qua* imagination):

He dreamed the heart warm, active, secret ... Each night he perceived it with greater clarity, greater certainty... from many angles, many distances. On the fourteenth night he stroked the pulmonary artery with his forefinger, and then the entire heart, inside and out. (Borges, 1998, p. 98)

Borges’ aim, of course, is not to argue for or against any particular philosophical view. Indeed, one can leave it as a beautifully open question whether this is another hallucination, a mental image, or a dream as a *suis generis* state. All I want to emphasise is this: it is precisely because the earlier hallucination was so perfect that it was mistaken for another faux perceptual state that the mystic had antecedent reasons for believing he was in. At the height of perfection, all faux perceptual states and perceptual states alike are to be conceived as subjectively indistinguishable on the basis of their experience alone.

Returning now to Macbeth’s faux perceptual state. Although it is hallucinatory, it is meant to be perfect, such that it seems like a perceptual experience in all admissible respects; at least, it does so as far as Macbeth can tell. Indeed, the key is that in both cases, if Macbeth were of the disposition to do so, he would be liable to assert

- that is a dagger which I see before me

as an expression of the content of his experience. However, in only one of these cases is there a dagger before him. Hence, DR is presented with a *prima facie* challenge.

DR holds that perceptual experience can explain how (most basically) the mind is connected to mind-independent things. The chief *explanans* is the fact that its content is demonstrative content. But since the same contents can be entertained in the presence or absence of the mind-independent object, that does not seem to do much explaining at all.

DR theorists are certainly sensitive to this. In reaction, many contemporary defenders argue that too much is being drawn from the assumption of indiscriminability. This is usually framed as the assumption that instances of genuine perception and perfectly faux counterparts are all conjoined under a common or fundamental kind of experience (e.g., Martin, 2002b, p. 404; Snowdon, 2005, p. 136). Rejection or refutation of this assumption involves denying the conjunction, and asserting a disjunction of kinds of experience. Adopting a slightly different language, one could say that a perfect experience, on the common kind assumption, can be equally characterised as an instance of perception, an instance of perfect illusion, an instance of perfect hallucination, and an instance of perfect imagination. Someone who rejects (or seeks to refute) the common kind assumption will hold that there is some feature of perceptual experience, such that it ought to be characterised as either a genuine instance of perception, or an instance of perfect illusion, or hallucination, or imagination. Authors that disjoin kinds of experience in this way are contemporarily called *disjunctivists*.⁸⁶

To set disjunctivism in relief, consider briefly the other extreme. There is a family of contemporary theories of consciousness that are adequately dubbed *virtual-reality theories of consciousness* (Revonsuo, 2010, pp. 197 - 200). Virtual reality theorists take perfection to be a significant *explanandum* for any adequate theory of consciousness. Antti Revonsuo characterises the situation as follows:

⁸⁶ See Haddock and Macpherson (2008) and Byrne and Logue (2009) for recent collections of classic and contemporary papers on disjunctivism. The earliest to outline (if somewhat obscurely) a disjunctive theory of perception was Hinton in his (1973). Snowdon was perhaps the first state the view with clarity in his (1980 - 1981); and see his (2008) for a useful discussion of Hinton's work. Particularly influential more recent discussions are McDowell (1998, pp. 228 - 259) and a series of publications by Martin (2002b, 2004); see Nudds (2009) for a useful review of critical responses to the latter's work. For completeness, it ought to be noted that although the interests of DR mesh nicely with disjunctivism, it does not necessarily entail realism. For instance, A.D. Smith (2008) argues that Husserl is readily described as a disjunctivist, despite equally valid reasons for thinking he was an idealist (for which see A.D. Smith (2003, pp. 71 - 110)).

Our experiences seem to happen in a real world, a spatially extended physical world beyond our bodies. The visual qualities we see are located distally, not in here but over there, on the surfaces of external objects. Our bodies seem to be in the centre of this world, and interacting directly with the physical objects of the world. One thing is for sure: Our experiences do not seem to happen somewhere, or indeed anywhere, inside our brains! (Revonsuo, 2010, p. 197)

However, these phenomena are treated as tantamount to pervasive hallucination: “out-of-the-brain” experiences generated by (or at least, explained by positing, what might be metaphorically understood as) a virtual-reality simulation created by the brain (Revonsuo, 2000, p. 65). The parenthetical qualifications are necessary in order to see that positing a metaphor, virtual reality simulation, and a theoretical construct, representation, is meant to provide significant purchase in modelling and explaining the phenomena in question. Hence, virtual-reality theorists typically advocate qualified use of the metaphor as a model for consciousness, and unqualified use of the theoretical construct in explanation of consciousness (Revonsuo, 2000, pp. 65 - 66). The metaphor is qualified in so far as the limitations of contemporary virtual-reality technology are recognised and crucial difference are highlighted: “Flight simulators *drive* phenomenal models of reality, but they do not yet *create* them” (Metzinger, 2003a, p. 556).⁸⁷ The unqualified use of the theoretical construct is simply that virtual-reality theorists conjoin states of perception, illusion, hallucination and imagination under a common kind of state, that is, under a common kind of neural representational process. Thus according to a leading advocate of the view, Thomas Metzinger:

⁸⁷ And a further qualification that is crucial for (and distinctive of) Thomas Metzinger’s theory is the claim that “*human brains simulate the pilot as well*” (Metzinger, 2003a, p. 556, emphasis original).

[A] fruitful way of looking at the human brain [...] is as a system which, even in ordinary waking states, constantly hallucinates at the world, as a system that constantly lets its internal autonomous simulational dynamics collide with the ongoing flow of sensory input, vigorously dreaming at the world and thereby generating the content of phenomenal experience. (Metzinger, 2003a, p. 52)⁸⁸

This unabashed conjoining of kinds of faux and perceptual states places virtual-reality theories neatly amongst the family of views that disjunctivists would want to reject, which we can call *conjunctivist* theories. And just as disjunctivist theories frequently involve an endorsement and defence of DR, conjunctivist theories just as frequently do not. Hence it is unsurprising that virtual-reality theorists are *indirect realists* at most (e.g. Lehar, 2003, pp. 1 - 31).

The main strength of the conjunctivist position is that, at least in the guise of a virtual-reality theory, it has tools to explain how faux perceptual states might be perfect. In this regard, the conjunctivist might see disjunctivism as guilty of an embarrassing silence on the matter.⁸⁹ But if the motivations of DR are what I have described them to be, then the issue between the two theories is more complex than that. For the aim of DR is not so much to offer an account of perceptual experience, but to use an account of perceptual experience to ‘restore’ a common-sense picture

⁸⁸ Two is hardly a family (of theorists). But others include Steven Lehar (2003), and Rick Grush, who claims that understanding representational processes in the brain as (what he calls) “emulation” processes explains “how it is that the same process that can operate offline as imagery, can operate online as the provider of expectations that fill in and interpret bare sensory information” (2004, p. 392), where the role of sensory input from the environment is merely “...to constrain the configuration and evolution of this representation. In motto form, *perception is a controlled hallucination process*” (393). Note, that these are claims about perception, imagination and hallucination. So, whilst it might be true that Grush is a virtual-reality theorist the thought that he intends to make claims about the nature consciousness *per se* might be stretching his intentions too far; but, see his (2007b) where the same architecture is extended to account for spatial phenomenology (or at least what he calls *spatial purport*).

⁸⁹ Disjunctivists on the other hand put an alternative spin on the matter, suggesting a sort of respectful quietism in recognition of the mutually agreed limits of self-knowledge with respect to subjectively indistinguishable states. Thus the line of argument is this: The fact that genuine and perfectly faux states are subjectively indistinguishable, tells us no more than that they are subjectively indistinguishable. In particular, it does not and cannot tell us that they are the same kind of state. If this conclusion is secured, it opens up the possibility of appeal to corollary issues to argue that DR should be favoured on reflective equilibrium. See Martin (2004) for arguments along these lines.

of how the mind is related to things independent of it. In this regard, consider again what a conjunctivist view seems to be committed to, as we have set things up. *Qua* conjunctivists, they are clearly advocating mass error of an interesting kind. For the less experience seems perfect, and thus the less error (for all intents and purposes) seems perceptual, the less error the subject is subjected to. In contrast, the main strength of the disjunctivist position is that it *allows* for the possibility of thoughts actually referring to the mind-independent world, and indeed knowledge of that world, through perceptual experience as a *suis generis* state. Hence, the question that the disjunctivist might see as an embarrassment to the conjunctivist is this: How then, can it be that consciousness makes knowledge of the world possible? The thrust of the question can be put more directly as a criticism as follows:

There is no sense we make of thought and knowledge reaching out to the world in a way that transcends what is available to the subject from within the perspective of consciousness. This form of 'magic realism' involves depriving the concepts of knowledge and thought of their normal meaning precisely by denying constitutive connections with consciousness. (Eilan, 1997, p. 236)

However, that does not obviously conclude the issue. The safest conclusion here I think is that any view that does not allow for the possibility of perceptual experience itself being in an appropriate relation to mind-independent reality will end up having to say something counter-intuitive about how we can think about reality, and know certain states of affairs. But one thing learnt from the history of inquiry is that a theory being counter-intuitive does not make it more likely to be false.

Meanwhile, DR is left in a position where it is not obvious how it meets its purported aim. If the model of the conjunctivist position is to be appropriately contrasted, two things need to be done. The first is to find a metaphor (as the virtual-reality theorists have done) that exhibits an appropriate sensitivity to the ongoing discovery of causal relations underlying perceptual states. For as things stand, it is hard to think of perceptual experience of objects on the DR model, when

[...] there is a sense in which cognitive processing is a 'common factor', an element found in both veridical and hallucinatory processing. Whether or not there is an external object being seen, the same features may be located on just the same feature maps, and they may be bound together in just the same way. (Campbell, 2002, p. 118)

What is needed is a way of conceiving of DR such that it is compatible with any particular discovery concerning the biology, computational, functional architecture *etc.* of perceptual systems. Furthermore, what is needed is a metaphor of a similar generality to the virtual-reality metaphor in play in conjunctivist accounts. Campbell,

following up a discussion of these issues, suggests the following as adequate to the purpose:

Suppose we have a medium which, like glass, can be transparent. But suppose that, unlike glass, it is highly volatile, and needs constant adjustment and recalibration if it is to remain transparent in different contexts. Suppose, in fact, that the adjustment required is always sensitive to the finest details of the scene being viewed. The upshot of the adjustment, in each case, is still not the construction of a representation on the medium of the scene being viewed; the upshot of the adjustment is simply that the medium becomes transparent. You might think of visual processing as a bit like that. It is not that the brain is constructing a conscious inner representation whose intrinsic character is independent of the environment. It is, rather, that there is a kind of complex adjustment that the brain has to undergo, in each context, in order that you can be visually related to the things around you; so that you can see them, in other words. (2002, p. 119)⁹⁰

Secondly, what is needed is a way of reinstating the explanatory role of conscious experience. The proposal noted earlier was that perceptual experience is held to have a certain kind of content that secures a direct-relation between mind and world. But the trouble with that attempt is that it makes the relation one of success (*qua* successful reference) and the difficulty with that is that the relation might just as well fail to hold, as in cases of perfect faux perceptual experience (Brewer, 2006, pp. 166 - 168). In a situation like this, it is hard to then press the explanatory role of perceptual experience. Indeed, what it shows is that on such an account, it was never perceptual experience that was playing an explanatory role in the first place.

The simplest response in a situation like this is to get back to basics. Campbell offers a path towards reconciling the formulation of DR with its general aims, by noting the (retrospectively obvious) fact that, if experience of objects is to explain our ability to think about objects:

⁹⁰ This indicates the extent to which metaphors only hold as much implication as their theoretical context; *cf.* Metzinger (2005b, p. 13).

That means that we cannot view experience of objects as a way of grasping thoughts about objects. Experience of objects has to be something more primitive than the ability to think about objects, in terms of which the ability to think about objects can be explained. (2002, p. 122)

With these points in mind, the importance of a certain account of perceptual experience becomes more evident. For if perceptual experience is construed as anything but a simple and primitive relation between mind and world, then it cannot be appealed to as a distinctive grounding condition for thought and knowledge. If DR is to appeal to perceptual experience in this way as a grounding for the possibility of conceiving the world as mind-independent, then it cannot build a concept of the world as thus into the experience. What is required is an account of perceptual experience that does not suggest any identification or any form of dependency between a subject's experience of the world and their thoughts concerning the world. And what is tricky is providing such an account, whilst simultaneously providing an account of how it perceptual experience can seem to be of things that are mind-independent.

5.2. Immediacy

Having said all that (and I am aware that it was a lot) there is a sense in which the relation between DR and the account of perceptual experience it appeals to is actually quite simple. This is especially clear when put in contrast with conjunctivist views of the ilk presented in the last section. For whilst those views are not required to take the common sense conception of perceptual experience at face value, so to speak, DR certainly is thus required. Witness for instance, the following passage from Mike Martin:

[The] phenomenological character of all perceptual experience requires us to view the transparency and immediacy of perceptual experience as involving actual relations between the subject and the objects of perception and their features. In just the case of veridical perception, the experience is a matter of certain objects being presented as just so (Martin, 2002b, p. 402)

The next section will be devoted to the *transparency* of perceptual experience, but for now focus on the question: what is the *immediacy* of perceptual experience supposed to be? In a review article, Matt Soteriou characterises it as follows:

[Our] perceptual experiences are non-neutral about the actual presence of the mind-independent objects and features in our environment they are directed upon. They appear to have a coercive power and authority over our beliefs. (2009, §3.3.)

There are obvious epistemological connotations to the phenomenon. J. L. Austin, for instance, in discussing a refined form of Foundationalism, on which there is supposed to be “some special kind of sentences whose function it is to formulate the evidence on which other kinds are based” (1962, p. 115), has his audience consider a case in which such indirect justification is superfluous:

If I find a few buckets of pig-food, that’s a bit more evidence, and the noises and the smell may provide better evidence still. But if the animal then emerges and stands there plainly in view [...] its coming into view doesn’t provide me with more *evidence* that it’s a pig, I can now just *see* that it is, the question is settled (ibid., p. 115, italics original)

The point can easily be abstracted from its epistemological context, for whether or not the epistemological question is settled, there is no sense in Austin merely entertaining the belief that there are pigs in his part of Oxford when visually confronted with the honking beast.

In this section, I will attempt to navigate through the several pitfalls DR must avoid even with a basic connection between belief and perceptual experience. Consider David Armstrong’s analysis of perception as a form of belief acquisition. Armstrong’s thesis is that “perceptions are acquirings of beliefs”. A first worry is that it might be thought to follow from this that “the intentionality of perception reduces to the intentionality of the beliefs acquired” (Armstrong, 1968, pp. 210 - 211); or indeed that “perceptions [...] are nothing but the acquiring of beliefs about the world by means of our senses” (Armstrong, 1961, p. 132). The difficulty is that it seems that simply believing something can occur whilst not perceptually experiencing the thing believed to be so. Austin might have believed there were pigs in the vicinity because someone convincing told him that there were. But this ought to be conceived as a rather different experience to a head-on confrontation with a pink-skinned, pig-shaped, stinking, snorting beast. Searle expresses the basic point as follows:

I see a yellow station wagon in front of me, the experience I have is directly of the object. [...] The experience has a kind of directness, immediacy and involuntariness which is not shared by a belief I might have about the object in its absence. (1983, pp. 45, 46)

What is needed is an understanding of how perceptual experience can involve the experience of believing something in virtue of perceptually experiencing the object with respect to which the belief is held. And if the goals of DR as described earlier are correct, this needs to be achieved without assuming that a perceptual experience is simply a belief, or that it is in some way dependent upon belief. From this angle of approach, Searle's remark serves as a challenge, one that might seem almost impossible to meet. In fact, I will argue later that an appropriately weaker version of this challenge can be met. But first it will be useful to consider a more common controversy over the relation between perceptual experience and belief.

Remarks like the following are typical: "there are times when belief and perception come apart. Optical illusions are a case in point. Knowing that one is witnessing an optical illusion does not make the illusion go away" (Bermúdez 1995, p. 335). Take the optical illusion in Figure 10, for instance. Looking at the lines on the left, the history of perceptual psychology is testament to the fact that most people say that the top line looks longer than the bottom. But looking at the lines on the right, it can perhaps be seen that the endpoints of the two lines (*sans wings*) are parallel. So looking back to the left, it is certainly rational to believe that the two lines are of equal length (and they are), but most might still say that one looks longer.

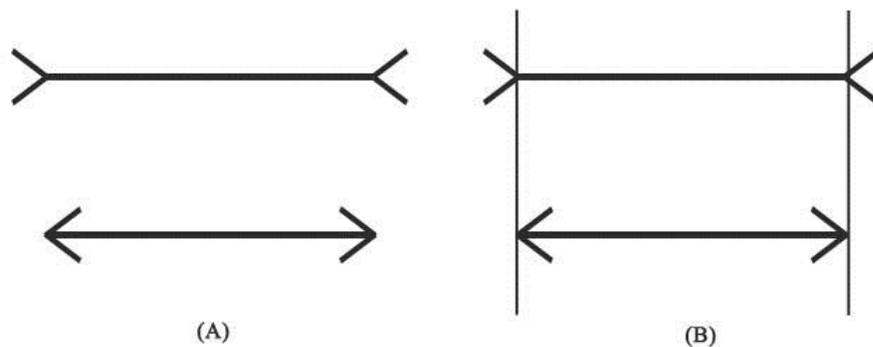


Figure 10 – The Müller-Lyer illusion

But perhaps as regards the relationship between perceptual experience and belief, there are illusions and then there are illusions (so to speak):

Sitting in the perceptual psychologist's laboratory it is easy to tell myself that the things I know I am being induced to see are mere illusions [...] in such a situation I do disbelieve my senses [...] What if, however, the psychologist made it seem to me – *really* seem – that a six-foot spider was making its way relentlessly toward me? I doubt I should remain in my seat. (A. D. Smith, 2001, p. 291)

Smith's anecdote illustrates the need for a conception of belief that can absorb both kinds of case. He suggests that *perceptual* and *theoretical belief* are distinct in so far as "perceptual belief can exist alongside a contradictory theoretical belief" (A. D. Smith, 2001, p. 292). This distinction would allow the DR theorist to meet a weakened version of the challenge described earlier. Schematically put, that challenge was to show how:

- (i). perceptual experience can involve the experience of believing something in virtue of perceptually experiencing the object with respect to which the belief is held;

whilst denying that:

- (ii). perceptual experience is simply a belief, or it is in some way dependent upon belief.

The weakening of the challenge would come in reading (ii) as:

- (iii). perceptual experience is simply a theoretical belief, or it is in some way dependent upon theoretical belief;

and this could be denied by claiming that:

- (iv). perceptual experience is simply perceptual belief, or it is in some way dependent upon perceptual belief.

The latter disjunct of (iv) would then satisfy (i).

This could do with some further illustration. For that purpose consider Escher's *Ascending and Descending* (Figure 11).

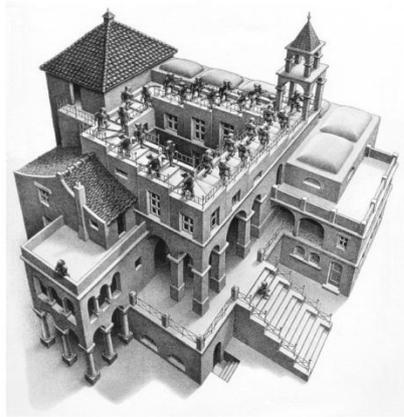


Figure 11 – *Ascending and Descending* by M. C. Escher.

Printed with permission, © 2010 M.C. Escher Company BV

Figure 11 is a famous depiction of an impossible object. But it is a depiction, and one might quibble whether one can experience a picture itself as embodying an impossible object. So, perhaps closer to the mark, consider a Lego™ version created by Andrew Lipson (Figure 12).

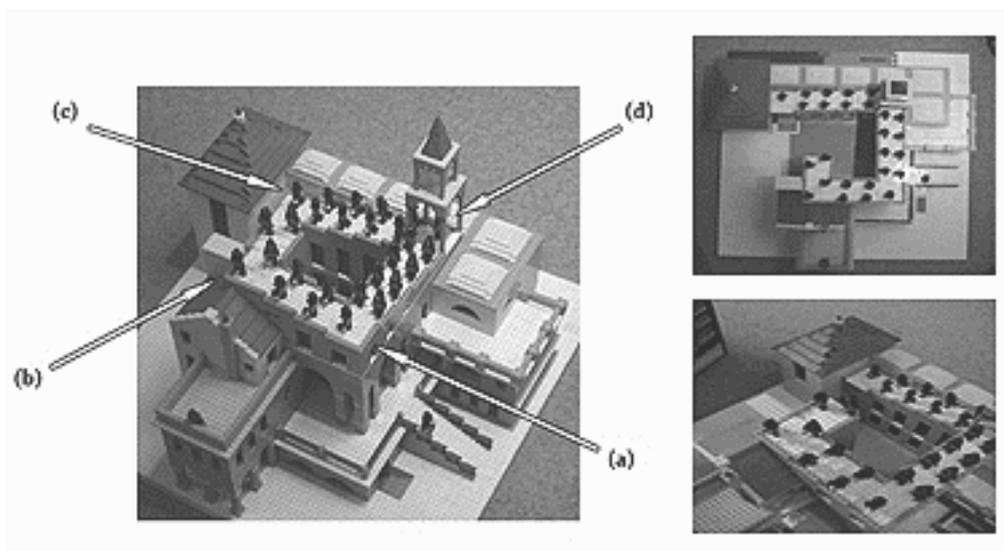


Figure 12 – Andrew Lipson's Lego™ construction of *Ascending and Descending*

Images on the right present alternate angles on the labelled image on the left. All retrieved from:
<http://www.andrewlipson.com>

The DR theorist could illustrate the distinction between perceptual and theoretical belief as follows. Say that one is actually confronted with Lipson's Escher. By attending to different relative heights one can discern two opposite directions of ascension. Observing the labels at the corners of the staircase, one can ask a series of relative height judgements. I will give some presumptive answers to make the case. Is (b) higher than (a)? Presumably yes. Is (c) higher than (b)? Yes, also. So one can infer that (c) is higher than (a). But then ask: Is (a) higher than (d)? Yes. Is (d) higher than (c)? Yes, again. But now one can infer that (a) is higher than (c).⁹¹ It is inconsistent to believe both that (c) is higher than (a) and that (a) is higher than (c). But there is no need for the perceptual belief that *e.g.*, (c) seems higher than (a) to be consistent with the theoretical belief that (a) is higher than (c).

A feature of Smith's example that gave it persuasive power was that the seeming presence of menacing arachnid with presumed ill intentions ought to result in evasive behaviour. Now whether one sees the experience as a reason or a cause for the behaviour, it treads dangerously close to the metaphysical territory leading to the lands of the problem of intentionality. To rid the analysis of some artefacts of the example, note that I could just as well have made the distinction with a look at Lipson's Lego™ Escher. There the perceptual beliefs accrued were required to play neither rational nor causal role. All that was required to illustrate was the contrast and lack of any need for consistency between two beliefs.

This divide allows one to properly parse out the perceptual experience itself, from the theoretical beliefs that the subject might have concerning the admissible contents of reality. It allows one to separate the immediacy of the subject's perceptual experience from the subject's conception of what she experiences. Certainly, perceptual experience can take the same (neutral) intentional object as thought; one can think about what one experiences. But the key is to treat immediacy in such a way that it does not become a determination of one's thoughts.

To outline such a treatment I will consider some alternative accounts of a difficult case. Consider Oliver Sacks' narration of the first of a recurring series of hallucinatory episodes suffered by a Hungarian man of the arts, named Frigyes Karinty:

⁹¹ I owe this manner of illustration to Jeroen Smeets. See also Smeets and Brenner (2008) where they use instances of the perception of impossible objects to provide a counter example to a Helmholtzian/Bayesian account of perception (*e.g.* Körding and Wolpert 2008). On such a view, perception is understood as involving unconscious inference of the most likely stimulus to have caused the retinal image. An impossible object is not likely at all, and yet we can experience objects as being in impossible configurations.

He was having tea at his favorite café in Budapest one evening when he heard “a distinct rumbling noise, followed by a slow, increasing reverberation [...] a louder and louder roar [...] only to fade gradually into silence.” He looked up and was surprised to see that nothing was happening. There was no train; nor, indeed, was he near a train station. “What were they playing at?” Karinthy wondered. “Trains running outside? [...] Some new means of locomotion?” It was only after the fourth “train” that he realized he was having a hallucination. In his memoir, *A Journey Round My Skull*, Karinthy reflects on how he has occasionally heard his own name whispered softly—we have all had such experiences. But this was something quite different. “The roaring of a train [was] loud, continuous, and insistent. It was powerful enough to drown real sounds [...] After a while I realized to my astonishment that the outer world was not responsible [...] the noise must be coming from inside my head” (Karinthy, 2008, pp. vii, viii, cited in Farkas, forthcoming, ms p. 10)

In a forthcoming paper on the sense of reality in hallucination, Katalin Farkas continues where Sacks leaves off:

Karinthy reports that the next day – same time, same café – the ‘trains’ started to come again, but, unlike on the first occasion, he didn’t even look up: he knew it was something happening inside. The experience repeated itself every day, and, together with the other developing symptoms of his tumour, became part of his daily routine. (Farkas, forthcoming, ms p. 10)

She then offers an interpretation of the case:

This process, it seems to me, illustrates how the experience lost its initial sense of reality. This can hardly be explained by a change in the phenomenological features of the experience. What changed was Karinthy’s knowledge that the event was not happening. (ibid., ms p. 10)

The problem with this interpretation is that it assumes the point at issue. The issue is whether the experience itself changes, or merely Karinthy’s response to it. The gradual familiarity that Karinthy exhibits can just as well be seen as the effects of his theoretical beliefs on his behaviour. Given his evolving knowledge about his condition (he suffered from a brain tumour that was later operated) it would be no wonder that his behaviour evolved accordingly. But none of this suggests that the experiences themselves were affected by his theoretical beliefs.

Dreams provide another apposite case. They are often reported as being bizarre. They are an interesting topic of artistic (particularly cinematic) study, because they are conceived as being potentially wildly inconsistent and yet simultaneously realis-

tic. It is important to recognise, incidentally, that a perfect dream is not necessarily what is known as a lucid dream. By definition a lucid dream involves insight upon the fact that one is dreaming (Revonsuo, 2010, p. 247). Consequently, the famous Cartesian sceptical scenario cannot be one that involves such lucidity. In passing, Mike Martin makes just the error I am warning against:

Cartesian sceptical hypotheses such as lucid dreaming and malign demons generalise cases of delusive experience: perfect hallucinations. Given the manner in which Descartes treats dreaming, a lucid dream may as well be an example of extended hallucination (Martin, 2009, p. 107)

The attribution of lucidity to the poor Cartesian subject seems to be straightforwardly mistaken.⁹² But still, the two are perhaps not mutually exclusive; a dream can apparently be realistic despite the dreamer's lucidity, as indicated in the following narrative:

I was about to enter the house when, on glancing casually at [the pavement] stones, my attention became riveted by a passing strange phenomenon, so extraordinary that I could not believe my eyes—they had seemingly all changed their position in the night [...] Then the solution flashed upon me: though this glorious summer morning seemed as real as real could be, I was dreaming! (Oliver Fox, as cited in Metzinger, 2009, p. 140)

Typically, insight is achieved by means of performing “reality checks” (see Metzinger, 2009, p. 141 for a handy list). For the most part these are checks on consistency, particularly when they pertain to the environment experienced. The guiding assumption is that reality is consistent, and governed by constant principles, principles that a dream might violate without one's notice. The purpose of the various tests upon consistency is to determine what one ought to (theoretically) believe about the experienced environment, *i.e.*, whether one ought to (theoretically) believe that it is real. Again, according to the definition of lucid dreaming (and the report above) this can be in spite of the fact that the objects of the dream environment are experienced as realistic. The purpose of said reality checks is not to deter-

⁹² In fact, it seems that what Martin is referring to is closer what I am calling a perfect dream. In particular, a perfect dream that does not involve lucidity. I am allowing a perfect dream to involve experience of an inconsistent environment. This serves to highlight how dramatic the assumptions of the dream scenario are. Without even the possibility of discerning one's predicament through reality checks *etc.*, the scenario moves beyond even perfect dreaming to involve what Andy Clark calls “industrial strength deception” (Clark, 2005).

mine how a dream environment looks or feels, or indeed how realistic it looks or feels. It is to determine whether they are as they look and feel.

The distinction between theoretical and perceptual belief also enables one to accomplish the tricky feat that I set as an aim in the introduction and in the first section of this chapter. It allows one to make initial sense of the idea that perceptual experience can seem real, whilst resisting an assimilation of that experience to the subject's thought about the objects of experience. Furthermore, it allows all this to be done in a manner that is compatible with the neutral intentionality thesis.

5.3. Transparency

In the course of an attack on an idealist metaphysics of perception in 1903, Moore devoted some time to an analysis of sensation.

We have then in every sensation two distinct terms, (1) 'consciousness,' in respect of which all sensations are alike; and (2) something else, in respect of which one sensation differs from another. It will be convenient if I may be allowed to call this second term the 'object' of a sensation: this also [as with 'consciousness'] without yet attempting to say what I mean by the word. (1903, p. 444)

His ensuing complaint was that an idealist would identify consciousness with the object, such that an expression "sensation of blue" denoted a single term. For if a sensation of blue differs from a sensation of green in virtue of a "second term", namely, the particular blue in the former sensation and the particular green in the latter sensation, then this second term is distinct from the first, namely, "consciousness", which is claimed to be universally present in all cases of sensation. By identifying the two terms, arguably the idealist winds up identifying particulars with universals (G. E. Moore, 1903, p. 445).⁹³

Moore then embarks on one of two famous and influential digressions, suggesting that idealists come to believe that the two are one and the same, rather than two and different because:

⁹³ For more on this interpretation of Moore's argument and aims, see Hellie (2007, pp. 341, 358 n17).

when we refer to introspection and try to discover what the sensation of blue is, it is very easy to suppose that we have before us only a single term. The term 'blue' is easy enough to distinguish, but the other element which I have called 'consciousness'—that which sensation of blue has in common with sensation of green—is extremely difficult to fix [...] in general, that which makes the sensation of blue a mental fact seems to escape us: it seems, if I may use a metaphor, to be transparent—we look through it and see nothing but the blue; we may be convinced that there is *something* but *what* it is no philosopher, I think, has yet clearly recognized. (1903, p. 446)

Notice that Moore is talking about *introspection* of sensation. The nature of introspection is a controversial topic as much as any other in philosophy of mind.⁹⁴ But assume as a minimal characterisation, that when Moore engages in act of what he calls “introspection”, he is doing something different to what is ordinarily the case in an occurrence of a sensation of blue. The attempt, in any case, is to introspect upon the act of experiencing, to catch the act itself, albeit in unusual circumstances. If that is right, then what is striking is the extent to which nothing beyond the ordinary is easily revealed, that the relationship between the act of experiencing and the object of experience is so intimate. Moore is suggesting that it is understandable that the idealist goes astray because it is hard to discern any distinction between the two. In particular, introspection (whatever that is) can fail to reveal a distinction between a mental element (consciousness) and a non-mental element (the object) of perceptual experience. And this failure, on the part of idealists, is precisely that of

⁹⁴ What one means by introspection, and the controversies one engages in, can vary with one's theoretical interests. For instance, if one is interested in self-knowledge: Introspection could be understood as one's ordinary capacities for rational and intelligent deliberation of consistency amongst beliefs (Shoemaker, 1996, pp. 224 - 246). Or even, simply making one's mind up on a matter, by determining what the relevant state of the world is (Evans, 1982, pp. 224 - 230; R. Moran, 2001, pp. 35 - 99). Alternatively, it could be understood as a special form of “inner” sense-perception (Armstrong, 1968, pp. 323 - 338; Lycan, 2002). If one is more interested in methods of studying the mind and consciousness, introspection could be understood as a means of producing first-person reports, however unreliable (Hurlburt & Schwitzgebel, 2007). If one is more interested in cognitive architectures underlying consciousness, the term could refer to the differential allocation of cognitive and attentional resources to processes within an organism's boundaries, according to which some state of affairs may be experienced as internal or external (Metzinger, 2003a, pp. 32 - 38). Although the extension of Moore's introspection must be one of these, he operates with a vaguer notion: whatever it is that one does when asked to attend to the look of something, how it tastes, feels *etc.* In the current context, the only substantial point required is that whatever this is, it is something different from what occurs in ordinary perceptual experience.

failing to hold “[consciousness] and blue before their minds and to compare them, in the same way in which they can compare blue and green” (G. E. Moore, 1903, p. 450). One could fail to do something because it is impossible, or one can fail to do something that is possible but simply too difficult. Moore is of the opinion that idealists fail in the second sense, that consciousness and its object “*can* be distinguished if we look enough, and if we know that there is something to look for” (ibid., p. 450).

The other famous passage from that article contains a description of the failure itself:

the moment we try to fix our attention upon consciousness and to see *what*, distinctly, it is, it seems to vanish: it seems as if we had before us a mere emptiness. When we try to introspect the sensation of blue, all we can see is the blue: the other element is as if it were diaphanous (G. E. Moore, 1903, p. 450)

Call this failure *simpliciter*, the *transparency phenomenon*. A great deal of the literature making reference to the ‘transparency’ or ‘diaphanousness’ of perceptual experience is bound up with issues concerning what the metaphysics of consciousness should involve.⁹⁵ But this is in a rather different sense than concerned Moore. The contemporary point of issue is whether (and for some, simply, how it is that) consciousness is reducible to representational content.⁹⁶ The main challenge in this regard is the claim that qualia are intrinsic properties of experience, to be found by Moorean introspection, and that these are irreducible to representational content. Occasionally, the challenge is not stated as such, but more generally as either the claim that we experience non-intentional properties inherent in consciousness, such as the intrinsic nature of our mental states (Harman, 2002, p. 664). Against

⁹⁵ Discussion of transparency has been rather popular of late. Benj Hellie (2007, p. 356 n1) lists over eighty articles referring to or making use of some relevant notion of transparency published between 1990 and 2007. Although such an output is rather meagre in comparison to rates of publication in the natural sciences, it is quite outstanding for a single topic in a subdiscipline of philosophy.

⁹⁶ However, the discussion of transparency is just one perspicuous case of a more general debate, in which no appeals to transparency need be made. Also the claim that conscious experience reduces to representational content is one of the stronger variants of the relationship between the two (see Chalmers, 2004). Possibly the weakest relationship would be that of supervenience. For a good reference on various conceptions of the relationship, and a defence of the view that consciousness supervenes on representational content, see Byrne (2001). For explorations of the complexities of that content and several constraints on lower levels of description, see Metzinger (2003a, pp. 116 - 197).

this broader background, there are actually various kinds of *transparency thesis* developed. I will discuss these theses to argue that, despite occasional suggestions to the contrary, a considered view on transparency should not entail that perceptual experience is an experience of representational content, or indeed the vehicle properties of that representation.

To begin, here is the most typical manner of appeal to “transparency” in the literature:⁹⁷

Suppose you have a visual experience of a shiny, blood-soaked dagger [...] Now try to become aware of your experience itself, inside you, apart from its objects. Try to focus your attention on some intrinsic feature of the experience that distinguishes it from other experiences, something other than what it is an experience of. The task seems impossible (Tye, 1995, pp. 135 - 136)

Tye claims it is impossible to focus on any intrinsic feature of the experience that distinguishes it from other experiences. Implicitly, it is assumed that what the experience is “an experience of” cannot count as such an intrinsic feature, given that experience-of denotes a relation, an intentional relation. The transparency thesis is that “perceptual experiences have no *introspectible* features over and above those implicated in their intentional contents” (Tye, 1995, p. 136). In this context, the act of introspection (along Moore’s vague lines) is to be construed as a test for metaphysical theories of consciousness, *i.e.*, some means of discerning a lesson to be drawn from reflection on the phenomenology_M of transparency. A theory which claims that consciousness is identical to, reduces to, or supervenes on representational content, need predict no more than the following: When one introspects upon a perceptual experience, all one will experience is the object one looks at, touches, *etc.*; there are no properties that experiences are held to have over and above the properties of the objects represented. A view which claims that we directly experience intrinsic properties of our mental states over and above the properties of the objects represented, would seem to require that these would be “revealed” in introspection. But for some that does not seem to happen:

one’s awareness seems always to slip through the experience to the redness and shininess, as instantiated together externally. In turning one’s mind inward to attend to the experience, one seems to end up scrutinizing external features or properties. (Tye, 1995, pp. 135 - 136)

⁹⁷ For prototypical instances of the kind of discussion I am referring to, see Block (2007a, pp. 533 - 570), Harman (2002), Tye (2002), Shoemaker (1990). For a deflationary perspective on the importance of the debate, see Crane (2006b).

when one “drinks in” the blue of a summer sky or the red of a ripe tomato [...] these are experienced, perceptually rather than introspectively, as located outside one, in the sky or in the tomato, not as features of one’s experience (Shoemaker, 1990, p. 112)⁹⁸

And we find Martin, once again gazing out of the window of his North London home:

When my attention is directed out at the world, the lavender bush and its features occupy centre stage [...] when my attention is turned inwards instead to my experience, the bush is not replaced by some other entity [...] I attend to what it is like for me to inspect the lavender bush through perceptually attending to the bush itself while at the same time reflecting on what I am doing. So it does not seem to me as if there is any object apart from the bush for me to be attending to or reflecting on while doing this. (2002b, pp. 380 - 381)⁹⁹

The transparency phenomenon is held to reveal a reason for the failure in question. One cannot distinguish consciousness and its objects, because consciousness is no more than the representation of its objects (Tye, 2002). Call this *transparency thesis 1* (TT_1). TT_1 decomposes to two claims.¹⁰⁰ One is that we perceptually experience objects as “external”. By this it is meant that the objects of experience seem to be mind-independent. So we have claim (α):

⁹⁸ It ought to be noted that later on in the article, Shoemaker gives several arguments for the existence of qualia.

⁹⁹ Although the procedure of Martin’s description is roughly that which others would use to support an account of the representational nature of perceptual experience, his considered stance is neutral in that paper.

¹⁰⁰ As far as I can tell, Martin was the first to note this explicitly (2002b, p. 378)

- α Perceptual experience is as of mind-independent objects, surfaces, volumes, properties, relations *etc.*¹⁰¹

Both the transparency thesis discussed in this section are committed to (α) or something sufficiently close to it. What distinguishes TT_1 is a second claim, that all we experience are these mind-independent objects as they are represented to be. So we have claim (β):

- β Perceptual experience is exclusively of objects (surfaces, volumes, properties, relations *etc.*) represented as mind-independent.¹⁰²

Despite the open inclusion provided in the parentheses, (β) might be considered rather too strong.¹⁰³ But note that whether or not that is the case, endorsing claim (α) already blocks a certain way of reading (β), or even a certain way of reading such claims as “phenomenal character is the same as representational content” (Tye, 2000, p. 45). What it blocks is the rather literal reading, that one perceptually experiences representational content. To see this, consider Crane’s remarks, whilst bearing in mind the neutral notion of an intentional object discussed in the last chapter:

¹⁰¹ The expression “as of” here can be seen as more or less loaded. For a loaded instance, probably intended by proponents of TT_1 , witness Martin Davies when speaking of “the notion of perceptual content” immediately adding the clarifying parenthesis “(of experiences as of ...)” (1992, p. 23). A less loaded understanding is neutral on the issue of whether a perceptual experience is in fact a relation to mind-independent reality. This would be to say the experience is “as of” not because of *e.g.*, the possibility of cases in which it might not involve a relation to mind-independent reality, but simply to state that the experience does seem to be so.

¹⁰² Incidentally, I leave aside issues as to whether or not some or other higher-order theory of consciousness (such as the higher-order perception theory) is correct. Although in some ways connected to the issue of whether perceptual experience is transparent, disputes concerning higher-order theories have little to no bearing on the broader project of articulating a DR conception of perceptual experience. For critical reviews of higher-order theories of consciousness, see Güzeldere (1995) and Zahavi (2005, pp. 11 – 30).

¹⁰³ For various counter-examples, see Block (2007a, pp. 539 – 543). For other counter-examples in the course of the development of an alternative transparency thesis (TT_2 , below), see Metzinger (2003b, pp. 359 – 362) and the discussion below.

If I see a rabbit, the rabbit is the intentional object of my experience. My experience may also have the propositional content that there is a rabbit running through the field. But I do not see such propositional contents or propositions; I see rabbits and fields. For this reason, even if perceptual experience should be analysed in terms of relations to propositions, it is at best misleading and at worst absurd to say that these propositions are the intentional objects of experience. (2006b, p. 136)

Crane's point is insightful, but perhaps unoriginal, as it is notably similar to a point made by Mike Martin:

It is true that if one endorses a 'Russellian' conception of propositional content, one might make some sense of taking the objects and properties that the content is about as its literal constituents. In that case, one might endorse the thought that one delighted in [sc. perceptually experienced] an aspect of content, but unless we also assume that in being aware of a constituent of a content one is thereby aware of the content, it still won't follow from being aware of the ocean and its blueness that the experience's content is immediately accessible to one's consciousness. (Martin, 2002b, p. 382)

As far as I am aware, all proponents of TT₁ hold that the content of perceptual experience is propositional. But whether they hold some other view of content is irrelevant. The key point is this: despite the way people sometimes speak about the relationship between the intentionality of perceptual experience and representational content, it is inconsistent to claim (α) and (β) and to claim that one experiences representational content. It is one thing to hold that experience has correctness conditions. It is quite another to hold that we experience the correctness conditions themselves.

Consider next, transparency as a claim about the architecture of systems that meet certain minimal conditions for enabling conscious experience. Putatively, certain states of these systems (in virtue of which the system is conscious, dubbed "phenomenal states") exhibit a feature which Thomas Metzinger (2003a, p. 169) dubs "phenomenal transparency".¹⁰⁴ The feature is characterised by claim (γ):

¹⁰⁴ Metzinger once upon a time called this *semantic* transparency (2000, p. 299). **Van Gulick!** But later in reviewing various ways in which a notion of transparency could be employed he refined his usage and adopted the term *phenomenal transparency* for essentially the same phenomenon (Metzinger, 2003a, p. 165; but see also pp. 386 – 387).

- γ “For any phenomenal state, the degree of phenomenal transparency is inversely proportional to the introspective degree of attentional availability of earlier processing stages” (Metzinger, 2003a, p. 165).

Whilst Moore’s use of the word “introspection” is vague, Metzinger’s usage is well-defined, but theory-laden; the latter, largely because he is a staunch internalist about both the vehicles and contents of conscious mental states.¹⁰⁵ To be clear on what Metzinger intends by (γ), some brief remarks are in order. On Metzinger’s view, all phenomenally conscious states are exhaustively constituted by neurocomputational properties. All are thus in some sense internally directed, and thus “introspective” in various different senses of “internal”. Metzinger distinguishes four different notions of introspection on the basis of these principles (2003a, p. 36). The first is the most relevant. By Metzinger’s lights, “Introspection₁” (note the subscript) is

a phenomenal process of attentionally representing certain aspects of an internal system state, the intentional content of which is constituted by a part of the world depicted *as external*. The accompanying phenomenology is what we ordinarily describe as attention or the subjective experience of attending to some object in our environment. (2003a, p. 36)

Introspection₁ draws upon a functional notion of attention:

attention is a process of subsymbolic resource allocation taking place within a representational system exhibiting phenomenal states. It is a form of non-conceptual metarepresentation operating on certain parts of the currently active, internal model of reality, the conscious model of the world. (2003b, p. 356)

¹⁰⁵ For his distinction between phenomenal and intentional content (the former a subset of the latter) see Metzinger (2003a, p. 173). For the distinction between internalism and externalism about the contents and vehicles of intentional and phenomenal content, see Hurley (2010).

Clearly there is a lot built into the account. But the centrepiece assumption is that representational systems are conscious in virtue of internal modelling.¹⁰⁶ This assumption and others are made against the background of a *constraint-satisfaction* approach to the study of consciousness (Metzinger, 2003a, pp. 116 - 208, and passim; 2005b; Weisberg, 2005). That is, it constitutes an answer to the question: What conditions must a representation satisfy if it is to enable conscious experience? One of these conditions is that “in standard situations and from a first-person perspective the contents of phenomenal states always are *in a world*”, and furthermore that “This world is presented in the mode of naive realism” (Metzinger, 2003a, p. 131). Metzinger does not mean anything particularly complex in this regard, merely that “whatever is transparently represented is experienced as real and as undoubtedly existing by this system” (Metzinger, 2003b, p. 364). Accordingly, Metzinger endorses something near enough to (α) .¹⁰⁷ Together with (γ) this amounts to *transparency thesis 2* (TT_2).

It ought to be clear that TT_2 is a substantial thesis in the way that the mere transparency phenomenon is not. For the particular what is not introspectively accessible on Metzinger’s view is “the representational character of the contents of conscious experience” (2003a, p. 169). By Metzinger’s lights, naive realism ought to be construed as a “phenomenal property” and it ought to be taken as a literal instance of naiveté concerning the actual facts of the matter underlying subjective experience (under

¹⁰⁶ Several other items to clarify are “resource allocation”, “sub-symbolic”, “metarepresentation”, and “non-conceptual”. Resource allocation is allocation of information-processing resources. It is sub-symbolic because the information is in a *non-linguistic* and/or *non-symbolic* format (pace Fodor, 1975). A metarepresentation is a representation of a representation. The label nonconceptual takes at least two meanings, and Metzinger probably intends both. Firstly, a natural consequence of Metzinger’s enthusiasm for an account of consciousness that it is sensitive to biological history (e.g. 2003a, p. 178; 2003b, p. 362) is that one should not presuppose an organism need possess concepts to be in (meta)representational states, whether or not specification of their content requires the use of concepts (Bermúdez, 1998, pp. 49 - 101). But also, given that their format is sub-symbolic, Metzinger’s (meta)representations are non-conceptual in another sense, in that their content is not structured in a manner amenable to conceptual articulation (this would be a version of ‘content’ non-conceptualism, see Heck, 2000, pp. 482 - 488). What is important in any case is that the resultant phenomenology is that of sensorily experiencing something, and not that of conceiving something to be a certain way. In attending to an object “we increase our degree of alertness and orient towards the object in question. However, we do so without mentally forming a *concept* for this object” (Metzinger, 2003b, p. 356).

¹⁰⁷ Nowhere do I find Metzinger wishing to distinguish between perceptually experiencing something as real and perceptually experiencing something as mind-independent. Though there is some nuance to his endorsement of (α) that will become apparent shortly.

the slogan “appearance is not knowledge”). Indeed, Metzinger claims that employing phenomenal transparency as a conceptual constraint forms a “decisive step” in a thorough-going error theory of self-knowledge: a view of the nature of subjectivity and consciousness as a fundamentally neural process of a deep complexity that is ordinarily beyond the reach of introspection (Metzinger, 2000, p. 299; 2003a, pp. 330 - 340, *passim*). But ‘ordinarily’ holds some weight here. For note that claim (γ) holds that phenomenal transparency is a graded phenomenon. Hence, the possibility that phenomenal states can exist at the other end of the scale is built into TT_2 . Accordingly, Metzinger, following in the footsteps of Moore, provides cases in which he suggests one can be aware of the representational nature of one’s conscious experience:

Sensory experience is the paradigmatic example of fully transparent phenomenal content. There are, however, examples of sensory opacity, for instance, during extremely short transition phases in bistable phenomena, *e.g.*, if a consciously experienced Necker cube switches from one interpretation to the next and back, or during the phenomenon of binocular rivalry (2003b, p. 360)

In part, this echoes the appeals that others make to binocular rivalry as a window into the deep structure of consciousness. For example, Leopold and Logothetis claim that “[p]henomena like binocular rivalry demonstrate that, although our brain can simultaneously analyse two conflicting representations, a selection process [...] ensures that we are only aware of one” (1999, p. 262). But in fact Metzinger’s claim is much stronger. His claim is that this phenomenon (and others) reveals to the subject, within the occurrent sensory experience itself, that phenomenal processes are representational processes (Metzinger, 2003a, pp. 170 - 175, 178).

Thus (γ) certainly puts TT_2 in conflict with (β). And as endorsement of (β) figured in defence of the neutral intentionality thesis, it looks like I need to either attack (γ) or show why TT_2 is compatible with the neutral intentionality thesis after all. To be safe, I will do both.

Take a Necker cube such as that in Figure 13.

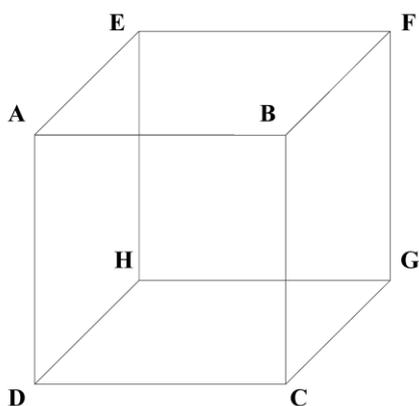


Figure 13 – A Necker cube

Necker cubes are of interest because they are thought to be a paradigm instance of an ambiguous image. The experience of a Necker cube as ambiguous can be described very basically as follows: when looking at the cube, it seems to flip between B looking closer than H, and H looking closer than B. There is a further unambiguous possibility, which would be to experience the ‘cube’ as merely seven abutted two-dimensional shapes: a square, two triangles, and four irregular quadrilaterals. Now, say that representational processes enabling consciousness are phenomenal representations, and that phenomenal representations represent by modelling possibilities. Further, leaving aside the two-dimensional possibility, assume that the bistability is enabled by two competing models. These models are of two mutually exclusive and jointly exhaustive possibilities with respect to the same cube (experienced as a cube): one in which B is closer than H, and another in which H is closer than B. These possibilities are crude statements of the correctness conditions for the models, and in turn the phenomenal representations. What does one experience, in each case when the Necker cube flips? Metzinger claims that because the Necker cube occasionally flips the subject experiences the cube as a representation. If his representational analysis is along the lines sketched here, the claim is really that the subject experiences the cube (as it flips) as a model: a model of B being closer than H, or H being closer than B.¹⁰⁸ But why say this? Why not simply say that the subject experiences either B being closer than H, or H being closer than B?

By my lights, someone who endorsed (α) & (β) ought to say just this. Earlier, I drew on Crane’s suggestion that describing the objects of perceptual experience as propositions is misleading and even absurd. I argued further that such a description is inconsistent with claiming both (α) & (β). But it was really just an extension of Crane’s (and perhaps originally Martin’s) point, which I take to be that subjects do not perceptually experience contents themselves. This same point cannot be applied

¹⁰⁸ See §8.5 below.

to (γ), at least not straightforwardly. For whilst Crane's point is that we do not experience contents, (γ) suggests it is possible that properties of the *vehicles*, the processes that enable contents, are experienced; namely, that the objects of experience are representational processes. The gap between Crane's point and (γ) amounts to the conceptual distance between vehicles and contents, or less metaphorically, the vehicle-content distinction.

The vehicle-content distinction is between the carriers of content and the content carried. It is widely used. For instance, expressing the most common usage in philosophy of mind, Hurley writes: "We should distinguish properties represented in content from properties of the vehicles of content: the subpersonal states and processes that carry content" (1998, p. 17, see also pp. 32 - 41, 144). "Subpersonal" states and processes are such in so far as they are "mechanical" and thus not normatively constrained in the manner that states typically attributed to persons are, such as beliefs and desires *etc.* (see Dennett, 1969/1983, pp. 90 - 98; 1987, pp. 43 - 68). Depending on one's proclivities, these might be the processes studied in cognitive psychology, cognitive neuroscience, neurophysiology *etc.*¹⁰⁹

However, the distinction itself is broader in kind than that between personal and sub-personal explanation, or indeed non-mechanical and mechanical. One can easily find people saying that "experience represents", a phrase which (oddly enough) suggests that the experience is itself the vehicle.¹¹⁰ In other quarters, one finds the claim that organisms are the vehicles for replicators, *alias* genes (Dawkins, 1976/2006, p. 19ff.).¹¹¹ And in still others, "a distinction [...] between using an expression and mentioning it" (A. W. Moore, 1986, p. 173): the distinction employed when I say that I pity the fool that uses the expression "I pity the fool" in a piece of academic writing. With respect to organisms and genes, perhaps one might not have much trouble finding distinct entities. But with respect to the use-mention distinction, a distinction on the basis of reification might be misleading. The same ought to hold in general with respect to vehicles and contents, at least amongst those naturalistically inclined.

¹⁰⁹ With respect to mental content, a distinction along these lines goes back at least as far as early modern work on perception (Yolton, 1996, pp. 183 - 214).

¹¹⁰ For a fairly randomly chosen but nevertheless typical selection, see Tye (1996, pp. 120, 121, 124).

¹¹¹ For issues concerning content attribution in biology, see Maynard Smith (2000) and Griffiths (2001). For a comparison of these with respective issues in the philosophy of cognitive science, see Wheeler and Clark (1999).

Reification worries seem to be exactly what motivates Metzinger's violation of the vehicle-content distinction. Speaking of (γ) he says that

this definition departs from the classic vehicle-content distinction. The standard way of defining transparency would be to say that only content properties of the phenomenal representata are introspectively available to the system, and not vehicle properties. The vehicle-content distinction is a highly useful conceptual instrument, but it contains subtle residues of Cartesian dualism in that it always tempts us to reify the vehicle and the content, by conceiving of them as distinct, independent entities. (Metzinger, 2003a, p. 166)

He then goes on to suggest a solution

A more empirically plausible model of representational content will have to describe it as an aspect of an ongoing *process* and not as some kind of abstract object. What we need is *embodied* content, as it were—an ongoing and physically realized process of *containing*, not “a” content. (ibid., p. 166)

But this can be recognised whilst still being sanguine about a distinction between vehicles and contents. Admittedly, the format of a representation, the choice of abstraction, is closely tied to properties of the vehicle. Representing <everything being illuminated> (a content) by means of ink on paper (a vehicle) is probably easiest done in a natural language (a linguistic format). One's choice of abstraction may be more or less distant from a propositional format, depending on how close one's theory of content is to biological reality. For instance, Paul Churchland (inspired by advances in the study of sensorimotor coordination in the 1970's and 80's) suggests that the right form of abstraction is a “*position* in a suitable *state space*” of a dynamical system potentially implemented by cortical and cerebellar brain activity (1986, p. 280, emphasizes original). Perhaps further along these lines, Metzinger muses that increased attention to evolutionary constraints in cognitive science could motivate a view of content as a “dynamical physical *process* pulsating across the boundaries of the system”, in virtue of ongoing interaction between an agent and its environment (2003a, p. 113, emphasis original, see also pp. 111 - 116).¹¹²

All of that suggests that there might be more biologically plausible views of content than those tied to propositional formats: views that posit complex interaction between content (or “containing”), and the material processes that enable it. That possibility is perfectly compatible with the vehicle and the content being distinct, *qua*

¹¹² For early articulation of thoughts in this direction, see Churchland and Churchland (1983), and Clark (1989, pp. 61 - 80).

having distinct properties. For instance, a vehicle such as paper might have properties such as weight, selective permeability, light reflectance *etc.* The content enabled, <everything being illuminated>, need not have any of these properties. Indeed none of these properties need make a difference to a vehicle's capacity to enable the content that it does.¹¹³

Hence, even though (γ) violates the vehicle-content distinction, the motivations adduced in its favour are really motivations for greater sophistication in format, greater sophistication in the theory of content, and greater sophistication in how one treats the relationship between vehicle and content. All that is certainly welcome. But as far as that goes, the vehicle-content distinction is still in place. So (γ) violates the vehicle-content distinction without reason.¹¹⁴

But say some reason could be found: would TT_2 be incompatible with the neutral intentionality thesis? Remember that I mentioned earlier that reference to ordinary conditions holds some weight indicating that phenomenal transparency is graded. At the transparent (*viz.* non-opaque) end, that is "in standard configurations", Metzinger admits "one's phenomenal experience has an untranscendably realistic character" (Metzinger, 2005b, p. 2). I suspect such "standard configurations" to be the ordinary conditions of perceptual experience. To see why, consider another example Metzinger uses to illustrate phenomenal opacity:

¹¹³ I am willing to concede though, that some of these properties might make all the difference in certain cases. Even if the carrier of content is readily distinguished from content itself, complex inter-relations in a proper understanding of the two is a live option. Metzinger's hopes for closer attention to the dynamic embodiment of representational processes might well be satisfied by Mark Rowlands recent work on representational deeds (see Rowlands, 2006, p. 201 *ff.*). Though it is notable that Rowlands (as with others interested in the dynamics of embodiment, *e.g.* Hurley, 1998, 2010) maintains strict adherence to the vehicle-content distinction (*op. cit.* 2006, p. 28), and occasionally uses it in arguments to support his case (*op. cit.* 2006, pp. 76, 181).

¹¹⁴ If the view then comes to claiming that content properties are introspectively available (claim (γ') perhaps) then it would be an instance of what Millikan calls a "content internalizing" and then "content-externalising" move, *viz.* projecting "properties claimed in or by the visaging onto the inner vehicle of the visaging" and then projecting "properties of the vehicle of the visaging into the visaging's content" (1991, p. 441*ff.*). Millikan uses the term "visaging" to stand in relation to perceiving in the way believing stands to knowing. I would just as well use "perceptually experiencing". For perhaps the opposite view, see Byrne (2009).

If a subject in a laboratory experiment and under the influence of a hallucinogenic psychoactive substance (say, LSD or 2-CB) observes abstract geometrical patterns on the wall, breathing, and slowly evolving into deeper and ever deeper forms of ineffable beauty, then she will frequently be aware of the representational character of her visual experience in that sub-region of her phenomenal space. Typically, the subject will immediately have doubts about the veridicality of her experiential state, cognitively “bracket” it and take back the “existence assumption”, something which effortlessly goes along with visual experience in standard situations. (2003b, p. 360)

Neutrally intentional perceptual experiences, both those that occur in “standard situations” and those that arise from perfect faux perceptual experiences, are at the transparent end of Metzinger’s scale. The neutral intentionality thesis is compatible with the possibility of phenomenal opacity with the proviso that a phenomenally opaque experience would not be a perceptual experience. Note that this compatibility is not conditional on the arguments above failing. If the arguments go through, it simply calls for a re-conception of the scale. But what then is the scale, if it is no longer the “introspective degree of attentional availability of earlier processing stages”? The answer is in the examples themselves. The Necker cube seems to flip, and the experience is that of an illusion. The walls seem to start breathing, and the experience is that of an hallucination. Each of these deviations from perceptual experience could be given a more extended treatment, but as such they suffice to reveal what I take to be the key motivation of TT_2 : sensory experience can instantiate various points on a phenomenological spectrum; faux perceptual states, if possible, would be clustered within a zone of that spectrum. Alternatively, the range of sensory experience could be conceived as graded on a scale, at the apex of which sensory experience seems perceptual, whereas at lower grades it seems like something else. In any case, the discussion highlights the importance of having a clear conception of perceptual experience, for it is this conception which dictates one’s judgement concerning the extent to which perceptual experiences might be similar to other states. Moreover, it allows one to better understand what is meant by the claim that the neutral intentionality thesis concerns only experiences that have the quality of being perceptual.

5.4. Presence

I have been treating the concepts applied to perceptual experience largely separately. But in fact they are interconnected and interanimating. The notion of ‘immediacy’ is a case in point. It expresses the idea that perceptual experience seems direct

(and immediate in that sense). But just as often it is claimed that the objects of that experience seem to be immediately *present*. The immediacy of the experience affects what the subject believes concerning the object, in a manner that I hope to have articulated in §5.2. But this leaves the task of explicating the notion of presence, to which I turn now.

Presence can be taken to have a temporal and a spatial meaning. Speaking of the former, Metzinger refers equivalently to the *de nunc* character of experience and the “phenomenological constraint of presence” (2003a, p. 128, quotation marks removed), going on to remark that:

Simple phenomenal content always is temporal content. This is to say that it always contains temporal information and this information is depicted as invariant: the state of affairs in question is holding exactly now. (ibid., p. 128)

Similarly, Armstrong proclaims that “[p]erception normally gives us up-to-the-moment information about the physical world” (1961, p. 109), and this characterises “the special, ‘flavour’ of perception” (cf., ibid., pp. 111, 112).¹⁵ Others express the same sentiment by appeal to other metaphysical notions. For instance, J.J. Valberg, in searching for an appropriate definition of the objects of experience, suggests that they invariably exhibit experiential presence, and that “experiential presence is limited to the category of particulars. What is present, directly available, is always a particular” (1992, p. 20). He continues the line of thought to say that,

In the tradition, particulars are temporal [...] objects. That is, they are objects of which it makes sense to ask how long they have existed or lasted, when they began to exist, and so on [...] Hence [...] an object present in experience is always a temporal object (ibid., p. 20)

Others focus their discussion on spatial presence. For instance, Alva Noë discusses what he calls the “problem of perceptual presence” (2004, p. 60), which he takes to be the problem of explaining phenomena such as the following:

¹⁵ A somewhat evolved descendent of this idea is Metzinger’s notion of presentational content, inspired by Brentano’s notion of *Präsentation* (Metzinger, personal communication). Presentations are highly stimulus-driven perceptual states, whose content is either too ephemeral or in the wrong format to inform conceptual thought, but can potentially inform intentional action (Metzinger, 2003a, pp. 86 - 93). According to Metzinger, presentational states are those which generate the experience of presence, and furthermore they are transparent states *par excellence* (ibid., pp. 98 - 99).

consider, as an example, a perceptual experience such as that you might enjoy if you were to hold a bottle in your hands with eyes closed. You have a sense of the presence of the whole bottle, even though you only make contact with the bottle at isolated points (ibid., p. 60, note removed)¹¹⁶

However, the notion of presence is also sometimes contrasted with imagining an object in its absence. Mohan Matthen, focussing on the visual mode, expresses the difference between imagining or dreaming a visual scene and experiencing it through normal visual perception, where in the latter case “the scene is not simply imaged, but seems to present the perceiver’s own surroundings as so” which he refers to as a “feeling of presence” (2005, p. 305). He discerns the difference as due to the presence of motion-guiding processes in ordinary visual perception, and their absence in visual imagination.¹¹⁷ This, he believes, broadly corresponds to a difference between experiencing the space that is within a picture and experiencing a picture as located in space, a subtle difference that is nevertheless discernable:

¹¹⁶ It ought to be noted that Noë discusses presence in more general terms that encompass any instance in which perceptual experience seems to outstrip occurrently available sensation. Generally stated as such, this is an issue that runs back to the 17th Century at least, aspects of which we have discussed in depth in Chapters 2 & 3. In recent times, rather dramatic demonstrations can be found in recent work on attention and visual memory, for a discussion of which see Noë (2001; 2004, pp. 49 - 65).

¹¹⁷ In support of this claim he draws upon work in cognitive psychology, neuropsychology and neurophysiology that suggests a functional dissociation between visual processing in dorsally and ventrally located areas of the brain (Milner & Goodale, 1995). Matthen’s “motion-guiding vision” is enabled by the faster, more ephemeral and more ancient dorsal stream, repeatedly demonstrated as insensitive to pictorial and descriptive features of a visual scene. For a slightly contrasting discussion of the implications that the dorsal-ventral model might have for visual experience, see Jacob & Jeannerod (2003, pp. 135 - 176). A simple account of the model posits a dissociation between perceived size and maximum grip aperture in a grasping action, assumed to be based upon visual information about object size (see, e.g., Aglioti, DeSouza, & Goodale, 1995). There is some debate over whether data demonstrating behavioural differences in response to illusions are best explained by this assumption, as visually informed action might be based on other spatial attributes, such as the position of points on an object’s surface. For a review along these lines see Smeets, Brenner, de Grave, & Cuijpers (2002).

many observers claim [...] that objects in a picture look a determinate distance away. I am inclined to think this response reflects a misunderstanding [...] a confusion between the picture and the things it depicts [...] Suppose that a depicted man in a particular picture looks from various visual cues to be 10 feet away from you. Now, close your eyes and move three steps closer. Open your eyes. How close does he now look? No closer than before. (*ibid.*, pp. 316 - 317)

Martin (2002b, p. 402ff.) contains an extended discussion of the differing accounts of imaginative experience that would be given by a DR theory and an account based on the claim that perceptual experience is representational. Assuming that, there is an “to visualise an apple is to imagine a visual experience of an apple” (*ibid.*, pp. 402 - 403), the DR theorist (ostensibly Martin himself) would claim that in imagining a visual experience, the imaginative project is non-neutral with respect to the presence of imagined objects in the scene:

Having the visual experience of water puts one in a position which is not neutral with respect to the actual environment as to whether blue water is present or not: that is how we have to characterise what our visual experience is like. Visualising the water puts you in a position of not being neutral with respect to the *imagined* situation. In visualising an expanse of water, one is not non-committal whether the imagined scene contains a blue expanse of water. Furthermore, visualising this way can have consequences for what one accepts about the imagined situation and hence what one comes to believe possible. In the furniture shop I might visualise a table being turned on its side and passing through a doorway, and on that basis decide that it is possible to move such a table into the house without too much effort. (Martin, 2002, p. 414)

By contrast, Martin claims that a representationalist account of perceptual experience would need to distinguish perceptual representation from imaginative representation, where in the former case the object is represented as present, and in the latter case the object is represented as absent. Hence, on Martin’s view, although considerations concerning perceptual experience might reach an impasse (*e.g.* because the transparency phenomenon speaks equally in favour of both views) DR’s stance on imaginative sensory experience, is apparently more adequate to the experience than a representationalist view.

I have my doubts that the representationalist needs to accept all the assumptions required to set up Martin’s critique. But I think one of these assumptions amounts to a statement of the DR conception of perceptual presence in genuine perception; in his words: “a visual experience of an expanse of water which is the veridical per-

ception involves the patch of water as a constituent of the experience” (*ibid.*, p. 414). This relates directly to the issue that I brought to the fore at the beginning of the chapter as the basic concern of DR theorists, namely the preservation of a simple relation between the mind and the world. According to this line of thought, recall, “experience of objects has an explanatory role to play: it explains our ability to think demonstratively about perceived objects” (Campbell, 2002, p. 114). Fore-fronting the importance of such a capacity puts certain constraints on how to treat perceptual experience in a DR framework, and in the current context, perceptual presence.

5.5. Particularity

As we saw above, ‘presence’ can have both a spatial and a temporal meaning. Also, as noted at the end of §5.1., one of the key steps in DR purportedly securing the relation of mind to world is to overcome the dangers inherent in massive reduplication of the world, by establishing “the theoretical possibility of a description of every other particular in space and time as uniquely related to our reference point” (Strawson, 1959/2003, p. 22). If one construes the subject herself as a particular in space and time, this at least lays the ground for demonstrative thought about the world itself. It is here that the explanatory role of perceptual experience is meant to come in, as Martin observes: “If experience makes reasonable such demonstrative judgments, surely how things are presented as being must reflect the fact that it is one particular thing rather than another that one perceives” (2002a, p. 182).

Although we have used the notion in a few places, it is worth having in front of us the basic idea of what particulars are (leaving aside the metaphysical puzzles they enter into) on this understanding. The following suffices:

Particulars are distinctive in being individuated by their spatio-temporal locations, so that no two particulars (or, at least, no two particulars of the same kind) can exist in two wholly distinct places at the same time. (Lowe, 1995, p. 348)

With this in mind, one can interpret Martin’s last remark with a fair degree of strength. What is being suggested is that a perceptual experience stands in a proprietary relation to its direct object. In a very broad sense, this is a similar idea to one held by sense-datum theory. Proponents of that view also thought that perceptual experiences were proprietary to their direct objects. But the key difference is that according to DR perceptual experiences are proprietary to their direct objects, and their direct objects are mind-independent. In the final section of the next chapter I will develop the idea that perceptual experience can seem to be of mind-

independent objects. In the course of that chapter I will also develop an account of how perceptual experience can seem to be of particular objects, one that is amenable to the idea that perceptual experiences are proprietary to their objects.

But first, what do I mean by describing the view as holding that perceptual experiences stand in a proprietary relation to their objects? With respect to thought, I already provided an application of this idea in §5.1, though it can be made a little more precise than it was expressed there. The most notable proponents of this view, namely, Gareth Evans (1982, pp. 30 -31, 40 - 42) and John McDowell (1998, pp. 229 - 232) equivocate between two closely related options. One is the claim that a certain thought content is dependent upon the existence of the object of the thought, in that the thought can only be determined as correct or not relative to that particular object (cf. Burge, 1977). The thinker would suffer an illusion of a thought being about one particular object rather than another. Another is the stronger claim that the thought itself would be unavailable to the thinker in the absence of its particular object, because the thought involves that particular object as a constituent (Martin, 2002a, pp. 176 - 178). The thinker would suffer from an illusion of thinking that thought rather than another thought, or none at all. We can apply thus *mutatis mutandis* to perceptual experience, where the second claim serves to fill out the idea of perceptual experience as a simple relation:

- A perceptual experience is *object-dependent* iff. its content can only be determined as correct or not relative to the particular object it is dependent upon.
- A perceptual experience is *object-involving* iff. it can only be instantiated in the presence of the particular object it involves.

Both are metaphysical statements *qua* phenomenology_M. Indeed, there is a conspicuous absence of a description of particularity in the literature, and by that I mean simply a description of the experience, rather than an account of phenomenology_M. These two are (as I hope to have shown above) often run together. Indeed, a prime instance can be found in a forthcoming paper by Michelle Montague, in which she complains that none of the proposals she considers in the literature, capture the “phenomenological particularity fact”. For instance, she argues that in their implicit appeal to a general content shared between phenomenal duplicates, Horgan and Tienson (see §4.5) arguably miss the particularity of perceptual experience. That much is clear on all hands. Even in their appeal to “wide” correctness conditions, where the content is determined by the particular object itself, this only due to the brute presence of the object. As Montague sees it, this would only constitute an explanation of the experience of particularity by conflating “the fact that a perceptual experience, when veridical, is of a particular object and the fact that it *seems* to a

subject that she is perceiving a particular object” (forthcoming, ms p. 12).¹¹⁸ The worry here is the (now familiar) possibility of a perfect hallucination which seems like a perceptual experience of a particular object, scene *etc.* This misses the more extreme claim broached earlier that the perceptual experience would not be of the same type or might not even occur in absence of the object. But in any case, by Montague’s lights, that option would not do much better in the task of providing “a wholly phenomenological account of the phenomenological fact”; for a “wholly phenomenological account” is defined precisely as one that “does not give any role to actual objects” (forthcoming, ms p. 18). By stipulating over “phenomenology” thus, she runs together phenomenology_D, with phenomenology_M. For it is only according to a certain account of phenomenology_M (one which, moreover, ought to be contested by DR) that a “phenomenological account” ought not give any role to actual objects, namely, the kind of ‘narrow’ (*alias* ‘internal’ or ‘internalist’) account that Horgan & Tienson provide.

With this in mind, consider Montague’s positive proposal that perceptual experiences “involve, as part of their basic structure, a bare demonstrative *thought-form* which can be represented as [that (thing) —]” (forthcoming, ms p. 16). This is a thought form, rather than a thought with content, in order to account for the object-dependency of the thought.¹¹⁹ Given that it is a thought, the experience involved is non-sensory, and given the contrastive name “cognitive phenomenology” (in the sense of Dennett’s phenomenology_U). But this cognitive aspect is not meant to exhaust the experience. It is meant to describe a structural feature which she dubs “object-positing”. In complement to the various sensory aspects of a total experience, she claims that the “*thisness*” of an experience is due to the mind positing a bare demonstrative “that (thing)” upon which the experienced properties of the object are hung” (Montague, forthcoming, ms. 16 ff.).

¹¹⁸ Some care needs to be taken as regards to what it supposed to be explained here. Sturgeon puts a similar point even more harshly, saying that: “Disjunctivism’s celebrated explanatory punch springs from ideology [...] pulled from thin air”, in that it “relies on phenomenal notions in its approach to phenomenology [but] does not explain their origin, applicability or explanatory role” (2000, p. 13). The context of these shortcomings is somewhat different from present concerns. For as Sturgeon clarifies on the next page, the lesson he means to draw is the ubiquity of the “explanatory gap” faced by explanations of how consciousness can arise from material properties and relations (Levine, 1983). At least for the purposes that I attributed to DR at the beginning of the chapter, such an explanation of consciousness is not an aim of the theory in the first place.

¹¹⁹ It might alternately be described as having gappy propositional content, with a slot that is filled by a property instantiation in the veridical case; see, *e.g.*, Tye (2007).

Montague expresses the theme of her “object-positing” proposal as broadly Kantian, and similar ideas have rippled through recent psychology and neuroscience. For instance, Metzinger & Gallese, giving a gloss on the emerging picture they see in contemporary neuroscience, say that: “An interesting, but frequently overlooked fact is that the human brain possesses an ontology [...] it makes assumptions about what the relevant [...] building blocks of external reality are” (2003, p. 557).¹²⁰ Similarly, a deeply entrenched idea in cognitive psychology is that visual perception relies on a psychological mechanism sensitive to “Spelke objects”: bounded, coherent, three-dimensional stimuli that move together.¹²¹ According to Fei Xu (1997) such a mechanism is responsible for a maximally general sortal concept, “physical object”, which both infants and adults use to individuate and identify the objects of thought and interaction under more specific sortals. Though this would be in certain respects different from the demonstratively specified bare particular that Montague suggests, its function in this context would largely be the same (Xu, 1997, pp. 368 - 370).¹²²

If any of these proposals are along the same lines as Montague’s, then there is perhaps one sense in which Montague is not obviously doing metaphysics at all, but rather positing capacities that explain a certain experience. This is a grey area in which there are certainly assumptions made about a subject’s psychological constitution, *viz.* the ontology of mind, but no assumptions necessarily need to be made about what ultimately grounds those capacities, or whether those capacities are posited as anything more than an instrumental grasp on the mind. Incidentally, I take it that this is something that the neutral intentionality thesis would allow, for in positing said capacities, even if *e.g.* they are the subvenient of other capacities, one is not thereby taking a stance on the metaphysics of content. Having said that, it is clear that in defining a “phenomenological account” in the way she does, the capaci-

¹²⁰ They go on to discuss the idea that the brain builds a representational ontology of agents *qua* individuals acting upon their environment. However, the more general idea of the brain as an ontology engine is broached in several places in Metzinger’s (2003a), with the tentative suggestion that the mastery of natural language might have a feedback effect resulting in a tendency to mentally refer to things (see *e.g.*, pp. 67 – 68 n40).

¹²¹ After Spelke (1990), whom Montague references in a footnote.

¹²² See especially Xu and Carey (1996) for psychological research to back up Xu’s proposal. For a critical response see Wiggins (1997). For an alternative, non-conceptual approach to how and why the visual system preferentially tracks certain stimulus features see Pylyshyn (2000). For a review of these and other proposals see Casati (2004). And for a more general state of the art review of the psychological literature that draws explicit links to metaphysical discussions of object-hood, see Scholl (2007).

ties that she posits have strong implications for the metaphysics of content by default. And the substantial metaphysical claim here is roughly the opposite of that which an object-involving view would take: thoughtful minds, whose experiences do not fundamentally involve their mind-independent objects, are somehow responsible for the mind-independent object-hood that they experience.

As a description of the experience this is at most just a start. Montague certainly admits that the sensory aspects of the experience are necessary for the particularity of what is experienced, and her paper is (moreover) work in progress. But as the account develops, it is hard to guess how it could describe sensory experience of an object as the presence of a particular. Furthermore, it would be hard to describe the seeming presence of a mind-independent particular by means of object-positing. For nothing seems to require that such objects amount to more than the sense-data Russell thought we were acquainted with (1910-1911, pp. 111 - 112). One of the goals of the next chapter is to develop an alternative proposal by drawing on the early ideas of Edmund Husserl.

Chapter 6 Husserl on the experience of particularity

6.0. Introduction

The goal of the last five chapters has been to articulate the direct realist conception of perceptual experience. This has involved both defence of the conception and resolute distinction of the conception from typically accompanying claims concerning the metaphysics of perception and its intentionality. I now offer synthesis of the work in these chapters by focussing on the experience of particular objects as mind-independent, by drawing upon the work of Edmund Husserl.

The account to be presented consists of a series of inter-related claims which together provide a detailed description of perceptual experience as of particular mind-independent objects. It takes its initial motivation from the assumption that sensory experience is indeterminate and requires structure to yield perceptual experience. In the first section (§6.1), I introduce this point, noting there that one of Husserl's innovations is to claim that bodily experience provides such structure. The status of the body in Husserl's philosophy is bound up with other controversies that I leave aside, but I note the controversies before moving on to describe another of Husserl's innovations (in §6.2), namely the claim that the objects of perceptual experience have a distinctive quality that he terms *leibhaftige Gegebenheit*. I state the manner in which I read this expression, illustrating the central idea, before moving on to a reconstruction of the account itself (in §6.3). After presenting an analysis of the sixteen inter-related claims that comprise the account, I then (in §6.4) contrast the account with a view recently developed in the philosophy of perception by Alva Noë. Having distinguished the Husserlian account thus, I extend its basic principles to a description of the experience of objects as mind-independent (in §6.5), by sufficiently weakening concepts of objectivity found in the Oxonian tradition of the twentieth century and in the Cartesian notions of accessibility and incorrigibility.

- 6.1 *Husserl's Body*
- 6.2 *Leibhaftigkeit*
- 6.3 *The Husserlian account*
- 6.4 *Husserlian notes on Noëan enactivism*
- 6.5 *Weak mind-independence*

6.1. Husserl's *Body*

A distinctive feature of the Husserlian account that I am about to sketch, is that it gives a distinctive role to bodily experience in structuring perceptual experience. This is important because the account begins from the premise that sensory experience is in a certain manner indeterminate. By way of illustration, consider a few lines more of the passage that I cited from James' *Psychology* in chapter 4:

a close attention to the matter shows that *there is no proof that the same bodily sensation is ever got by us twice*

What is got twice is the same OBJECT. We hear the same note over and over again; we see the same quality of green, or smell the same objective perfume, or experience the same species of pain [...] how inveterate is our habit of not attending to sensations as subjective facts, but of simply using them as stepping-stones to pass over to the recognition of the realities whose presence they reveal [...] We take no heed, as a rule, of the different way in which the same things look and sound and smell at different distances and under different circumstances. The sameness of the things is what we are concerned to ascertain; and any sensations that assure us of that will probably be considered in a rough way to be the same with each other. (James, 1890/1950, p. 231; also partially cited in Hickerson, 2008, p. 103)

The Husserlian account I describe below can be read as an attempt to deepen James' description. Indeed, I adopt what Hickerson (2008) calls a 'Jamesian' reading of the texts that I cite. James' claim is that perceptual experience involves the experience of sameness through changes in sensation. But what remains to be further described is the special relationship between the sensations, and the manner in which this arises. It is only against this background that the claimed structuring of perceptual experience through bodily experience can be understood. However, I ought to note that it is not so clear what status the body has in Husserl's philosophy more generally.¹²³ For the sake of clarity, before moving on to the account of particularity, I will say a little on the dispute.

It is often thought (especially by those working in the philosophy of cognitive science) that Husserl's work ought to be seen as the culmination of a (faulty) Cartesian paradigm of disembodied philosophy of mind. That is, although worthy of considerable credit for inventing the method of phenomenological reduction, Husserl

¹²³ For discussion of whether it makes sense to speak of Husserl's philosophical thought as a whole, see Hickerson (2008, pp. 121 – 124).

systematically failed to recognise the importance of the body in perception.¹²⁴ For example, Shaun Gallagher provides the following diagnosis: “In Husserl’s transcendental analysis, the body is reduced to a perceived object and appears to have no role in the production of perceptual experience”, whereas by contrast, Merleau-Ponty “sets out to show that the body itself is doing the perceiving” (1995, p. 223, see also pp. 231 – 235).¹²⁵ However, many manuscripts published posthumously (most conspicuously, his 1973, 1973/1997) clearly emphasise central roles for the body in Husserl’s phenomenology. Given this ever expanding corpus it is an understatement that there is textual support for more than one reading of Husserl. In the present context, then, consider two emphases. One emphasis on which “[t]he Body [...] is necessarily involved in all perception” (Husserl, 1952, p. 56; 1952/1989, p. 61, emphasis original). And another emphasis on which the subject has “an abiding sense of self, logically prior to and independent of anything outside my consciousness, including my body, namely my awareness of myself as the “pure” or “transcendental I””(Carman, 2000, p. 214). Whether these are both valid readings of Husserl’s account of subjectivity in perceptual experience, and whether either is thus sound, will partly depend upon how one ought to understand the metaphysical implications of Husserlian intentionality.¹²⁶ But more to our present concerns, it will centrally depend upon how one ought to understand Husserl’s concept of *Leib*, rendered as “Body” in a quoted translation above.

The most neutral account of the difference between body and Body here is in a distinction between the body as an (abstracted) object of attention, scientific investigation, or introspective scrutiny (*Körper*) and the body as the non-perceptually (*i.e.*, merely) experienced subject of perception and action (*Leib*). This is often rendered as a distinction between the living and the lived body.¹²⁷ But what this distinction connotes, especially in relation to Husserl’s various notions of an ego (and particularly in relation to his “Ur-Ich”), is a matter open for some dispute. Minimally then, I will take *Leib*/Body to refer to the experiential subject of perception and action;

¹²⁴ See Dreyfus & Hall (1982), and Varela, Thompson & Rosch (1991) for prime examples. But see Thompson (2007, Appendix I) for some second thoughts given the wisdom of hindsight.

¹²⁵ Gallagher (personal communication) admits that this opposition was merely for rhetorical purposes, and not in fact his considered view of Husserl (compare e.g., Gallagher, 2005, pp. 133 – 152).

¹²⁶ For a review of the range of disputes, see Drummond (2003, pp. 71 – 81, 90 – 91 n.32).

¹²⁷ See and *cf.* the translators notes to Husserl (1952/1989, pp. xiv – xv) and (1973/1997, p. xvi). Also see pp. 137 – 138 [161 – 163] of the latter.

though for many this can simply be thought of as the experience of being a *bodily subject* engaged in perceptual activity.

Lastly, I want to unequivocally declare that issues concerning the continuity of Husserl's thought with Merleau-Ponty's (and even Heidegger's) are also not within my remit. Given the substantial development and popularity of Merleau-Ponty's thought on the body *qua* perceptual agent, the account presented might bring his work to mind. But these themes are originally found in Husserl. Accordingly, it is certainly better to dub the account Husserl's (or at least Husserlian) rather than otherwise.¹²⁸

6.2. *Leibhaftigkeit*

It will be useful to begin by illustrating the tenor of the claims to come. We can do that by looking back at chapters past (1 – 3) where we took great pains to dispose of accounts of IPE that develop from one of the possibilities that Moore considered for the nature of sense-data. But the reader will remember, there was at least one other possibility that Moore was concerned with, namely, that sense-data were parts of the surfaces of material objects (see §1.5). From this one could derive *the object surface view*:

- A subject indirectly perceptually experiences an object by directly perceptually experiencing a part of its surface.

In fact, Moore thought that construing sense-data as parts of the surfaces of material objects was tantamount to a form of direct realism (see Baldwin, 1990, pp. 242 – 246). This initiated a long-running debate (in part, between Moore and himself) over whether in perceiving the surface of a material object one perceived the object itself or something non-trivially distinct.¹²⁹ But leaving that issue aside, we can see that if it is meant to indicate indirect perceptual experience, then the object surface account of perceptual experience certainly does not rule out alternatives. Consider another take on perspectival variation. Initially, it was suggested that experiencing something as elliptical is incompatible with experiencing a circular region of a three-dimensional space. But an alternative is to claim that perceptually experiencing a circular region of three-dimensional space from a particular angle of regard

¹²⁸ For supplementary analysis and exegesis, see Drummond (1979, 2003), Madary (2010), Mensch (2001), A. D. Smith (2007, 2008), and Zahavi (1994, 2002, 2003a).

¹²⁹ See Bermúdez (2000, p. 358 ff.) for a recent discussion.

just is to perceptually experience that very same thing as elliptical. Now apply that line of thought to experiencing the surface of opaque objects. Perceptually experiencing the surface of an opaque three-dimensional object is not incompatible with perceptually experiencing a three-dimensional object; it is a crucial feature of perceptually experiencing that particular object as three-dimensional. If it were not for the manner in which we have been led to this point, I think it would seem obvious to the point of triviality. The claim then is this: The way a particular thing is experienced to be from one perspective is bound up with how it is experienced to be beyond that perspective.¹³⁰

To illustrate a similar point, Sean Kelly (2004) argues that there is clearly a difference between the experience of seeing a *façade* once its illusory nature has been revealed (see Figure 14), and that of an object that simply looks like the object it turns out to be. One could understand this as simply a fact of further knowledge concerning the object in question. But the point of interest is the claim that it just looks different. In attempting to deal with this (experiential) difference, phenomenologists since Husserl have been concerned to provide “some account of the way in which the hidden aspects of an experienced object – the backside it is experienced to have, for instance – are present to me in my experience of it” (Kelly, 2004, p. 78). Kelly motivates their toils by saying that, on the experiential level at least, “[w]ithout such an account, we have no resources to distinguish between the case in which it looks to be a *façade* and the case in which it looks to be an object” (*ibid.*).

¹³⁰ Funnily enough, the claim is captured neatly by a sense-datum theorist:

Even the most elementary perceptual act, the barest acceptance, not only is inexhaustive and indefinite, but (so to speak) knows that it is. The unspecified ‘more’ is brought before the mind in the very act itself [...] what we take to exist is a spatially complete material thing, fully determinate in all its characteristics, and continuing through time [...] what form its spatial completeness takes, the present act does not tell us. (Price, 1932, p. 179)

Price also remarks earlier that “even in the single perceptual act the material thing is ‘presented bodily’, *leibhaft* [*sic.*] *gegeben*”, footnoting on that last expression: “The phrase is Professor Edmund Husserl’s (*ibid.*, 1932, p. 152 n2). This is the only reference to Husserl amongst what are evidently a stream of Husserlian ideas.



Figure 14 – Two views of a film-set façade

- (A) A façade at close-viewing.
 (B) A façade in full-view. The train depot from the *Gone with the Wind* film-set can be seen in the background behind the girders supporting the façade itself.
 Adapted from:
http://www.retroweb.com/4oacres/4oacres_flat_facade.jpg

What is interesting about cases such as these is that there are so many ways in which the visual sensations could be thought of (*pace* James) as similar, both on an experiential level and on a more basic organic level (*i.e.* Berkeleyan sensations of a VS₁ type). But crucially, the manner in which those sensations are held to yield perceptual experience of particular things differs. As I will show later, by drawing on the distinction between perceptual and mere sensations the account presented has resources to describe the difference that makes a difference.

One of Husserl's key innovations was a particular characterisation of experiencing an object perceptually.¹³¹ On his view, this necessarily involves a characteristic that

¹³¹ Oftentimes translators of Husserl distinguish between "Object" as a translation for Husserl's use of the German word *Objekt*, and the lowercase "object" as a translation for Husserl's use of the German word *Gegenstand*. Generally it is thought that, after Cairns who introduced the convention (see Husserl, 1950/1999, p. 3, n. 2), these denote two different senses. In particular, some (*e.g.* Rojcewicz & Schuwer (Husserl, 1952/1989, p. xv), and Rojcewicz (Husserl, 1973/1997, p. xvi)) take it that although all Objects are objects, not all objects are Objects, precisely because Objects are intersubjectively accessible objects, whereas objects *simpliciter* need not be (such as dream or phantasy objects). Occasionally though, it seems that Husserl does use the two interchangeably (*e.g.*, in his Husserl, 1966/2001).

Though I will often quote from texts where the distinction is employed, it is not central for my purposes, and I will render the 'particular objects' that I speak of persistently in the lower case. In all instances it should be clear that I take Husserl's points as concerning particular objects as transcendent in only the sense presented in the main text.

he considers to be “the hallmark of perception, namely [the] *Leibhaftigkeit* of the object in perception, that is, the fact that the object always appears ... as bodily present” (Pacherie, 1999, p. 148). In what follows, I will take the phenomenon that the expression *leibhaftige Gegenbenheit* metaphorically marks to be the experience of objects as particulars in virtue of each exhibiting an extant unity of appearances. That is, it is in virtue of exhibiting a unity of appearances that “the object stands in perception as there in the flesh, it stands, to speak still more precisely, as actually present” (Husserl, 1973, p. 14; 1973/1997, p. 12).¹³²

Elsewhere, Husserl describes this feature of our experience of objects as of them being “transcendant”. In this context, I take this to mean the experience of objects as existing beyond our experience of them. There is a strong (though fairly common) claim that could be made here: that something only counts as an object of perception if it in fact has a mind-independent existence. But here is a weaker claim: an object is only experienced as an object if it is experienced as mind-independent (Husserl, 1976/1982, pp. 88 - 92 [75 - 78]). In contemporary philosophy, the term ‘mind-independence’ functions as synonymous with reality. For the present purposes, the value of an account of perceptual experience which gets us closer to understanding how objects can seem to be mind-independent is then obvious. In the next section a weak notion of mind-independence will be evident in fragments, but will not be made explicit until the section after. In order to have a label for particular objects experienced as (weakly) mind-independent, I will use the term *particular object* with this connotation.

6.3. The Husserlian account

To begin we need a substantial definition of particular objects. On my reconstruction, the proposal is that in order for an object to seem particular there must be an inherent indeterminacy in perceptual experience. The conceptual apparatus Husserl provides to characterise this indeterminacy is a distinction between modes of experience; a narrow or proper (read, *determinate*) mode and a broad or improper (read,

¹³² Suffice to say that I take “perception” in all these quotes to be referring to perceptual experience. The “in virtue of” claim that I am ascribing to Husserl here does not commit him (or the exegesis I will provide forthwith) to a form of indirect perceptual experience. What would be required for that would be the kind of bizarre iteration of perceptual experience that we have been considering in previous chapters. In this case, rather, the “in virtue of” merely denotes the objective dependency of perceptual experience on certain other factors (see §1.3). I will often use the word “requires” to mean the same. An aim of this chapter is to articulate these requirements.

indeterminate) mode. The proper mode of a particular object accords to the region of its surface in view from a given perspective. So, in an instance where one sees a house, Husserl's claim here is that, at a certain perspective, "*properly* we only see the front side" (Husserl, 1973/1997, p. 42 [49], emphasis mine). By contrast, the improper mode of the object accords to surface regions beyond that perspective. I will refer to these simply as aspects of the object which are yet to be determined. Hence particular objects are experienced as having aspects that have yet to be determined by our experience of them. To state this point explicitly:

- (a). Definition: Particular objects have determinate and indeterminate aspects.

In distinguishing determinate and indeterminate modes of appearance, if the view is to claim anything contrary to the Object Surface View, then it must deny that in the course of experiencing an opaque particular object we experience the presented side as an autonomous particular object.

- (b). Determinate aspects are not autonomous particular objects.

The denial can be motivated by a contrast against experiencing pieces of an object. *A side of an object* (as it is to be understood here) is an aspect of the whole: it cannot be experienced as having an independent existence and yet also be experienced as a side (cf., Husserl, 1973/1997, pp. 43- 44 [50 - 52]). In order for a side to look like a side, rather than a potentially autonomous object, it must seem to be part of an object that has aspects that are yet to be determined. Determinate and indeterminate aspects are thus inter-related. Hence, although the account holds that the phenomenology is somewhat neutral on the nature of hidden surface aspects, it cannot hold that it is neutral to the extent that those aspects are taken to not exist. Accordingly:

- (c). Hidden aspects are experienced as determinable precisely in so far as presented sides are experienced as extant sides.

The interrelation between aspects is such that the particular object does not consist in any single determinate sensory experience, or any conglomeration of such. It is to be identified with the higher order unity to be revealed through its progressively determined aspects.

- (d). Particular objects are experienced as such in the progressive determination of their indeterminate aspects.

Together (b) – (d) clarify the proposed relationship between determinate and indeterminate aspects:

- (e). For every determinate aspect of a particular object there is a range of implied indeterminate aspects of the same particular object.

The foregoing claims are pretty Husserlian: “[A] consciousness of ever new possibilities of appearance constantly persists over against the factual, limited courses of appearance, transcending them” (Husserl, 1966/2001, p. 39 [33]), with the result that, “no delimitation whatsoever lies in the appearances as such; their essence prescribes possibilities of unitary progression” (Husserl, 1973/1997, p. 108 [130]).¹³³ Crucially then, on the account being presented, perceptual experience is holistic, involving a series of inter-animating (that is, mutually implying) perceptual sensations unfolding in the cycle of determinacy and indeterminacy. Most basically, this sets a constraint on perceptual sensations. If perceptual sensations are of the same particular object then they ought to coincide somehow (Husserl, 1973/1997, pp. 77 - 80 [91 - 95]). There ought to be continuity across a multiplicity of possible sensations. I discuss this further in §7.5. But there is a prior issue that arises from claim (c). If an object is a particular object, then it ought to seem to have determinable aspects. How might the experience of determination proceed? Husserl’s answer is a series of “perceptual steps”, where in each step there is both a determinate sensation and the potential for further determinations (Husserl, 1973/1997, p. 81 [96]).

To even make sense of this requirement there must be some basic change across minimally distinct sensations. And, at least as regards spatial experience, change in sensation occurs through movement. Movement of the subject, the object, or both, enables change in sensation (Husserl, 1973/1997, pp. 132 [155 - 156]). The actual role of movement (and, in particular, endogenous movement of the subject) in the manifestation of change needs further explication. But it will be useful to immediately address the following question: what of the situation in which neither the subject nor the object moves; is this a case in which the object is not experienced as a particular? There is some metaphysical bite to the question, and in that sense it is orthogonal. But running through both a positive and negative answer will help clarify the description.

A positive answer (*i.e.* that this would be a case in which there is no perceptual experience) follows naturally from claims (a) – (e). If it were truly possible for there to be an appearance in a situation which excluded perceptual steps entirely (where one reads “entirely” as strong as possible), then this would not be an appearance of a particular object. For, by definition and by implication, particular objects are just those objects upon which alternative perspectives seem possible. If a positive answer sounds strange, this is probably the reason.

¹³³ *cf.* also Husserl (1952/1989, p. 39 [36]).

Finding the positive answer strange might seem like a reason to reject one or all of the earlier claims. But note that, upon further specification, the account proposed is not so strong as to be without the resources to provide a negative answer (*i.e.* that this would not be a case in which there is no particular object experienced) provided that perceptual steps are not ruled out *entirely*. For it is not the actual instantiation of perceptual steps itself that is required, but rather the structure that pertains to the seeming possibility of such steps. This structure falls under what translators of Husserl often render as the “inner horizon” of the experience (see Husserl, 1966, pp. 6 - 7, 7 - 8; 1966/2001, pp. 43, 44 and *passim*). In this case the structure is that of anticipation and fulfilment (Husserl, 1973/1997, pp. 86 - 87 [103]). We can characterise perceiving an object as having hidden aspects roughly as follows:

- (f). Subjects anticipate that indeterminate aspects will be revealed as perspective on the particular object varies.
- (g). The conditions for anticipations being fulfilled are just those conditions where there are further perceptual steps involving a series of sensations of the same particular object.
- (h). A series of sensations must be anticipated but need not be manifest for the subject to experience an object *qua* particular object.

(f) is a further statement of determinability. (g) will be elaborated upon shortly, for clearly the bare notion of anticipation is a place-holder for a more substantial description, *viz.* a description of what is being anticipated. The general structure of anticipation and fulfilment (as relevant to the present account) pertains to the discussion of the coincidence of sensation that will follow shortly. But note presently that (h) is crucial for the possibility of a negative answer to the question posed earlier. That is, one needs only to anticipate that there would be fulfilment if the viewing conditions were to change. One need not actually go through the perceptual steps in order to anticipate them.

By construing cases where change is ruled out entirely as limit cases, we can move on to further characterise the anticipation/fulfilment structure. This will be to explicate the coinciding determinability mentioned earlier, as *continuity*.

The potential fulfilment of anticipations requires both a distinction between and continuity across sensations. The distinction between appearances is precisely the difference between determinations, *viz.* the way that an object looks at different orientations, and/or from different angles. Continuity across appearances pertains to particular relationships between determinate and indeterminate modes of an object’s appearance, and between indeterminate appearances themselves. So it is a little more complex.

At each perceptual step there is necessarily a broad, and contingently a more narrow, continuity in the range of potential sensations that correspond to the occurrent sensory experience of the object (Husserl, 1973/1997, pp. 78 - 83 [92 - 98]). To capture the difference, Husserl employs a metaphor that serves as useful aid to exposition. A series of sensations can exhibit a certain “harmony” in its continuation, precisely because there is no conflict between perceptual steps (Husserl, 1973/1997, pp. 79 - 80 [93 - 95]). This holds true, for example, when an orb that looks perfectly spherical from one angle continues to be experienced as such during the unveiling of previously hidden aspects. There is continuity between distinct sensations: new sensations on the one hand, and the retention of previous sensations on the other. Hence, continuity is made possible precisely by:

- * A gradually receding retention of a previous sensation, and;
- † A previous anticipation being fulfilled by an occurrent sensation.

Ex hypothesi, (*) & (†) yield an overall harmony between appearances (Husserl, 1966/2001, pp. 44 - 46, 49 - 50 [47 - 10, 12 - 13]; 1973/1997, pp. 83 - 87 [99 - 104]).¹³⁴ Construe such cases of experiential harmony as definitive of (and thus (*) & (†) as defining) narrow continuity.

By distinguishing between narrow and broad continuity, I want to bring out a powerful feature of Husserl’s account of particular objects. For the distinction allows the account to leave the determinability of indeterminate aspects open in such a way that a “non-harmony is also possible despite the identity of the appearing object” (Husserl, 1973/1997, p. 81 [95]). That is, there might be cases in which a conflict does obtain, where nevertheless a series of sensations are experienced as providing perception of the same object. To elaborate on an earlier example, an orb that looks like a perfect sphere at first sight might later be revealed to have a gaping cavity. Yet, despite the cavity the experience is nevertheless of the same particular object, previously experienced as a perfect sphere. Thus, even if, in the course of sensation “a conflicting determination manifests itself” it might still be the case that a particular object is experienced as “a unitary body, into whose unitary form the deformation fits, precisely as a partial structure into a total structure” (Husserl, 1973/1997, p. 82 [97]). In such a case, there is a certain lack of continuity between retained and occurrent experience, producing a violation of anticipation (or, if you like, a dishar-

¹³⁴ It is no accident if this brings to mind Husserl’s famous analysis of time-consciousness. A crucial difference, however, between the spatial and temporal experience of objects, is that with the former but not the latter there is the possibility of reversing the series of presentations (Husserl, 1973/1997, pp. 87 - 88 [104 - 105]). See Drummond (2003, pp. 75 - 81) for further discussion.

monious conflict). But, there is nevertheless a sufficient broad continuity such that the experience is one of simply becoming more familiar with that particular object (Husserl, 1973/1997, pp. 58 - 59 [70 - 71]).

Already we can begin to make intelligible what Kelly was claiming earlier: the putative experiential difference which the object surface view failed to capture; *viz.* the difference between seeing a façade once its illusory nature had been revealed, and seeing an object that simply looks like the object it turns out to be (where this is a more basic difference than a change in one's knowledge of propositions concerning the object in question). If what has just been said is right, then in both cases the perceptual experience involves anticipated perceptual steps. In the case of the presently illusory object the anticipated steps pertain to precisely the particular object the illuded subject takes it to be. But, in the case of the formerly illusory object the experience has changed, precisely because the anticipation has changed. The anticipation is now of perceptual steps which no longer correspond to the former illusion. Rather the experience is of hidden aspects that are a radical departure from the aspects presented. But the departure is not so radical that there is no broad continuity in the series of sensations; once the illusory object is revealed as such, this broad continuity is all that is anticipated.

So narrow continuity is too stringent a constraint on particular experience. For any two sensations to be of the same particular object they must involve experiences of "the same object as determined, or determinable in the same [broad or narrow] way" (Husserl, 1973/1997, p. 79 [93]). And for that to obtain there must be at least a broad continuity experienced across change, as perceptual steps progress. Thus we have a further proposition of the view:

- (i). Experience of a particular object in a series of sensations requires experiencing broad continuity across change in sensations.

As broached earlier, (i) requires (at least) the seeming possibility of bringing about change. For the object must be experienced as having indeterminate (yet determinable) aspects, disclosable through movement of the subject, or the object, or both. In addition, we said earlier that the limit case would be one in which all movements were barred, for by definition this would not be a case in which one were experiencing a particular object. A similar case is that in which the only possible source of change is in the presentation of a mobile particular object. Seeing this as anything but a limit case would render the view as absurd. To see why, consider what I take to be the main motivation of such an idea: the fact that the possibility to manifest change in aspect has so far been taken as the central necessity. Such a bare statement leaves open the question of where change does in fact come from (Husserl,

1973/1997, p. 76 [89]). But the sense of possibility involved cannot be merely contingent on the potential for objects to move, for that would require that every particular object be experienced as a mobile object. Or, conversely, it would imply that objects that are not currently in motion cannot be experienced as particulars, unless they are somehow experienced as potentially mobile.

I do not want to deny that most interesting objects of perceptual experience can and do move. And I am not claiming that, in the case of an object that did change its position and orientation, corresponding changes in sensation would be irrelevant. Rather, I am claiming that the account cannot require this, even as a disposition of the object. The focus, then, is on the simplified case of an immobile particular object. A virtue of the simplified case is that it applies pressure: if the account is to require potential for movement, it must find the source of that potential somewhere else than in the particular object itself. It is here that the eponymous structuring body takes centre stage. For rather than requiring potential for movement in the particular object, the account instead requires potential for movement in the bodily ability of the subject. Hence:

- (j). For every series of perceptual sensations, there must be an anticipation or manifestation of an effecting series of bodily movements.

But as has been repeatedly stressed, the need for change is within sensation. Thus as a source of change, the potential for movement must also be systematically connected to particular series of sensations. For Husserl, both of these requirements are captured in the concept of *kinaesthesia*, the corresponding fields of kinaesthetic sensations, and their enabling kinaesthetic systems, the operations of which form a kinaesthetic situation (Husserl, 1973/1997, pp. 131 – 253 [154 - 293]).

The concept of kinaesthesia (from the greek κίνησις (movement) and αἴσθησις (sensation)), in this context, certainly should not be understood as the sensation of bodily movement *per se*, as its familiar meaning might suggest. Rather, primarily it ought to denote the ability to make certain bodily movements (Husserl, 1952/1989, p. 323 [310]). It is here that the account posits the endogenous source of change in sensation. In execution, every bodily movement produces kinaesthetic sensations. But in a similar manner to (h), these need only be anticipated.

- (k). For every series of bodily movements, there must be an anticipation or manifestation of a proprietary series of mere kinaesthetic sensations.

Kinaesthetic sensations are systematically coupled to respective series of visual sensations, each of which poises anticipations of further (as yet indeterminate) series of

visual sensations, also coupled to kinaesthetic sensations (Husserl, 1973/1997, pp. 136, 144 [160 - 161, 170 - 171]).

Kinaesthesia (in general) and kinaesthetic sensations (in particular) are enabled by various nested kinaesthetic systems that define kinaesthetic fields, the points of which potentially correspond to particular kinaesthetic sensations. For example, oculomotor systems enable sensations of eye-movement, and the range of movement enabled by these systems defines a field of potential sensations of eye-movement (Husserl, 1973/1997, pp. 144 - 147 [170 - 175]). These are dependent upon superseding cephalomotor systems, the range of movement of which defines a field of potential sensations of head-movement. These are further dependent on superseding systems governing torso rotation, flexion and extension, and finally locomotor systems governing whole-body translation (Husserl, 1973/1997, pp. 173 - 176 [204 - 209]).

The kinaesthetic systems are thus not necessarily discrete, for instance movements of the eye can be augmented along the same trajectory by movements of the head. In a similar regard, they can systematically replace one another in yielding the same visual sensations (Husserl, 1973/1997, pp. 144, 176 [170 - 171, 208 - 209]). But each system has a particular range of spatial determination, according to the dimensionality enabled by both its own degrees of freedom and those of the kinaesthetic systems that it nests. Thus for instance the oculomotor field is two-dimensional in only allowing for movement along vertical and horizontal axes (Husserl, 1973/1997, pp. 283 - 284 [330 - 331]). Whereas the superseding cephalomotor systems enable free leaning of the head, by pitching forwards or backwards, or rolling from side to side; and free approach or retreat, by extension or retraction of the neck; thus enabling a further range of otherwise unavailable depth determinations (Husserl, 1973/1997, pp. 284 - 285 [331 - 332]). These are further elaborated by movements of the torso, and finally the locomotor systems that enable not only the greatest range of depth determinations such as expansion, retraction, and covering, but also orbital movements around particular objects.¹³⁵ All of which would otherwise be only partially available through a combination of eye, head, and torso movements (Husserl, 1973/1997, pp. 175 - 176, 192 - 205, 209 - 217 [206 - 209, 227 - 243, 246 - 255]).

The holistic convolution of these systems forms a total system, to which pertains a kinaesthetic situation, setting the perceptual circumstances of a visual sensation and the initial conditions for the anticipation of ensuing sensations. Drawing on

¹³⁵ Furthermore, it might be that it is only through these further determinations that the perceiver is able to disjoin a series of appearances of one object from those of another (Husserl, 1973/1997, pp. 207 - 209 [243 - 246]).

earlier claims we can characterise the nature of this situation, and thus the role of kinaesthesia in perceptual experience, as follows. Perceiving objects requires potential for change in sensation. At minimum said changes are possible through bodily movement. Bodily movement produces kinaesthetic sensations. Kinaesthetic sensations are systematically coupled to visual sensations. Therefore, anticipating a change in visual sensation involves implicitly anticipating a series of kinaesthetic sensations consequent to the movements that bring about said change (Husserl, 1952/1989, pp. 135 - 136 [127 - 129]).

The crucial claims are that kinaesthetic sensations are systematically coupled to visual sensations and that it is as a result of this coupling that visual sensations are perceptual sensations. Although the kinaesthetic sensations are not perceptual sensations they enable perceptual sensations to be such. In our earlier terminology they are mere sensations.

- (1). For every series of perceptual sensations, there must be an anticipation or manifestation of a respective affecting series of mere kinaesthetic sensations.

By means of mere kinaesthetic sensation, the subject is able track the necessary continuities in perceptual sensation and thus experience (potentially) revealed aspects as parts of an improperly experienced whole.

In fact Husserl puts the point rather strongly:

consciousness of the identity of the form within the continuous change of its modes of givenness, which we are calling here its aspects, essentially presupposes the continuous unfolding, played out in the back-ground of attention, of the concomitant kinaesthetic sensation complexes (Husserl, 1952/1989, p. 136 [128])

We can make best sense of this by understanding the role of kinaesthesia as enabling a kinaesthetic cycle of effecting movements and affecting kinaesthetic sensations:

the running off of the optical and the change of the kinaesthetic do not occur alongside each other, but rather proceed in the unity of an intentionality that goes from the optical datum to the kinaesthetic and through the kinaesthetic leads to the optical, so that every optical is a *terminus ad quem* and, at the same time, functions as a *terminus a quo* (Husserl, Manuscript C 16, IV, 40b, as cited in (and translated by) Mensch, 2001, p. 42) (see also Husserl, 1952/1989, pp. 62 - 63 [57 - 58])

Hence:

- (m). Definition: a kinaesthetic cycle is a cycle of perceptual sensations and mere kinaesthetic sensations.

Given this cyclical connection, the account must imply that (perceptual) visual sensation depends upon (mere) kinaesthetic sensation in yielding perceptual experience.

- (n). For every perceptual sensation, there must be an anticipation or manifestation of a kinaesthetic cycle.

This is to say that insofar as the continuity of perceptual sensation is dependent upon continuity in change of sensation, continuity of perceptual sensation is dependent upon the continuity of a series of mere kinaesthetic sensation (Husserl, 1952/1989, pp. 70 - 71, 135 - 136 [165 - 166, 127 - 129]; 1973/1997, pp. 149 - 155, 157 - 159, 316 - 317 [176 - 184, 186 - 189, 356 - 357]). Thus each perceptual sensation indicates not only a further (broadly continuous) perceptual sensation, but also an affecting mere kinaesthetic sensation. And this itself indicates both a further (broadly continuous) mere kinaesthetic sensation and a perceptual sensation, where the latter is experienced as continuous with the previous perceptual sensation in virtue of the kinaesthetic cycle.

- (o). Broad continuity in a series of perceptual sensations requires broad continuity in mere kinaesthetic sensations throughout a kinaesthetic cycle.

Given (a) - (i), (j) - (o) yield:

- (p). Experience of particular objects requires anticipation of a broadly continuous kinaesthetic cycle.

6.4. Husserlian notes on Noëan enactivism

Claim (p) completes the Husserlian account in its essentials. There are more details to work out concerning how particular objects can seem mind-independent. They will occupy us in the next section. There are also more details to be worked out concerning what it is to anticipate a broadly continuous kinaesthetic cycle. That will occupy us in places in the following chapters. But before moving on, here is as good a place as any to note that the reader might already find a striking similarity here with a contemporary view of perception attributed to Noë, a recent defendent of direct realism. Noë argues that perception is a bodily activity, through many an ap-

peal to phenomenology_D. In this respect, he is often called an *enactivist* and his view is referred to as a species of *enactivism*. So one might wonder (leaving aside the fact that Husserl predates Noë) is this Husserlian account a species of enactivism?

Enactivism was introduced by the eminent biologist Francisco Varela, his student Evan Thompson, and the renowned psychologist Eleanor Rosch, to usher in a new paradigm in cognitive science. Their aim in coining the term was to emphasise the importance of cycles of activity in a general theory of cognition, and to thus evoke a view of cognition as “the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs” (Varela et al., 1991, p. 9). Despite the important differences in the original reference (*viz.* its explicit stress on history, its aims as a general account of mind) in the consciousness and perception literature enactivism is most immediately associated with Noë’s work. Other contemporary views are similar enough in their core principles (such as taking sensorimotor engagement to be primitive to mentality in some way) to be called enactivist (e.g. Hurley, 1998), and indeed some proponents self-identify as such (Gallagher, 2005; Hutto, 2005; Thompson, 2005, 2007). Others who nevertheless ground perceptual experience in dispositions for bodily movement resist the (somewhat unnecessary) conflation (Grush, 2007b). Indeed, a common label does not imply a common thesis, or the inverse. Hence, one could call Husserl an enactivist if one wants, but it would not serve much purpose. Indeed, one could call Berkeley an enactivist, but it might not be particularly illuminating. In any case, let me dedicate a few pages to clarifying the similarities and differences between Noë’s theory of perception and the Husserlian account of perceptual experience.

A central posit in Noë’s theory of perception is that of a “sensorimotor profile”, sometimes also referred to as a “sensorimotor contingency” or “sensorimotor dependency”. I will use these terms interchangeably, as Noë seems to. If there is a rhetorically significant difference between these notions it has certainly not been made clear by Noë in any work of his of which I am aware.¹³⁶ Indeed, they all seem to have the same reference: a pattern that unfolds in the changing sensory stimulation resultant from either movement of the sensors or the object, although movement of the sensors is taken to be more significant. Andy Clark summarises the relevant ideas with a remarkable clarity that makes it worth quoting him at length:

¹³⁶ The interested reader should see O’Regan and Noë (2001, p. 94off.) for the original statement of sensorimotor contingencies, but it should be noted that my comments are directed at Noë’s more recent solo efforts, as represented in the texts that I cite.

Sensorimotor dependencies are relations between movement or change and sensory stimulation. Such relations may be of many kinds, but what they all have in common is that they concern a kind of loop or cycle linking real-world objects and properties with systematically changing patterns of sensory stimulation. These changing patterns of sensory stimulation may be caused by the movements of the subject (this is the central case), as when we use head and eye movements to scan a visual scene. Or they may be caused by movements of the object itself or be due to other elements in the environmental frame (e.g., changes in illumination or light source). In addition, some features of these various kinds of changing patterns will be due to properties of the objects themselves (e.g., the self-similarity of a straight horizontal line along its length, giving rise to an unchanging pattern of retinal stimulation as the eye tracks along the line...). Other features [...] will be due to the idiosyncrasies of the human visual apparatus. For example, the same straight line projected onto the retina distorts dramatically as the eye moves up and down due to the curvature of the eyeball. (2008, p. 171)

Consider the Husserlian kinaesthetic cycle and Noëan sensorimotor contingency as conceptual tools in isolation from the account in which each is introduced. Even the casual reader can note significant similarity, such that one might regard the latter as a (perhaps unwitting) precisification of the former. But note also that this is only in so far as one considers the “central case”, where changing patterns of sensory stimulation are brought about by the perceiver. In having application beyond the central case sensorimotor contingencies are more general than kinaesthetic cycles. This is one significant difference between the two accounts. But it is inert as things stand. Another significant difference is in the scope of what is to be potentially explained. The Husserlian account aims to provide a description of the implicit intentionality of our perceptual experience of particular objects, and accordingly introduces the notion of a kinaesthetic cycle. By contrast, Noë employs the theoretical tool of a sensorimotor contingency time and again to provide explanations of many and various qualities of perceptual experience, such as perceiving the particular object one does in a specific way with both its specific shape and its specific colour etc. Again, this difference is largely inert. I say largely, because in the details of Noë’s account of the spatial experience of object perception one finds claims of unnecessary strength and even manifest incoherence. It is here that, to the extent that Noë’s account is a mutation of the Husserlian account, Noë’s account (to extend the metaphor) ought to be seen as maladaptive. At least, so I shall argue. To see the relevant differences and to see why they are thus inert, we need to explore Noë’s account of spatial perception a little further.

For a Noë-type enactivist, what perception amounts to is an understanding of the ways in which we must explore the world to grasp its detail. In the case of spatial perception, what we understand in perceiving an object as three dimensional is its *visual potential*. The visual potential of an object is the way its aspects change as a result of movement. So to experience an object as three dimensional on the basis of how it looks is to understand its visual potential. Take an earlier example: we experience the plate as elliptical from a certain perspective, yet we also experience it as circular. On Noë's account, our experience of it as circular is explained by our understanding of how its ellipse changes as we move, or as it moves relative to us. So the visual potential of an object is just the way in which sensory stimulation varies due to movement induced change. Unsurprisingly, then, our understanding of visual potentials reduces to an understanding of the sensorimotor profiles objects will display: "[w]hen we experience something as a cube in perception, we do so because we recognize that its appearance varies (or would vary) as a result of movement, that it exhibits a specific sensorimotor profile" (Noë, 2004, pp. 101-102). To see the plate as elliptical and yet see it as circular is to bring to bear upon it one's knowledge and understanding of its sensorimotor profile. The sensorimotor relations that distinguish said profiles are markedly systematic, indeed mathematically formalisable:

Tomatoes no less than cubes, have determinate visual potentials, or, as we can think of the visual potential, sensorimotor profiles. As we get to more complicated forms, such as animal bodies, plants, and so forth, the mathematics needed to determine the sensorimotor profile of an object gets more complicated. Our visual perceptual skills, however, are that sophisticated, encompassing these complex (but ultimately manageable) relationships (Noë, 2004, p. 78)

In short, there is nothing ambiguous about a sensorimotor profile, or understanding a sensory-motor profile. Understanding a sensorimotor profile involves anticipating one's ongoing experience to unfold in the specific way specified by that sensorimotor profile (ibid., pp. 75 - 122).

This highlights an important difference between the Husserlian account presented and Noë's account: On the latter view, but not the former, perception is constituted by one's knowledge of something specific *vis á vis* expected patterns of stimulation. The emphasis on a certain understanding that the perceiver brings to her contact with the object (which gives perception of the object its content) seems to require that there be an anticipation of the specific patterns of sensory stimulation that one already knows how to make the object exhibit.

More schematically: One understands objects of perception insofar as one understands the relevant sensorimotor profiles. One understands sensorimotor profiles

thanks to one's learned experience of them. And one's learned experience of sensorimotor profiles is due to one's history of exploratory engagement with objects that exhibit said profiles – for “only through *self*-movement can one test and so learn the relevant patterns of sensorimotor dependence” (Noë, 2004, p. 13, emphasis original). Therefore, “[t]o perceive something, you must understand it, and to understand it you must, in a way already know it, you must have already made its acquaintance” (Noë, 2009, p. 474).

This is a far more radical thesis than is necessary, on at least two counts. On the first count it is too strong to provide a negative answer to an appropriately reframed version of the earlier question posed to the Husserlian view: what of the situation in which neither the perceiver nor the object moves, is this a case in which one does not perceive at all? A positive answer would be forced, but not because of the definition of what particular objects are *qua* our experience of them (as potentially explorable objects); rather, because of a definition of perception in general (as an exploratory activity).

Perhaps this can be avoided by emphasising the role of what Noë calls *sensorimotor knowledge*. Occurrent exploratory activity is not necessary, as the perceiver simply anticipates what such exploration would yield, in the sense that the perceiver knows how to bring about certain patterns of stimulation by means of certain sensorimotor routines. This brings us to the second count. The obvious difficulty is that there is no way to account for novel objects as objects of perception. For even if we grant that one must grasp certain stimulus pattern relationships between circles and apparent ellipses, in order to perceive an apparent ellipse as a circular region of three dimensional space, it is not then clear how the very same account can provide an explanation of how we see a novel opaque object consisting of a novel complex of shapes. For that object cannot be seen all at once, it must by *de facto* necessity be an object that has hidden aspects.

Noë might respond that to claim that the aspects are hidden is a misnomer, for they are *virtually present* as readily accessible to the perceiver through exploratory activity (2004, pp. 59 - 65). But to claim that is not enough. It cannot stand without the further claim that the perceiver perceives in virtue of its sensorimotor knowledge, *viz.* its knowledge of exactly how the patterns of sensory stimulation will unfold. So Noë's final response might be that one does not see an entirely novel object at all (where, again, one reads 'entirely' as strong as possible), at least not until one learns and understands (through practice) the requisite patterns of sensorimotor stimulation and thus acquires perceptual content; “as merely to be given visual impressions is not yet to be made to see. To see one must have visual impressions that one understands” (2004, pp. 4 - 5, emphasis original). But again, that would be to claim

that the object's sensorimotor profile had already been learned. In short, it is to claim that the object was not novel after all.¹³⁷

Clearly then, Noë's account is far more radical than Husserl's account, indeed perhaps too radical. It might be thought that this is because Noë's account takes it that our experience of objects – hidden aspects and all – is determinate through and through. As he says in a recent paper, speaking of the familiar philosophical tomato: "The nature of our access to the front is of a kind with that of our access to the back" (Noë, 2009, p. 475). By grasping the determinate visual potential of the object in virtue of our knowledge of how the sensory stimulation will evolve, the tomato "(front and back) is there for us, present, in reach" (ibid., p. 475) in an equally determinate manner in all aspects.

But this rather natural reading actually points to significant tension within the view. In fact, Noë repeatedly asserts that all perceptual experience is radically indeterminate, precisely in virtue of being "virtual *all the way in*", elaborating the idea as follows:

Notice that although the whole facing surface of the tomato is present to you, in contrast with the far side, which is out of view, you can no more embrace the *whole* of the facing side at once in consciousness than embrace the *whole* tomato in consciousness all at once. (Noë, 2004, p. 134, emphasis original)

And he reiterates the point elsewhere:

¹³⁷ This claim might be harmless when made in the context of a multi-level account of perception. That is, when supplemented with an account of how the preconscious matching of sensory and motor processes enables the sensorimotor understanding putatively constituting perceptual experience. But that would make Noë's frequent appeals to phenomenology rather redundant. For *prima facie*, without an illuminating sub-personal story to tell, the overall account will be found wanting. Note, this is not a problem for others in favour of a sensorimotor theory of consciousness, such as Susan Hurley (1998) who explicitly makes a distinction between circular causality in sub-personal sensorimotor dynamics and the conceptual interdependence of perception upon action in order to build explanatory links between the two levels. It is not obvious that this is what Noë has in mind, not only because he makes frequent appeal to phenomenology, but also because he has a tendency to slip between personal and sub-personal level explanation without principle (see e.g. 2004, pp. 30 - 31). For a criticism of Noë in this regard, see Block (2007b).

Experience in the large, and in the small, is complex and manifold; it is always an encounter with hidden complexity. Experience is fractal in this sense [...] In a way, for perception, everything is hidden. Nothing is given. (Noë, 2009, p. 473)

This, it ought to be said, is in reaction to the view that there are primitive qualitative states, often known as *qualia*, to be construed as the simple atoms of experience. By contrast, Noë's phenomenological_D assertions are broached in the service of demonstrating that experience is "ineliminably holistic in a sense that can be made tolerably precise. What you are given in experience is always a structured field. You are never given individual, atom-like qualia." (2004, p. 134).

This last point is (or at least ought to be) well taken. Indeed, Husserl makes much the same point when characterising the inner horizon of a particular object, claiming that "even what is already seen is laden with an anticipatory intention. It – what is already seen – is constantly there as a framework prefiguring something new; it is an *x* to be determined more closely" (Husserl, 1966/2001, p. 43 [7]). But one could recognise the holistic character of perceptual experience without subscribing to the proclamation that there is never anything specific about the way in which a particular object is experienced. And one could do this precisely by distinguishing between determinate and indeterminate modes of object perception. Indeed, this is what the Husserlian account does. Essentially, determinacy is a function of a perceiver's perspective, a point that we will explore further in the next section. For now all we need to note is that, in embracing the distinction, one can recognise that the determinacy of the presented aspect could well be more determinate, whilst nonetheless also recognising that it has a determinacy that is lacking in the openness of the hidden aspects of the object.

By contrast, as a consequence of not making a consistent distinction, the sensorimotor theory seems almost obfuscating. On the one hand we are told that we know something (in the sense of 'knowing how' mentioned above) about the object that we perceive, namely, its "determinate visual potential" (Noë, 2004, p. 78), and on the other we are told that all experience has a complexity that never bottoms out as concrete in any way, in that it is unendingly "fractal" (Noë, 2004, p. 135; 2009, p. 473).

Sometimes Noë seems to have not made up his mind on the matter: "I said before that nothing is given. We might say: if anything is given, everything is. If the front of the tomato is given, then so is that back." (2009, p. 475). As profound as these comments sound, they reveal the basic dilemma the sensorimotor theory must face. Either it must give up the claim that experience is fractal, in which case the parity between hidden and presented aspects is false. Or it must give up the view that knowledge of how to bring about particular patterns of sensory stimulation is con-

stitutive of perceptual experience, in which case the heart of the view might well be lost.

Indeed, if both these bullets are bitten, then (at least *qua* an account of perceptual experience) the view loses its significance, for it is thus weakened to something virtually indistinguishable from the Husserlian position espoused here. Though, I am fine with a new dog playing some old tricks. Especially if it helps us see those old tricks in a new light.

6.5. Weak mind-independence

In this last section, I want to clarify how various elements of the Husserlian account indicate a weak-notion of mind-independence that is nevertheless amenable to the sentiments of DR. It will be useful to draw on certain themes found in literature that is concerned with epistemological and metaphysical issues. In that literature, mind-independence tends to imply “objective existence” *viz.* dependence upon objective states of the world. This is in contrast to dependence upon conscious states of a subject *viz.* dependence upon subjective states of the mind. So it is best to begin by looking at some ways of drawing the subjective/objective distinction.

Objective existence is often understood as strongly as possible: as possessing a kind of extreme context-independence; as existing in a way that is only adequately characterised when one describes things from “no point of view”, a manner of description that somehow supersedes and encompasses individual points of view. By contrast, when one aims to understand the “subjective existence” of some state, one must persistently take into account certain facts that vary systematically with the subject’s context. These are often further dependent upon other states of the subject, and are taken to exist in a way that is only adequately characterised when we describe things from that subject’s point of view (A. W. Moore, 1997, pp. 1 - 18; T. Nagel, 1989, pp. 13 - 15 and *passim*; B. Williams, 1978/2005, pp. 48 - 49, 228 - 230).

Unfortunately the notion of a point of view here is rather obscure. The fundamental distinction is between how the world seems in a subject’s thought and experience of the world, and how the world is without such restrictions, as it is “there anyway”, independent of thought and experience (B. Williams, 1978/2005, p. 48). A typical reason for using the notion of a point of view in drawing this distinction is to exploit the use of the same term in stating the two sides of the divide, and emphasise that understanding either side requires understanding both. That is, in order to understand the subjective one must be able to contrast it with the objective, and vice versa. In the spirit of an Oxonian tradition that begins with Strawson (1959/2003; and

esp. Strawson's interpretation of Kant's Transcendental Deduction in his 1966, pp. 57 - 67), we could take that last sentence as descriptive of the actual mental capacities that need to be in place in order to ascribe a grasp of objectivity to a particular subject. On Strawson's view, one cannot possess such capacities unless one also has a basic grasp on the world as both spatially and temporally extended beyond the bounds of occurrent experience. For instance, he discusses the idea of "a series of experiences which belong to a unitary consciousness" as follows

Not all the members of such a series are in fact self-ascribed: a man may be more prone to forget himself in contemplation of the world (or in transactions with it) than he is to be conscious of, or to think of, himself as perceiving (or doing) what he perceives (or does). But it is a shining fact about such a series of experiences, whether self-ascribed or not, that its members collectively build up or yield, though not all of them contribute to, a picture of a unified objective world through which the experiences themselves collectively constitute a single, subjective, experiential route [...] conceptualized as to determine a distinction between the subjective route of his experiences and the objective world through which it is a route (Strawson, 1966, p. 62)

Strawson's worry, it seems, is that without such a hefty conceptualisation of a sequence of experiences, one's experience will be all subject and no world. Elsewhere he describes these conditions as those required for "non-solipsistic consciousness", which he elaborates as

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; and by a solipsistic consciousness, the consciousness of a being who has no use for this distinction. (Strawson, 1959/2003, p. 69)

In order to think about objects as being there anyway, one must be able to think of them as extant in certain places that one does not currently perceive. And in order to do that one must have certain capacities for spatial thinking; one must be able to conceive of "a spatial system of objects, through which oneself, another object, moves, but which extends beyond the limits of one's observation at any moment, or, more generally, is never fully revealed to observation at any moment" (Strawson, 1959/2003, p. 74). This would be a spatial system that was importantly not exclusively defined in terms of relations to the subject. Rather in thinking of objects as located in such a system, the subject ought to be able to entertain, and potentially exchange, several distinct items simultaneously occupying distinct places defined by their spatial relations to one another (Evans, 1985, pp. 151 - 152).

A subject that is able to grasp such a system is able to entertain thoughts about particular places they occupy by understanding the connectedness of those places. And this is most basically achieved by simply moving around and understanding the practical implications of getting from one perceived place to another, *i.e.* understanding that the space of one's perception and action is embedded in a space that exists beyond it. Understanding these practical implications would require constraining one's thought about the perception of places by means of certain temporal restrictions. Such as, for instance: that sequences of perceptions relate to spatially adjacent locations; that thoughts about perceiving a location at a time must be constrained by thoughts about speed of travel over time (Cassam, 1997, pp. 38 – 39; Evans, 1982, pp. 153, 243).

All of this is required according to Strawson and Evans, in order to ascribe an understanding of objectivity to a subject. Once a subject has such a grasp on objectivity, they also have a certain grasp of their own subjectivity. For the subject then has use for a “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” (Strawson, 1959/2003, p. 69). That is to say, that the conditions for ascribing the capacity to think about mind-independent objects are also the conditions for ascribing what Strawson calls non-solipsistic self-consciousness. Thus we might ascribe the subject the capacity to think about herself as having a point of view upon the world, on the very same conditions that we ascribe the subject the capacity for thinking about the world as independent of that point of view.

But all of this is too strong if one's aim is to describe a simple perceptual experience of a particular object. To put it another way, the objective existence that the Strawsonian line on objectivity requires is the object of the subject's theoretical beliefs about the world that they experience. In order to capture the more immediate sense in which particular objects are claimed to be experienced as mind-independent I will draw a distinction between three levels at which an object might seem to be independent of the subject:

- (i). A neutral object experienced as having aspects that are not occurrently accessed
- (ii). A neutral object experienced as having continued mind-independent existence
- (iii). A neutral object experienced as having an objective existence

The weak sense of mind-independence that the Husserlian account describes takes (i) to be sufficient for (ii). (iii) is putatively available to a subject whose capacities for

spatio-temporal thinking meet the Oxonian conditions outlined above. In order for the Husserlian account to be coherent with what has been said in previous chapters, it cannot make an appeal to the third level in order to account for the first two levels.

We can get a handle on how this can be achieved by considering another way of drawing the subjective/objective divide. On a view attributable to Descartes, mental states exhibit two distinctive features that distinguish them as subjective. Firstly, if a subject's mind instantiates a state with a certain content, then they will believe that it does. That is, all mental states are evident to the subject.¹³⁸ Secondly, if a subject believes that their mind instantiates a state with a certain content, then their mind does in fact instantiate that state. that is, the subject is incorrigible with regard to its mental states (B. Williams, 1978/2005, pp. 64 – 68). Both of these involve the implicit assumption that the subject has access to its mental states, and the first can be understood as claiming that the subject has guaranteed access to its mental states. Now, without drawing any verdict on whether or not a subject's access to its mental states is in fact evident (or guaranteed) and/or incorrigible, one can illustrate the subjective/objective divide by stating the following: It is not the case that a subject's access to (putatively non-mental) states of the world exhibits either evidence or incorrigibility. That is to say, it is not the case that if the world instantiates a certain state, then the subject will believe that it does; and it is not the case that if a subject believes that the world instantiates a certain state, then the world does in fact instantiate that state. On this way of drawing the subjective/objective distinction, objective states are states that exhibit neither evidence nor incorrigibility.

Now to apply this analysis to drawing the link between (i) and (ii). States of particular objects are experienced as states that are not evident, in the sense that hidden aspects of objects are experienced as states that are not evident. It is not the case that if a hidden aspect the object instantiates a state with a given content, then the subject will experience it as such. This gives further substance to the notion of indeterminacy in perception, and the sense in which the content of hidden aspects is left

¹³⁸ Witness *e.g.* that Descartes defines 'thought' "to include everything that is within us in such a way that we are immediately aware of it. Thus all the operations of the will, the intellect, the imagination and the senses are thoughts" (1642/1984, p. 113). This is often taken to be crucial to a Cartesian theory of self-knowledge. In fact it is not obvious that Descartes' considered view is that simply having a thought is sufficient for knowing what thought one is having, *viz.* that self-knowledge is evident (see Broughton, 2008, pp. 187 – 192). A weaker form of the idea of mental states as evident holds that all mental states must *in principle* be accessible to their subject, in the sense of being brought into the focus of conscious attention.

open on the Husserlian account. Consider again the case of perceiving a *façade* for the first time. The claim is that it is not the case that when one experiences the hidden aspects of the *façade* as being determinable in a certain way, that the hidden aspects of the *façade* are in fact thus determinable. Consider again, also, the notions of broad and narrow continuity as a means of delineating the extent to which the determination of hidden aspects is left open. These can be further understood as delineating the extent to which a subject is corrigible in experiencing the hidden aspects of an object. The experience of a subject is always corrigible concerning any narrow continuity exhibited in a series of sensation, for particular objects of certain kinds (*façades* being a perspicuous case) might well violate the anticipation of narrow continuity. However, if the object is experienced as a particular object, then the only circumstances under which the experience of a subject is corrigible with respect to broad continuity are circumstances under which the subject no longer experiences the same object.

By employing a Cartesian distinction between mind and world, we provided a negative contrast between the presented and hidden sides of a three-dimensional object. However, the account also trades on a notion of perspective that is also usefully clarified in reference to the Oxonian account. On that account, a subject can only be accredited with a perspective if they can have a thought about a place p in a frame of reference somehow centred upon the subject, where p is *also* conceived as being within a space whose frame of reference is not centred upon the subject. In order to have such a thought, the subject must be “able to think ‘objectively’ about space”, they must know what is for $\pi = p$ to be true “where π is a stand-in for an arbitrary *fundamental* [...] holistic, identification of a place” (Evans, 1982, p. 162). As I said earlier, the Husserlian account cannot appeal to such capacities, so it needs a much weaker notion of perspective. In any case, it has no need for the grand scale of thought well beyond the particular object experienced. Where the two accounts make contact, though, is in the idea of a frame of reference centred upon the subject. Consider for instance, the following quotation from Husserl:

each Ego has its own domain of perceptual things and necessarily perceives the things from a certain orientation. The things appear and do so from a certain side, and in is this mode of perceiving is included irrevocably a here and its basic directions. All spatial being necessarily appears in such a way that it appears either nearer or farther, above or below to the right or to the left (Husserl, 1952/1989, pp. 165 - 166 [158])

Husserl uses various spatial terms: ‘here’, ‘nearer’, ‘farther’, ‘above’, ‘below’, ‘to the right’, ‘to the left’. One might add terms such as ‘there’, ‘in front’, ‘behind’ etc. In contemporary literature, these terms are often referred to as “egocentric terms”.

What the Husserlian account describes are certain stable limitations in the relationship between the subject and the object of experience. This relationship can be described in egocentric terms, where the determinate aspects of an object are experienced as *here* and the indeterminate aspects as *there*. The Oxonian tradition requires that if one is to attribute to subject an understanding of what it is for both *here* and *there* to be in the same fundamental frame of reference, one must attribute to that subject a sophisticated conception of an objective world. By contrast, the Husserlian account merely wants to claim that “all that is thingly-real in the surrounding world of the Ego has its relation to the Body” (Husserl, 1952/1989, p. 61 [56], italics removed).

It might seem that an obvious candidate for this rather minimal grasp on spatial relations is provided in the bare notion of an egocentric frame of reference: a reference frame structured in reference to a privileged point of origin. This latter is at least supposed to be Husserl’s Body, *Der Leib*, the *relatum* that all particular objects of experience stand in relation to. I express some hesitation because a set of spatial relations structured around “point of origin” does not require any reference to a body as such a point of origin (Cassam, 1997, pp. 45 - 46). To make this relation more than coincidental one needs a sense of a point of origin that makes an intrinsic reference to bodies. For instance, one could understand the notion of an egocentric frame of reference as a special case of an object-centred frame of reference, *viz.* a body-centred frame of reference. Using certain described axes of the body one could set up a system of spatial relations according to which one might locate objects in reference to the body as a privileged locus (Campbell, 1994, pp. 9- 10; Peacocke, 1992, pp. 61 - 63).

Take a human body, for instance. It can be described as exhibiting certain axes. One could cast a horizontal plane extending perpendicular to its length, splitting it into arbitrary superior and inferior regions. A frontal plane might extend vertically along its length, dividing it into anterior and posterior regions. A sagittal plane could also extend vertically, dividing the body into left and right regions. These spatial planes would enable us to give substantive definition to the axes of orientation up/down, left/right, forward/backward. As each of these three planes lie orthogonal to each other one can rotate the body around a point at which they cross – somewhere in the torso – and still keep these axes of orientation constant. That is, the spatial planes form the fundamental axes for the egocentric space, in the sense that the spatial relations they characterise cannot be reduced to more fundamental axes of another frame of reference. So even if for instance the body in question is inverted relative to an extrinsic frame of reference (such as that defining the gravitational field) there is still an intrinsic frame of reference, defined by the axes we have described, according to which there is still a determinate up/down, left/right, for-

ward/backward (thus it is “upside down” so to speak). Having set up these bodily axes and a bodily origin we are then able to locate objects relative to that origin.

Though this might seem very neat, it might not seem so any more when one attempts to describe the spatiality of perceptual experience enjoyed by means of any of the special senses. The problem is that the point of origin is in an odd place, and the same place regardless of the sense involved. For on the present definition the point of origin is described as lying somewhere in the torso, rather than *e.g.* just between and behind the eyes. One could suggest an *ad hoc* amendment, such as having the very same spatial planes run through a point in the head. But an obvious difficulty with this is just the fact that it is an *ad hoc* solution. Such a solution might be admissible if vision were the only sense modality through which a subject could conceivably enjoy spatial experience, but then that would rule out *e.g.* tactile experience. This might motivate yet another *ad hoc* definition of an egocentric reference frame, perhaps centred upon the hand. But this only leaves us with the problem of how the account would describe a subject as simultaneously touched in another part of her body, let alone when she simultaneously sees and touches the same object.

In fact, in the specific context of the Husserlian account even more problems stem from the idea that egocentric spatial relations ought to be defined in reference to a point of origin. For the central claim is that a subject experiences particular objects in virtue of the poised activity of her kinaesthetic systems affecting and effecting perceptual sensations, enabling anticipations of continuity and unity. For each kinaesthetic system a proprietary frame of reference could be described, centred upon the eye, or the head, the torso *etc.* At an information processing level, assuming such frames of reference is almost unavoidable, and the co-ordination of said frames of reference is an important problem with interesting implications. But this does not manifest itself as such at the experiential level. Consider the following example: there is an object directly in front of a subject’s torso; her head is turned to the right and her eyes turned to the left. On the basis of various postulated body-centred frames of reference one could say both that the object is experienced as in front of her and to her left. Thus the object occupies two separately specifiable egocentric locations at once. Again, this might be right insofar as, at some level of description, multiple frames of reference need to be accounted for. But if the subject experiences an object as seeming to be in two places at once, then they are simply not experiencing a particular object.

It is possible to resolve such difficulties in a way consistent with the commitments of the Husserlian account, simply by taking bodily movement to be intrinsic to an ac-

count of egocentricity. The approach would be to endorse what I will call the *behavioural egocentricity* claim:

- Behavioural egocentricity: there is nothing more to experiencing x as at egocentric location e , beyond a subject being disposed to perform potential orientating actions φ with regard to x

Thus in specifying objects as egocentrically located, egocentric terms such as up, or down, to the right or to the left, in front, behind, over there *etc.* derive their meaning from their connection with bodily action (Evans, 1985, p. 384). For Evans this was first and foremost an informational connection between perceptual input and behavioural output, such that “having the perceptual information at least partly consists in being disposed to do various things” (Evans, 1985, p. 383).¹³⁹ Though this is a powerful analysis on that level of description (see Grush, 1998, 2007b), what we are after is the experiential significance of this connection, which is simply that the egocentric spatial relations are “structured as a field of potential action” (Taylor, 1978, p. 155).¹⁴⁰ This avoids all the problems of the earlier analyses rather simply: by not identifying the egocentric perceptual field with any particular egocentric frame of reference; or indeed any frame of reference at all. It brings a new set of constraints also. For the φ concerned are channelled through the overall structure and mobility of the body. The situation of individual parts constrains their movement dynamics. And these constraints on movement dynamics set the range of φ .

Now, with all that in mind, cast a critical eye over the following statements:

¹³⁹ Admittedly, Evans was not always consistent in his unfinished work; witness the various uses of the term information in his (1982), and see Campbell (2005).

¹⁴⁰ Although, as already stated, Evans’ aim was to establish the necessity of an informational connection between sensory and motor capacities, Evans (1982, p. 156; 1985, pp. 384 - 385) quotes Taylor (1978, p. 154) seemingly in order to illustrate the view on phenomenological grounds. Taylor himself attributes the view to Merleau-ponty (1978, pp. 152 -153). Thus as a supplement to the Husserlian account, one might consider this way of substantiating the notion of egocentric space to be rather Merleau-Pontian. To a certain extent that may be right, however the emphasis placed upon bodily structure is more in the spirit of Samuel Todes’ (2001) phenomenology_T. And, in fact, it goes somewhat further in emphasising not only the front-back asymmetry of bodily structure, but also the interlocked nature of the parts.

The aspect of the moment is necessarily related to the zero-point of orientation, to the absolute “here”, and to the concomitant system of the depth dimension (fore-back), and of the breadth and height dimensions (right-left, above-below). (Husserl, 1952/1989, p. 135[127 - 128])

The sense-things are thereby constituted in the subjective way of “orientation” and are constituted for us ... such that a distinctive sense-thing, the “Body”, is given as the constant bearer of the center of orientation. (Husserl, 1952/1989, p. 70 [65])

It ought not to be Husserl’s considered view that one takes talk of a “zero-point” or an “absolute “here”” too literally. Similarly, I advise rejection of the claim that this “centre of orientation” is something that is actually borne by, or located within the bodily subject. I have explored reasonable options as to what these might mean beyond vaguely gesturing at the body; none of them seem to work.

So in what sense do both the ‘here’ of the presented side and the ‘there’ of the hidden side stand in a spatial relationship to the body? And how do these relate to the idea that subjects anticipate a broadly continuous cycle of kinaesthetic sensations? Employing a useful piece of terminology adapted from Evans, I will call the space of egocentric relations a “behavioural space”, structured by the abilities of the subject (Evans, 1982, p. 160). The positive proposal is that if one treats the notions of ‘centering’, or ‘anchoring’, or any ‘point of origin’ as superfluous, one will not be throwing out the baby with the bathwater. For discarding any substantive notion of an egocentric frame of reference does not force one to discard the idea that the egocentricity of perceptual experience is systematic. This is precisely because the structure of behavioural space is still systematic in a way that admits of egocentric terms: up/down, left/right, in front/behind are still the natural axes of orientation. But this is not a consequence of the described axes of the body *per se*, but rather a consequence of the situation and mobility of the perceptual apparatus that these axes help us track.¹⁴¹

In this regard, the body exhibits symmetry along the lateral plane in contrast with asymmetry along the frontal plane, forming systematic constraints on φ : *e.g.* the situation of the subject’s eyes dictate that in order for her perceptual sensation of an

¹⁴¹ In some regards this account is similar to Campbell’s gloss on what is necessary in providing what he refers to as a psychologically substantive conception of egocentric space (1994, pp. 10 - 15). An important difference is that Campbell (somewhat oddly) takes recourse to actual *perception* of the body to be necessary in accounting for the relation between egocentric perception and action. The account presented here need not make such an appeal.

object to be broadly continuous as she passes it on her right she will eventually need to move her head, and then her torso, turn her hips, and eventually her whole body. Experiencing the object as on the right in any one of these instances consists in being disposed to φ in this manner, whether or not one does in fact φ . But all that amounts to is the claim that experiencing the object as on the right involves anticipating a broadly continuous cycle of kinaesthetic sensations that would occur, were the subject to φ .

This also allows for the possibility that there is a genuine experiential difference between experiencing an object that is directly in front of the torso and directly in front of the head and eyes, and experiencing an object that is to the right or left of the torso and yet in front of the head and eyes. Furthermore, it provides a key step in clarifying the systematic relationship between perceptual sensation and kinaesthesia. For anticipations concerning ensuing perceptual sensations, will in part be anticipations of ensuing arrangements of various kinaesthetic systems, bringing a new comportment of the body.

PART III

*An age which demands free inquiry, pushed without fear or compromise
to its legitimate conclusions [...]*

(T. L. Peacock, 'The epicier' (1836); as cited in Reed, 1994, p. 297)

Chapter 7 Structural affordances

7.0. Introduction

The previous chapter completed the description of a certain conception of perceptual experience that is a major aim of this thesis. A distinctive feature of the account presented in that chapter was the idea that kinaesthesia provides a broadly continuous structure to perceptual sensations. The remaining three chapters, including the present, aim to provide a theory of the natural basis of kinaesthesia, and clarify the terms of its evaluation.

I begin (in §7.1) with a review of various developments in neurophysiology and psychology that suggest a general set of mechanisms that might serve in a naturalistic explanation of kinaesthesia. These mechanisms are studied in the effort of understanding the flow of information within and between certain physiological structures of an organism, information concerning both the movement of parts of the body relative to other parts, and the body as a whole relative to its environment. The guiding thought is that in understanding these informational transactions, one might move towards an understanding of how subjects come to experience bodily movement, compartment and spatial situation. In later sections, I will build upon this review, supplementing it (in §7.2) with a detailed analysis of the concept of an affordance, in which I will introduce the concept of a ‘structural affordance’ as providing a way of thinking about an agent’s relationship to the constraints on its bodily movement. This will be followed (in §7.3) by a review of ways in which agents deal with constraints upon bodily movement, in order to show the extent to which structural affordances have been studied already. Structural affordances will then serve as an element in a more general theory of the natural basis of kinaesthetic experience. I will introduce such an account (in §7.4) by clarifying the ambiguities of my previous work on the spatial content of bodily experience. I then conclude (in §7.5) with an application of the theory as an explanation of the Husserlian descriptions provided at the end of chapter 6, and other forms of kinaesthetic experience besides.

- 7.1 *Proprietary information*
- 7.2 *The concept of a structural affordance*
- 7.3 *The empirical reality of structural affordances*
- 7.4 *A structural affordance theory of kinaesthetic experience*
- 7.5 *Phenomenal grooves & kinaesthetic abilities*

7.1. Proprietary information

Neurophysiologists have been aware of organic processes that might serve to provide information about bodily movement for over a century:

The deep tissues underlying the surface sheet [of the body] have receptors specific to [...] changes going on in the organism itself, particularly in its muscles and their accessory organs (tendons, joints, blood vessels, etc.). Since in this field the stimuli to the receptors are given by the organism itself, their field may be called the proprioceptive field. (Sherrington, 1906, p. 131)

All proprioceptive receptors are mechanoreceptors, in that they produce nerve impulses when deformed mechanically, and in this case particularly by being stretched. Charles Sherrington's (1894) work on cerebrate animals provided early evidence for an abundance of sensory receptors embedded within skeletal muscle. These structures, dubbed *muscle spindles* are now commonly thought to have adapted for registering limb movement, through the detection of changes in muscle length (see Figure 15). Muscle spindles are integrated with the (intrafusal) fibres of skeletal muscle and surrounded by the (extrafusal) bulk of the muscle itself (see Figure 15A). So when the muscle is stretched the spindles are stretched also. They house two types of stretch-sensitive nerve-endings, *primary* and *secondary endings*. In both types of nerve-ending the frequency of impulses increases with stretch, as one might expect. But in primary endings frequency also significantly increases with *velocity* of stretch. Their afferent projections run to the cell body of a ganglion near the spinal cord, whose projections take several different paths (see Figure 15B – D).

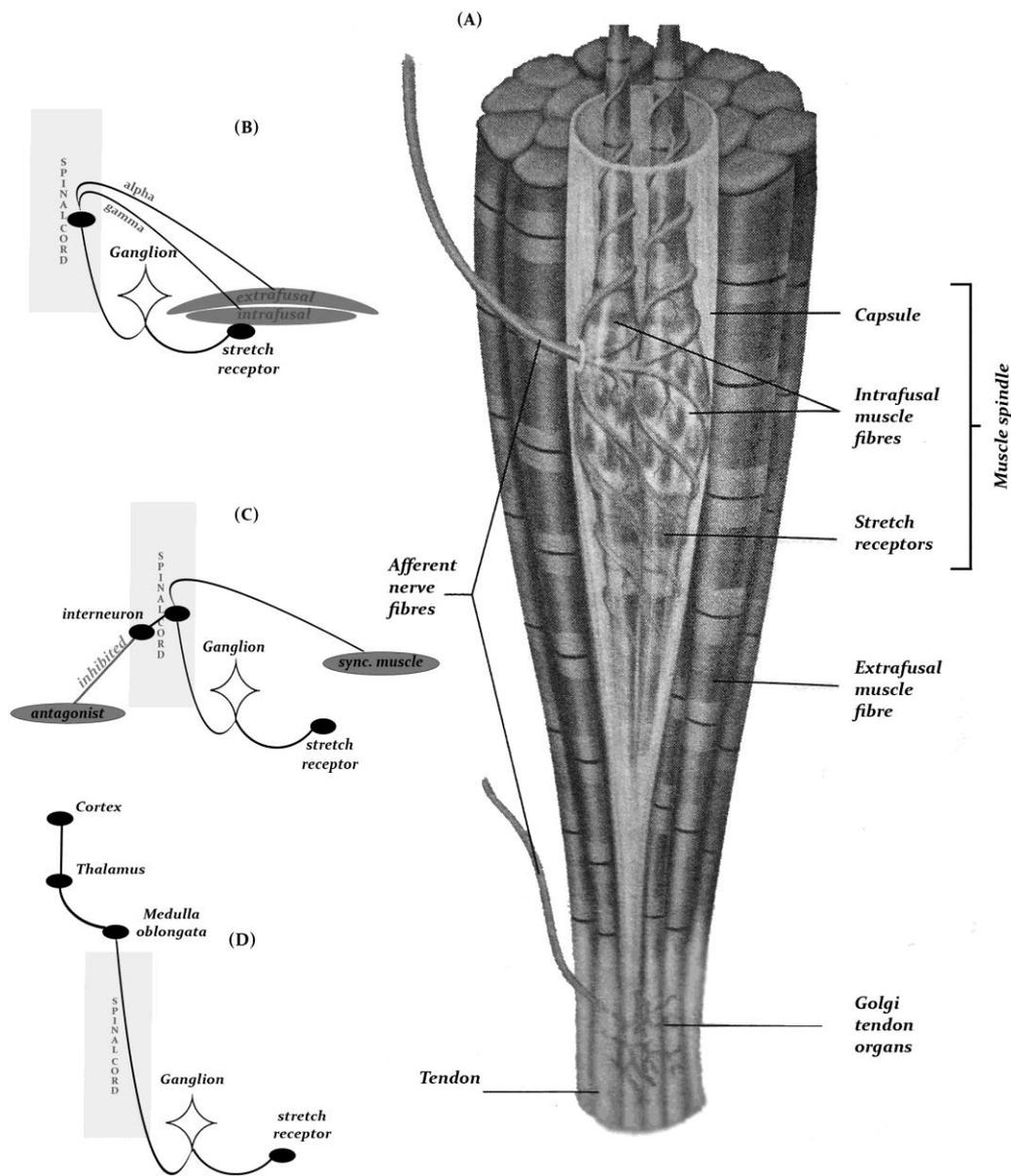


Figure 15 - Neurophysiology of muscle receptors

(A) A muscle spindle and a Golgi tendon organ. For the purpose of illustration the muscle spindle is exaggerated in size, as compared to the surrounding extrafusal muscle fibres.

Adapted from Vander et. al. (2001, p. 338)

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(B) - (D)

Afferent nerve channels running from stretch receptors (see text for details), based on information from Latash (2008a, pp. 261 - 262) and Vander, Sherman, & Luciano (2001, p. 339).

Some of the muscle spindle's paths synapse directly on motor neurons in the spinal cord controlling the bulk of the very same muscle. The function of these paths is to retain muscle tension; for in the absence of muscle tension, sensory signals from the spindles would drop out. However, thanks to a spinomuscular loop, when the muscle contracts, tension upon intrafusal fibres (and thus the spindles) is retained through innervation by dedicated *gamma motor neurons*, coactivated with *alpha motor neurons* that control the bulk of the muscle (see Figure 15B). Other paths synapse on motor neurons controlling muscles that act in synchrony, or on *inter-neurons* that in turn serve to inhibit the activity of motor neurons controlling antagonistic muscles in sympathy with the activity of the muscle projected from (see Figure 15C). And finally, still others run up the spinal cord, through the *medulla oblongata* and the sensory relay stations in the *thalamus*, terminating in the *parietal cortex* (see Figure 15D).¹⁴²

Muscle spindles are the largest, fastest and easily the most complex of the classic proprioceptors. But there are also several other potential sources of information about joint movement. *Golgi tendon organs* are embedded at the junction between skeletal muscle fibres and their tendons, just prior to their insertion into the bone (see Figure 15A, bottom-right). Their location places them poorly to indicate muscle length, but they do function as highly efficient force detection mechanisms. Their nerve endings wrap around the collagen bundles in the tendon, and the consistency of tendons makes them springy. So as the extrafusal muscle contracts, the tension within the tendon increases. Increase in tension stretches the embedded nerve endings producing an increased frequency of impulses. Changes in tension effectively correspond to changes in muscle force, so the embedded receptors produce nerve impulses indicative of the entire range of muscle force.¹⁴³

To make appropriate contact with the material of the foregoing chapter, we need a way of discussing the relationship between these structures and bodily experience,

¹⁴² For good reviews of the function, anatomy and physiology of muscle spindles and Golgi tendon organs (below) see Vander et al. (2001, pp. 337 - 340) and Latash (2008a, pp. 39 - 47, 258 - 263).

¹⁴³ Another important contribution comes from Sherrington's "surface sheet". Although this violates the initial contrast that he used to mark out the proprioceptive field, recent work indicates that skin-stretch contributes to (at least) the sense of finger, arm and leg position (D. F. Collins, Refshauge, Todd, & Gandevia, 2005). Receptors found in joint capsules were also long thought by many (including Sherrington) to provide salient information about the whole range of joint angles. However, evidence that they might only respond to extreme joint angles (Burgess & Clark, 1969) sparked some debate, for a review of which see Proske, Schaible, & Schmidt (1988).

or more specifically, the relationship between these structures and the experience of bodily movement. As an operational marker for that kind of experience, I will focus on whether these structures determine self-ascriptions of bodily movement.¹⁴⁴ Here determination means just that the output of the structure is necessary and sufficient for the self-ascriptive behaviour in question. As it turns out, there are good reasons to think that these sensory structures are neither necessary nor sufficient.

Consider a case in which all of these sources are lost, dubbed by Oliver Sacks as “proprio-blindness”.¹⁴⁵ Jonathon Cole describes the early difficulties of Ian Waterman, soon after he suffered specific loss of the sensory structures we have just described (1995, pp. 24 - 34):

He could not feel anything with his arms, his legs or his body. That was frightening enough, but he had no awareness of their position either [...] [H]e could make an arm move. But he had no ability to control the speed or direction of the movement [...] He realised that was why he had fallen out of bed [...] he was losing the internal feedback of limb position (1995, p. 12)¹⁴⁶

These dramatic effects might suggest that such “internal feedback” is necessary for the self-ascription of bodily movement. To see this, consider a (much more common) situation in which all “internal feedback” from a limb is lost, precisely because the limb itself has been lost, and yet it is felt to move position. Such cases have been documented since (at least) the 16th century CE.¹⁴⁷ In the 19th century they were

¹⁴⁴ I realise, however, that the notion of self-ascription brings its own problems, but for a discussion of those I ask the reader’s patience until the next chapter.

¹⁴⁵ See Sack’s preface to Cole’s book (1995, p. x). Sacks also discusses a very similar case of his own, “Christina: the disembodied lady” in his (1986, pp. 47 - 58).

¹⁴⁶ At points Cole’s narrative gives the impression that Ian knew what was missing under such descriptions as “loss of internal feedback”. However, the tenor of the autobiography is a tale of Ian’s difficulty in comprehending and managing his own situation, and especially in expressing what was wrong to family and friends, who were even more clueless than the doctors and nurses treating him (Cole, 1995, p. 22 ff.). For more on Ian Waterman’s deaf-ferented life see Gallagher (2005, pp. 40 - 64). For a comparison with an even more extreme case (G.L.) see Cole and Paillard (1995).

¹⁴⁷ The first well-documented description of phantom limb sensation is due to the progressive 16th century surgeon Ambroise Paré. Several major (and minor intellectual) figures consistently documented the phenomenon in the centuries leading up to Mitchell’s article, including Descartes in his letters and (most notably) in his 6th Meditation (1642/1984, p. 53). For a detailed review of each of these descriptions and biographical details of their authors, see Finger & Hustwit (2003).

dubbed “phantom limbs” by an American surgeon named Silas Weir Mitchell. Reporting his experience treating casualties of the American civil war, Mitchell speaks of amputees being “haunted, as it were, by a constant or inconstant fractional phantom of so much of himself as had been lopped away – an unseen ghost of the lost part” (Mitchell, 1871, p. 565, as cited in Finger & Hustwit, 2003, p. 683). Phantom sensations are often painful, and often this seems to be the result of the body part in question assuming a determinate posture that is highly uncomfortable. For instance, the fingers of a phantom hand may seem to be twisted in anatomically impossible positions, or the thumb might seem to be pushed through the palm of the hand (Bailey & Mörsch, 1941, pp. 38 - 39). Furthermore, both spontaneous and voluntarily induced sensations of phantom limb movement are typical. As to the former, a phantom hand might seem to spontaneously clench, or adopt a new position (Ramachandran & Hirstein, 1998, p. 1607). Mitchell describes a case in which a voluntary movement of the phantom hand had unfortunate effects:

A very gallant fellow, who had lost an arm at Shiloh, was always acutely conscious of the limb as still present. On one occasion, when riding, he used the lost hand to grasp the reigns, while with the other he struck his horse. He paid for his blunder with a fall. (op. cit., p. 566)

In sum, it would be hard to claim that the output of sensory structures embedded in body parts is necessary for self-ascriptive behaviour concerning the parts in question, when the self-ascriptive behaviour can occur in absence of the parts in which those structures are embedded.

Leaving this matter aside for the moment, consider now a gesture towards sufficiency. Both muscle spindles and Golgi tendon organs can be tricked by artificial vibration. The former are far more sensitive than the latter and when tricked they can produce interesting illusions. If the muscle belly is vibrated at 100 Hz with a physiotherapy vibrator, low amplitude changes in muscle-length drive the stretch sensors within. A train of nerve impulses relayed through the spinal cord drives a sympathetic response in the antagonist, resulting in an involuntary movement. If this movement is gently checked until halted, the spindles will continue to send information up the spinal-cord, consonant with lengthening of the muscle, despite the fact that the muscle is not getting any longer. Typically, a subject in this condition, required to track the angle of the stimulated arm by matching it with the non-stimulated arm, will continue to extend the latter well after the former’s movement has been checked. Indicating that the angle of the arm that they ascribe to themselves is based upon an illusory experience of arm position, itself likely based upon an influx of false information due to the effects of vibration (Goodwin, McCloskey, & Matthews, 1972a, 1972b). Moreover, with such finely placed stretch receptors,

muscle spindles might be thought of as ideal detectors of muscle length. And if a system could be appraised of the relative lengths of muscles either side of a joint, it ought to be able to discern its angle, or its movement *etc.*

However, Mark Latash raises several reasons for blocking the claim that the output of these structures provides sufficient information about bodily movement to be the source of the self-ascriptive behaviour in studies such as these (2008a, pp. 258 - 260). Firstly, though they are sensitive to stretch, nerve impulses from primary and secondary endings will only correlate with extrafusal muscular activity. Say one is moving an arm (as depicted in Figure 16A), in such a case an increase in muscle activity will result in a decrease in muscle length. If the movement is obstructed (as in Figure 16B) then there will not be the same decrease, but there would still be an increase in alpha motor neuron signalling (to move the arm) and thus there would also be an increase in coactivated gamma motorneuron signalling, driving the sensory nerves wrapped about the intrafusal muscles. This could result in a comparable frequency of nerve impulses running up the spinal cord in two situations of differing muscle length. In any case, the information provided should concern not only the length of the muscle itself, but the combined length of the muscle and its tendons. Again, in a situation where a movement is blocked, activation from motorneurons will increase the tension of the muscles. But the same increase in tension will not occur in the tendons. They will retain the same degree of elasticity, and under the force of the movement their length will extend (see Figure 16B).

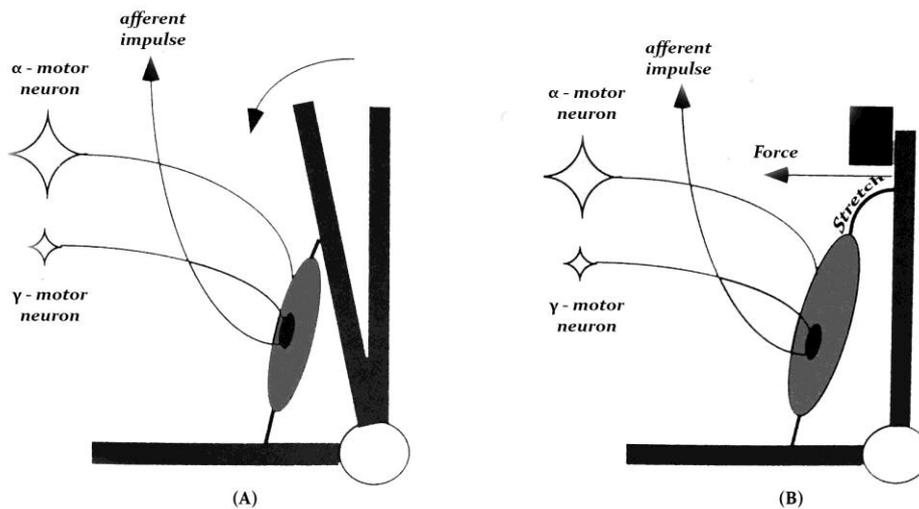


Figure 16 - The ambiguity of muscle spindle information

- (A) An obstructed movement: muscle fibres contract and afferent impulse correlates with contraction.
- (B) An obstructed movement: muscle fibres contract much less and the tendon stretches; nevertheless, comparable afferent impulse to (B).

Adapted from Latash (2008a, p. 259) © 2008 Mark Latash

So there seem to be several physiological reasons why muscle spindles alone cannot be sufficient for self-ascription of changes in position. That might merely indicate that signals from these receptors need to be integrated with signals from other somatic sources, such as Golgi tendon organs and impulses from cutaneous receptors resulting from patterns of skin stretch. However, several converging lines of evidence indicate that central processes might play a more active role than merely integrating sensory information from the periphery.

To appreciate this one needs to take a detour through the development of a contemporarily popular control-theoretic analysis of motor control. And in turn, to appreciate that one needs at least a qualitative grasp on control systems analysis. At bottom, all control systems have a basic common structure. All have at least two components: a *controller* and a *plant*; the latter being the target/controlled system. These two components, controller and plant, map *goal states* and *control signals* in opposite directions. Thus the controller implements the *inverse mapping*: it takes goal states as input and produces control signals as output. The plant implements the *forward mapping*: it takes control signals as input and produces goal states. Together they produce the *identity mapping* of goal states to goal states (Grush, 2004, pp. 378 - 379). Control in the system is either *open-loop*, in the case of a *feed-forward system*, or *closed-loop*, in the case of a *feed-back system*. Say the controller

receives input for a goal state; it sends control signals to the plant, which implements forward mapping from control signals to the output of a goal state. So far this is a feed-forward system. For example, when one sets a microwave oven to defrost for time x , buttons are pressed, the process unfolds for time x and halts when initially commanded to, regardless of the state of (or any feedback from) the item to be defrosted.¹⁴⁸ By contrast, feed-back systems form closed-loops, where the signal flow is bi-directional: the controller receives signals from the output of the plant and sends control signals according to the relative disparity between the output and the desired goal state. So feedback from the plant modifies the control signal driving the plant, forming a closed-loop and ideally keeping everything on track. Not only is the plant regulated by the behaviour of the controller, but if all is set up properly the controller is regulated by the behaviour of the plant. A conventional toilet illustrates how such a system might break down: if the feedback mechanism, i.e., the toilet's ball-cock lever, fails to modify (inhibit) the control signal, the cistern overflows. Other examples are thermostat regulators, vehicle cruise control systems *etc.*

For some time, it was common consensus that most skilled movements were executed open-loop; that is, without the ongoing influence of sensory signals. This seemed especially plausible in cases of often repeated, somewhat ballistic movements, and insights from these quarters were generalised into the concept of a motor program, “a set of muscle commands that are structured before a movement sequence begins, and that allows the entire sequence to be carried out uninfluenced by peripheral feedback” (Keele, 1968, p. 387)¹⁴⁹ A *prima facie* source of support for such a purely “feed-forward” account of motor control is the fact that incoming peripheral sensory signals cannot travel fast enough to influence the ongoing stream

¹⁴⁸ The example is Clark's, see his (2008, pp. 150 - 151).

¹⁴⁹ Keele's (1968) review article evidently captured the zeitgeist, receiving over a 150 citations in the next 15 years, winning it the accolade of being a “citation classic” from *Current Contents* (no. 37, Sept. 12, 1983, see <http://garfield.library.upenn.edu/classics.html>). Desmurget & Grafton (2000, p. 425ff.) provide a nice survey of the development of different concepts of motor control following Keele's article.

of motor signals at the right time.¹⁵⁰ Although this fact is problematic for any feedback analysis of motor control that might restrict “feedback” to peripheral signals, the mere fact that a signal delay exists does not exclusively support a feed-forward analysis. Furthermore, cases of decreased motor performance after peripheral deafferentation (such as Ian Waterman above) indicate that the control system must be dependent upon afferent signals in some fashion.

The framework for a hybrid analysis was inspired by ideas from a slightly different quarter. Since at least the 19th century, perceptual psychologists and sensory physiologists have been developing models of how efferent motor signals and afferent sensory signals interact.¹⁵¹ Much of the work has stemmed from Wilhelm Wundt’s idea of a “sensation of innervation”. The concept (and its disrepute in the 1940’s) is captured by Boring as follows:

All through the second half of the nineteenth century there persisted a confusion between muscular sensations and sensations of innervation. Most [...] believed that the innervation of efferent tracts in voluntary action establishes sensations that arise wholly within the brain and not by way of afferent fibres from the activated muscles. These sensations of innervation, forming the sensory conscious basis of the experience of volition, were relinquished, along with the will, only reluctantly by the psychology of the twentieth century. In the nineteenth century it was never certain whether an experience of effort was a muscular sensation or a sensation of innervation (as cited in Ross & Bischof, 1981, p. 319)¹⁵²

Boring opted for the former option, and many others also took Sherrington’s discoveries of the sensory properties of muscle spindles (and the fast reflexes that their

¹⁵⁰ And this is despite the fact that the axons running from muscle spindles are insulated such that they propagate the fastest signals of all axons in the body. Their primary sensory axons carry a signal at roughly 120 metres per second, and secondary sensory axons are smaller and carry a signal at between 20 to 60 metres per second (Latash, 2008a, p. 42). However, this only accounts for the speed at which each impulse travels between synaptic terminals. Furthermore, efferent signalling will implicate similar delays, *viz.* time-lag between the central generation of motor signals and their actually *resulting* in sensory consequences to be fed-back (Grush, 1997, p. 21 n13; Latash, 2008b, pp. 70 - 72).

¹⁵¹ In fact similar ideas run back to the pre-Socratics, right through Descartes’ time until they were “refuted” in their ancient form in the mid-eighteenth century. For a review of how the concepts and methods evolved over the ages, see Grüsser (1986).

¹⁵² Ross and Bischof (1981) provide a useful review of the fate of Wundt’s sensation of innervation in his own writings.

afferent paths enable) to be responsible for the experience of endogenously generated movement. However, in the 1950's, Roger Sperry and Erich von Holst each independently revived Wundt's earlier theory in accounting for certain visual perceptual phenomena. One of these amounts to a contrast described between "the illusory displacement of the visual field in man when the eyeball is moved passively as when tapped with the finger tips and the lack of such displacement when the same movement of the eye in space is brought about through an active response" (1950, p. 488). According to Sperry, what explains the difference is the presence of a "corollary discharge" from the oculomotor system in the second case, and its lacking in the first case. Using the term "efference copy" Von Holst described a closely related phenomenon. In a situation where an eye is fixed in place and the ocular muscles are paralysed:

[...] every intended but unfulfilled eye movement results in the perception of a quantitative movement of the surroundings in the same direction. Since here nothing happens on the afferent pathways, this false perception can only result from the activity, originated the intention of the eye movement [...] the unmatched efference-copy causes the perception (von Holst, 1954/1996, p. 418)

A simple account of the way in which this common idea has been developed is that there is a central mechanism that uses a copy of the motor signal to compute the likely sensory feedback generated by the motor signal (see Figure 17). This mechanism functions as model of the causal process in which the motor behaviour produces sensory consequences. It is often called a *forward model*. The motor command itself is generated by a system that takes sensory measurement as input and assembles an appropriate series of compensatory motor signals to move the body from its starting state to a target state. This mechanism functions as a model of the inverse of the causal process occasioned by the motor behaviour. It is often called an *inverse model*.

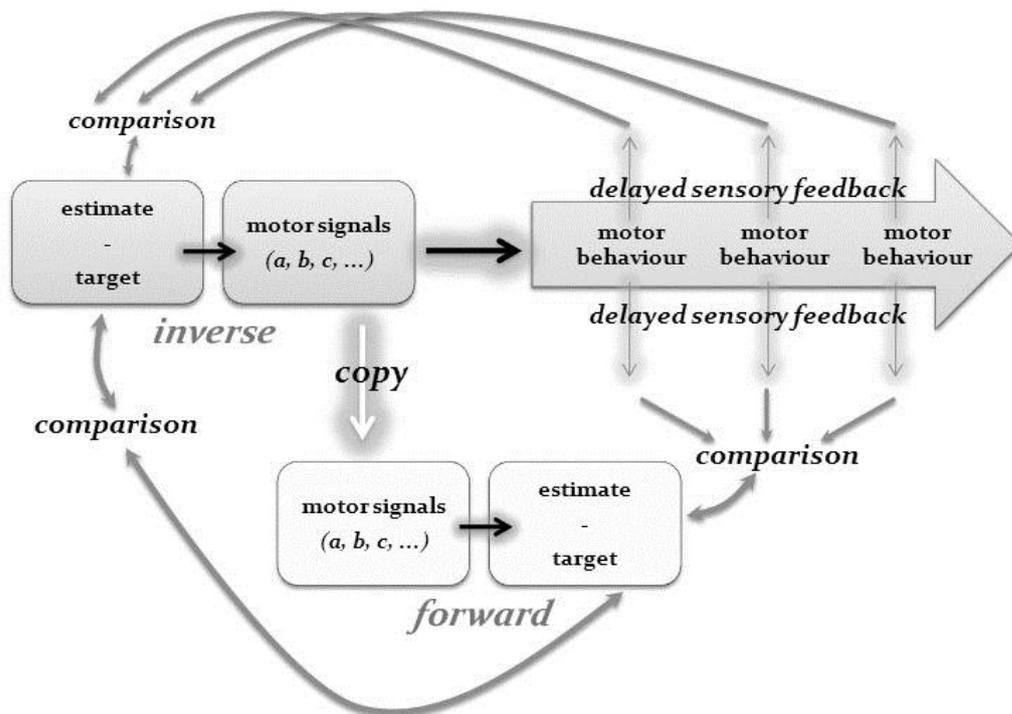


Figure 17 – Forward and inverse modelling of sensorimotor processes

A simplified schema of inverse and forward modelling processes (see text for explanation). Meant as illustration only: for more detailed hypotheses about the measurement, estimation and prediction processes that might adequately inform inverse and forward models, see Wolpert, Ghahramani, & Jordan (1995) and Grush (2004, pp. 380 - 382).

This forms a powerfully simple analysis of motor control. Return to the dispute between feed-forward and feed-back accounts. A forward modelling process for a given movement can be trained by taking a copy of the motor signal as input and comparing predicted sensory consequences with actual sensory consequences.¹⁵³ Once adequately trained, it then provides a candidate solution to the problem of signal latency. In the execution of a movement, certain areas of the brain take a copy of the

¹⁵³ For a nice introduction to the application of forward modelling analyses to issues on motor learning, see Wolpert, Ghahramani & Flanagan (2001).

motor signal and run through a forward modelling process.¹⁵⁴ A prediction of any resultant discrepancy between current state and target state can then be generated and used to adjust the inverse modelling process, and as both processes are hypothesised to occur within the brain, signal latency is far less of an issue. Call this the *forward modelling analysis (FMA)* of sensorimotor control.

This kind of analysis is closely associated with the *comparator approach to agentive experience*, a view according which “the system(s) responsible for agentive experiences are nested within the very mechanisms responsible for motor production” (Bayne & Pacherie, 2007, p. 485).¹⁵⁵ This is typically contrasted with the *narrative approach* (2007), which treats agentive experience as a form of rationalising inter-

¹⁵⁴ A common consensus is that the cerebellum (which receives afferent proprioceptive channels from the arms and trunk) is implicated in encoding forward models (D M Wolpert, Miall, & Kawato, 1998). In their (2000) review, Desmurget and Grafton consider a range of evidence pointing to various divisions of labour between the anterior parasagittal cortex of the cerebellum and the intra parietal sulcus of the posterior parietal cortex. Recent work also seems to be converging on a specific role for the basal ganglia in discerning when appropriate interventions to an ongoing sensorimotor process are required (Tunik, Houk, & Grafton, 2009). Another recent development is the application of similar principles to the observation of actions (Miall, 2003; D M Wolpert, 2003).

¹⁵⁵ For instance a typical study in this line of research, conducted by Shergill et al. (2003), had subjects sit opposite one another and take turns in applying force to one another’s finger tips. Although in each case the subjects were required to apply the same amount of force as they received, the forces escalated turn after turn. In further manipulations it was demonstrated that the estimation of self-generated forces is roughly 50% weaker than the estimation of any force of an external origin of the same magnitude. The explanation suggested is that the comparison of the predicted sensory consequences attenuates the incoming sensory signal if that signal is close to what has been predicted. From here it is typical (though not uncontroversial) to make a simple extension of the ideas of Sperry and von Holst, and claim that the comparison of predicted and incoming signal actually provides a means of distinguishing between endogenous and exogenously generated movement. For discussion of issues surrounding such an inference, see de Vignemont & Fournieret (2004). For a critical discussion of the comparator approach more generally, see Synofzik, Vosgerau, & Newen (2008).

pretation that it is potentially (or perhaps continually) confabulatory.¹⁵⁶ The opposition is certainly not absolute. For instance, Bayne and Pacherie, provide several reconciliatory suggestions (2007, p. 485ff.). In a similar spirit, Synofzik, Vosgerau, & Newen (2008), suggest a two-step account in which feelings of agency (produced by flexible sub-personal weighting of sensorimotor cues) interact with deliberations and judgements in a context sensitive manner, producing a variety of dimensions of agentive experience as a result of both bottom-up and top-down influences. Pacherie (2008) proposes a model of equal generality and flexibility, but one which iterates an FMA structure. On the whole, reconciliatory models are to be favoured in light of the fact that the term “agentive experience” can cover a rather broad range of phenomena with several elusive subtleties (*cf.* Bayne, 2008). In that regard, a point of issue is whether or not a distinction between the experience of agency and the experience of ownership is robust (Gallagher, 2000). And this issue might well turn on whether the experience is dependent upon the voluntary nature of the movement (whatever that might mean) as contrasted with what it is the agent is trying to do (Gallagher, 2007), or perhaps more broadly on conceptions of self-consciousness (de Haan & de Bruin, 2010). Furthermore, if agentive experience is conceived as a form of self-consciousness (which it usually is) then a further variable is the extent to which contents attributed to such states are of normative significance, particularly with regard to the rational concerns of the subject (Bayne & Pacherie, 2007).

Suffice to say that by appealing to an FMA, in an account the experience of bodily movement, I do not mean to thereby advocate the comparator approach mentioned

¹⁵⁶ A key line of support for the narrative approach comes from some classic neuropsychological studies on “split-brain” patients who have undergone a *commisurotomy*, a surgical operation performed on severe epileptics which removes the functional connections between two hemispheres of the brain. Gazzaniga provides a typical illustration:

For example, give a command to the silent, speechless right hemisphere: “Take a walk.” Then see how a subject typically pushes back her chair from the testing table and starts to walk away. You ask, “Why are you doing that?” The subject replies, “Oh, I need to get a drink.” (1998, p. 133)

Observations like this lead Gazzaniga and colleagues to suggest that the left-hemisphere, though functionally isolated from the original stimulus information, is disposed to interpret the actions of the subject such that they form a coherent story (Gazzaniga, 2000; Roser & Gazzaniga, 2004). And the line of argument has been extended to the claim that the very experience of being the agent of a particular action involves such an interpretive process, even in individuals with intact colossal structures. Thus, for instance, Wegner, Sparrow and Wienerman claim that “the feeling that we consciously will our own actions is traceable to an inference we make from the match between our conscious thoughts and observed action” (2004, p. 839). For critical discussion, see Bayne & Pacherie (2007).

above. Moreover, the liberty taken in talking about self-ascriptive behaviour, rather than proprioceptive awareness, or indeed a sense of agency, agentive experience, agentive self-awareness, *etc.*, is to ensure that issues such as these are not prejudged. I would be happy to concede that a bare FMA would need to be supplemented in order to account for these many and various phenomena.

Nevertheless, FMA does provide a useful insight into the sensations of movement that apparently occur in the experience of phantom body parts. In their (1973), Melzack & Bromage were able to induce sensations that resemble those of phantom limb sensations in healthy subjects by anaesthetising the afferent and efferent nerves of their arms. Limb positions were reported that deviated significantly from that of the position of their actual arm, as well as spontaneous changes in position. By contrast, when subjects attempted to voluntarily move their arms, changes in position occurred only in correlation with retained muscle activity. To further explore, whether experienced changes in position bear a regular relationship to attempted yet physiologically suppressed movements, Gandevia, Smith, Crawford, Proske, & Taylor (2006) induced rapid paralysis of the hand by means of modified sphygmomanometer cuff and an intravenous injection of lignocaine. To test estimations of wrist angle, they placed a large protractor on a board obscuring the subject's hand, which itself was mounted (thumb-side up) in a manipulable apparatus that allowed the wrist to extend away from and flex towards the body. Subjects were first asked to indicate the angle of their arm after a movement, then later to make the same movements, with the same degree of force after paralysis. Despite complete paralysis of all relevant afferent and efferent nerves, both the estimates and testimony of the subjects indicated movements of a phantom hand in the direction of the attempted movement. Moreover, these movements exhibited patterns of variation consonant with the degree of force applied. This led the authors to suggest that the occurrence of "attempted movements produced illusions of position change in the direction of intended movement" (Gandevia et al., 2006, p. 709).

Let me gather the ideas together for a moment. I have been arguing that internal modelling of the sensorimotor process (characterised by FMA) supplements incoming information from the peripheral sensory structures classically known as the proprioceptors. At this stage, a little clarification is in order. For the general idea of proprioception can be understood in many ways:

First, there are internal *proprioceptive systems*, namely those channels of information [...] whose source is the body. Second, there is *proprioceptive information*, understood to include all the information available about the body [...]. Third, there is *proprioceptive awareness*, where this is taken to be conscious experience of the body [...] (1995, p. 14)

The term “internal *proprioceptive system*” indicates a demarcation amongst proprioceptive systems, a demarcation between *internal proprioceptive systems* and proprioceptive systems more generally. A distinction worth making here, precisely to allow for the possibility that proprioceptive information, *viz.* information available about the body (moreover, sensory information) might come from through channels within a variety of systems. This is precisely Gibson’s sentiment, when he writes that:

The eyes, ears, and skin can register the behaviour of the individual as well as external events. The eyes, for example, register the movements of the head – forward, backward or rotary – by way of the motions of ambient light [...] The ears register the sounds of locomotion, and of vocalization. The skin registers manipulation. (1966, p. 34)

Although these claims are not particularly controversial today, they had some significance at Gibson’s time of writing. The idea that all the special senses can register the same information (*sc.* “the behaviour of the individual”) runs against the grain of the doctrine of specific nerve energies, that “each organ of sense is provided with a capacity for receiving certain changes to be played upon it, as it were, yet each is utterly incapable of receiving the impression destined for another organ of sensation” (Charles Bell, 1811, as cited in Norrsell, Finger, & Lajonchere, 1999, p. 457).¹⁵⁷ In fact, Gibson’s point ran against the combination of the specific-nerve energy doctrine with the received wisdom from Charles Sherrington, that there are “two primary distributions of [...] receptor organs, each a field in certain respects fundamentally different from the other” (1906, p. 131). Sherrington continues,

¹⁵⁷ The idea, though nascent in Bell’s work was developed by Johannes Müller and apparently established as orthodoxy by Helmholtz (Hergenhahn, 2009, pp. 235 - 236; Norrsell et al., 1999, pp. 457 - 458). The doctrine further suggested that subjects are conscious only of sensations and not the environmental source of stimulation, a thesis that Gibson opposed for most of his career (see notes 27, 47, & 40).

The surface field [...] extero-ceptive as it may be called, is rich in number and variety of receptors to which adaptation has evolved in it. [The receptors of] the proprio-ceptive field in contradistinction from those of the extero-ceptive [...] receive their stimulation by some action e.g. muscular contraction, which was itself a primary reaction to excitation of a surface receptor by the environment. (1906, p. 131)

The contrast that Gibson wants to draw is clear:

all the perceptual systems are proprioceptive as well as exterosensitive [...] information that is specific to the self is picked up as such, no matter what sensory nerve is delivering impulses to the brain [...] information about the self is multiple [...] all kinds are picked up concurrently (1986, p. 115)

Gibson's most famous discovery in this regard was that patterns of retinal stimulation could specify the movement of an observer relative to surfaces in the observed environment (Gibson, Olum, & Rosenblatt, 1955). The basic idea is that the effects of the observer's motion can be extracted from invariant features of the (superficially chaotic) optic flow. The *optic flow field* is a dynamic property of the optic array, which is itself constituted by the set of optic cones convergent on the point of observation. Optic cones should not be confused with colour photoreceptors, rather they are theoretical posits corresponding to (*ex hypothesi*) real structural features of the light reflected by textural elements in the incident environment; or as Lee puts it, "light reflected from each element to the point of observation forms a thin optic cone, with the base of the cone on the element and the apex at the point of observation" (Lee, 1993, p. 44). As the point of observation moves, the optic array exhibits constant change, resulting in a linear optic flow field, where various optic cones will systematically expand or contract and texture elements will delete or accrete (see Figure 18A). To give an example, say you are rushing towards a tree with eyes focussed upon it. At some point, you stop before imminent impact with the tree causes you a mischief. According to the above framework, it is the systematically changing patterns in the optic array itself, as the bases of various optic cones expand and the tree's visual profile begins to loom, that directly inform you of your location relative to the object (Lee & Kalmus, 1980). To explore this phenomenon and its relation to postural regulation, Roly Lishman & David Lee (1973) used an apparatus that would allow two facing walls of a room to lean forward and backward whilst the floor remained stationary. When fixating a wall that is gradually tilting forwards, optic flow is produced in peripheral vision that is consistent with the head moving backwards (see Figure 18). In this condition adults were observed to sway back and forth in compensation, keeping their alignment with wall in sympathy with its

movement and infants could be (perhaps rather cruelly) induced to fall over when the tilting was rapid (Lee & Aronson, 1974).

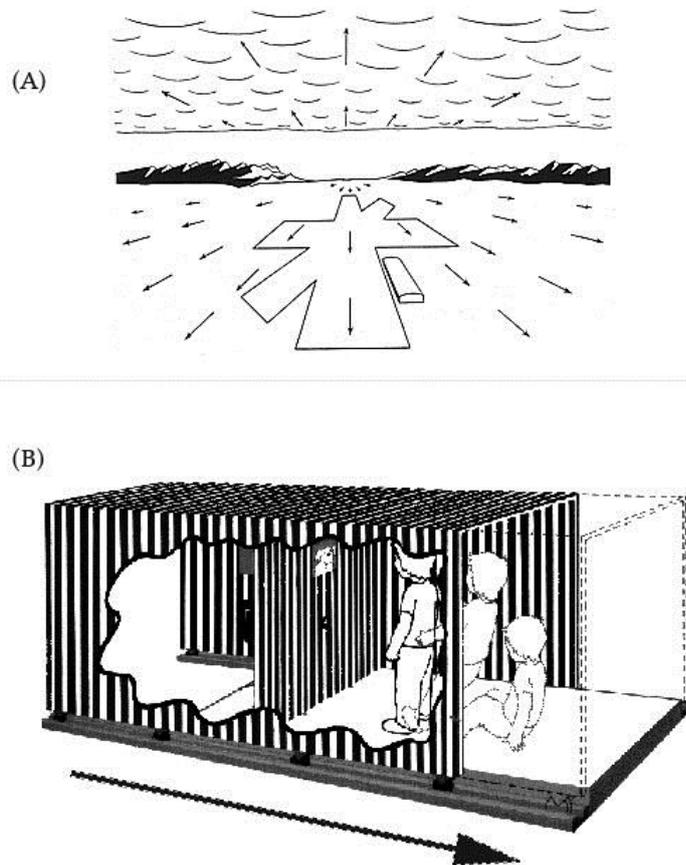


Figure 18 – Gibsonian proprioception

- (A) Optic flow relative to a focus of expansion
 Reprinted from Gibson (1986, p. 124)
 © 1986 Lawrence Erlbaum, Inc.
- (B) The moving room paradigm (see text)
 Adapted from Steven M. Boker's website:
<http://people.virginia.edu/~smb3u/NASPSA9506a/node1.html>

In a homely remark, Gibson suggests that such processes might also be determinants of orientation relative to the ground:

An amusement park device called the Haunted Swing used to be popular. A couple entered what appeared to be an ordinary room and were seated in a swing hanging from a bar running horizontally across the room. The room, not the seat, then began to swing on the shaft from which the seat was suspended. When the room eventually made a complete revolution, the occupants felt themselves go head over heels. What a sensation! (1986, p. 186)

Gibsonians are as confident as Gibson that the principles of optic flow will generalise across all the special sense-perceptual systems. The confidence is well motivated. Accounts of visual, auditory and haptic proprioception can all exploit FMA. As we saw already, FMA itself was exapted from certain hypotheses developed in an account visual perception. Nothing (in principle, at least) prevents the extension of the framework to understanding multi-sensorimotor processes.¹⁵⁸

7.2. The concept of a structural affordance

Another of Gibson's novel contributions to perceptual psychology is the notion of an *affordance*, simple examples of which are seeing a ditch as leapable and feeling a substance as malleable. Gibson took this (largely phenomenological_D) insight, and developed the idea that:

An affordance [...] points two ways, to the environment and to the observer. So does the information to specify an affordance [...] the information to specify the utilities of the environment is accompanied by information to specify the observer himself [...] This is only to re-emphasize that exteroception is accompanied by proprioception (1986, p. 141)

Here is the first example he gives:

¹⁵⁸ For a good example, Mark Wexler's lab is engaged the application of a broadly FMA approach to Gibsonian depth perception (Wexler, Panerai, Lamouret, & Droulez, 2001; Wexler & van Boxtel, 2005).

If a terrestrial surface is nearly horizontal (instead of slanted), nearly flat (instead of convex or concave), and sufficiently extended (relative to the size of the animal) and if its substance is rigid (relative to the weight of the animal), then the surface *affords support*. (Gibson, 1986, p. 127, emphasis original)

The status of affordances is slightly ambiguous. At first blush, when Gibson says that the surface affords support, it would suggest that he wishes to pick out certain properties of the environment. Indeed, when he introduces the term itself he says that the “affordances of the environment are what it offers the animal” (ibid., p. 127, emphasis mine). But then he says this: “The verb to afford is found in the dictionary, but noun affordance is not. I have made it up. I mean by it something that refers to both the animal and the environment in a way that no existing term does” (ibid., p. 127, emphasis mine). How could a term refer to both animal and environment? He then offers a third option (which I think is the most sensible) saying what he wants to do refer to is something that implicates their relationship, for he insists that the term “implies the complementarity of the animal and the environment” (ibid., p. 127, emphasis mine). So we have a few options for interpreting the term. Indeed, there are two extremes. At one end, the interpretation is that ‘affordance’ denotes a property of the environment, which bears a special and particular relationship to an animal. At the other end, ‘affordance’ denotes the (special, particular) relation itself.¹⁵⁹ Although this is a significant matter of theoretical choice, I opt for the latter interpretation; but not entirely without motivation. Treating affordances as rela-

¹⁵⁹ There is of course the possibility that affordances could be both. Norman (1988) aims to provide a distinction between perceived and real affordances. In effect, this is a distinction between the perceived properties of a thing (*viz.* properties that bear particular relations to particular animals) and the actual relation that an animal bears to that thing. Now, if a proponent of DR (ostensibly Gibson himself) wants to give a unitary account of affordances, what is at stake is whether the properties things are perceived to have are really properties that they do have (and whether one should call *those* properties affordances). An alternative possibility would be to dub affordances as the interdependent relationship between animal and environment. It should be noted that much theoretical literature on affordances assumes that affordances are environmental properties that bear particular relations to animals, and occasionally this assumption is made without argument (see Chemero, 2009, pp. 135 - 147 for a review). However, others have argued for the view that affordances are properties of an animal-environment system (Stoffregen, 2003), or relations between the abilities of animals and features of their environments (Chemero, 2003). As the reader can surmise, my preference is for the latter.

tions is the simplest way of capturing the reality of affordances: they are as real as their *relata*.¹⁶⁰

Interpretive issues aside, there are several things about affordances that are clear. The relations are certainly conditional. They only occur within a certain range of possibility, denoted here by the explicit contrasts used (nearly horizontal vs. slanted etc.). In this case, and presumably others, multiple conditions must simultaneously obtain in a particular situation for the instantiation of a particular affordance. If a terrestrial surface were nearly horizontal over one period of time, but only sufficiently extended at another, and rigid at neither time, then there would be no time during which the affordance held at that place.¹⁶¹

Identifying affordances requires identifying relational properties of the environment that are inter-dependent with relational properties of the animal. And they must be identified as such; for only this would give us a handle on the complementary relationship that is putatively at hand in the instantiation of an affordance. But it certainly does not follow from the fact that a *theory* of affordances must identify certain relational properties, that they must be known to the perceiver under that description. In fact this is just what Gibson wished to avoid. If there is anything that is clear about what it means to perceive an affordance, it is that it is precisely not supposed to convey the idea that seeing a surface as affording support involves entertaining (or endorsing) a thought such as:

- The surface I see that is nearly horizontal (instead of slanted), nearly flat (instead of convex or concave), and sufficiently extended (relative to the size of my body) and its substance is rigid (relative to my body) is in such-and-such a spatiotemporal relation to me that the relation affords support.

¹⁶⁰ An analysis of affordances as properties of the environment is bound to get some motivation from linguistic practice. Here the objection might run that it is the ditch that is leapable, not the relation. I would be happy to talk about a relation of leapability if needs be. But as a term of art, 'affordance' need not be hostage to linguistic practice. Writing style probably ought to be though, and for this reason I will occasionally use the simple construction *x* affords *y* for *a*. In all cases though, this can be reconstructed into the rather more awkward construction, *x* stands in affordance relation *y* to *a*.

¹⁶¹ And the same point holds, of course, for conditions holding in different places at the same time. It is also clear that the conditions are not necessarily binary phenomena, but are potentially graded; a surface that is nearly flat may do just as well as a surface that is completely flat. This gradation may further dictate the extent to which an affordance holds (and even in part its evaluation as positive or negative). A slippery surface, for instance, might be some grade between an affordance of support and falling; and this might be an instability to be exploited by the right morphology (cf. Pfeifer & Bongard, 2007, p. 99).

If anything is meant to follow from Gibson's claim that "affordances *seem* to be perceived directly because they *are* perceived directly", it is that the perceiver need not be appraised of affordance relations under any description of them as such in order to perceive them (1986, p. 140).

Nevertheless, in order to study affordances one needs to identify the relational properties of the animal that are supposed to stand in an affordance relation with the environment. In the quoted case, size and weight (at least) seem to be important properties. These may be determined in a number of ways, for instance, relative to conventions of measurement designed to approximate objective physical units, or relative to a particular contextual relation with no such design. The crucial difference here is that the contextual relation is symmetric, whereas the conventional relation is asymmetric. The girl being six feet tall depends upon conventional measurements of feet and inches, but conventional measurements of feet and inches do not depend upon the height of any particular individual. There have been some elegant studies designed to demonstrate the importance of contextual (rather than conventional) relations in the instantiation of an affordance. For instance, Warren and Whang (1987) sought to investigate the extent to which an aperture affords walking from one side of a partition to the other by measuring the frequency of shoulder turning in a group of smaller-than-average participants and a group of larger-than-average participants. Unsurprisingly, a decreased frequency of shoulder turning was found to be positively correlated with an increase in aperture width. But when aperture width was determined relative to conventional physical units, the psychophysical functions of the two groups were fairly dissimilar. It was only when aperture width was determined relative to the distance between the participant's shoulders that the psychophysical functions of the two groups became comparable (indeed strikingly similar).

I now want to argue that there is a particular kind of affordance relation pertaining to the structure of that body, one that can be distinguished from all others. The initial impetus comes from Jose Luis Bermúdez's discussion of a candidate solution to the problem of how to segment the body into parts:

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

Bermúdez suggests that his talk of hinges “provides a nonarbitrary way of segmenting the body that accords pretty closely with how we classify body parts in everyday thought and speech” (1998, p. 156). This is not quite right. It may be non-arbitrary, but it does not exactly capture reference to noses and ears, for example. Still, I want to extract something positive from the idea by noting another point he makes, which is that “awareness of the location of the hinges, as well as of the possibilities for movement that they afford, can plausibly be viewed as an inevitable concomitant of learning to act with one’s body” (ibid., p. 156). A look around his book would suggest that Bermúdez is using the notion of an affordance here in the Gibsonian sense (cf. Bermúdez, 1998, pp. 103 - 129). According to the account of affordances adopted above, affordances are relations. Here the relationship is between a bodily agent and its body. Call this kind of an affordance a *structural affordance* (SA), to repeat:

SA A structural affordance is a relation between a bodily agent and its body.

This in turn enriches the idea of an (ordinary) affordance relation between an agent and environment. On this analysis, *agent-environmental affordances* (leapability, malleability *etc.*) are second-order relations, prior to which are an agent’s first-order SAs. Call agent-environmental affordances AEs for the sake of the distinction. One can define the relationship between SAs and AEs as follows; reading *Q* and *R* as specific relations, *x* as an unspecified relation, and *b* as an individual:

- (1). If there are affordances, then there are SAs.
- (2). There are affordances that are not SAs.
- (3). If *x* is an affordance in which *b* as a *relatum*, then either *x* is an SA relation *R*, or else *x* is an AE relation *Q*, and *b* is a *relatum* in *Q* in virtue of being a *relatum* in *R*.

The definition of the relationship between SAs and environmental affordances is similar to a seminal definition of the notion of a *basic action* (cf. Danto, 1965, p.

142). Here I will understand basic action to mean any instance of an agent trying to maintain or change its bodily compoartment. This is nevertheless meant to be along the lines of the typical understanding. A basic action can be in the service of some further (instrumental) action that an agent is trying to perform, but it need not be. Furthermore, *trying* to act requires the following condition: only when actions are initiated (and usually performed) under the impression that the actual performance is *possible* might we say that the agent *tries* or is *trying* to perform that action. This is one side of the philosophical coin paid in a trying-analysis of action, the other side of which is the metaphysical possibility of the action's total failure. O'Shaughnessy provides a description of this latter:

There is a perfectly genuine sense, suppressed by philosophers of a common-sensical orientation, in which *no* event, including intended act-events, can be foretold as an *absolute* certainty. That sense is this: the world is known to have harbored freak happenings; this is a permanent potential of the world, and of no situation can it be said: "This situation bears a charmed life, it is guaranteed not to harbor such a freak". (1973, pp. 365 - 366)

For our purposes the point here is not (or at least ought not to be) the mere suggestion of the metaphysical possibility of a radically indeterminate world. Rather the significant insight is that when we try to perform some basic action, such trying is always engaged in spite of the possibility that reality may not co-operate. But nevertheless, "trying entails the presumption on the agent's part that success is at least a remote possibility" (O'Shaughnessy, 1973, p. 367). If this is correct then there ought to be some way of specifying the constraints on the action in question, and some way of ascribing sensitivity to such constraints to the agent that licenses genuine ascription of trying. And there also ought to be a general term that encompasses the veridical case and the non-veridical case, in which the agent tries under a false impression of those constraints. I will use the word *anticipation* as such a general term: one only tries to do what one anticipates to be possible. I will use the term *practical knowledge* as a label for the case in which an agent's anticipations are veridical: one only knows what one can do in virtue of anticipating what is possible. This possibility is far narrower than the general metaphysical possibility that O'Shaughnessy entertains. An agent's possibilities for action are set by an agent's SAs. Hence, anticipations constitute practical knowledge relative to the SAs involved in the basic action an agent tries to perform.

The ascription of practical knowledge to those that try and perform basic actions also enriches a canonical theory of the intentionality of action, originally advanced by John Searle (1983, pp. 8, 85, 94). On Searle's view intentionality in general has

two salient features, it has a world-to-mind direction of fit, and a mind-to-world direction of causation, each of which he describes as follows:

When I try to make the world be the way I intend it to be, I succeed if the world comes to be the way I intend it to *be* (world-to-mind direction of fit) only if I *make* it be that way (mind-to-world direction of causation). (Searle, 1983, p. 96, emphases original)

This match between what the agent tries to do and what actually happens is only intelligible given the possibility of a mismatch. Part of Searle's concern here is the possibility of causal exclusion (cf., 1983, pp. 89 - 90). The general platitude is that if an agent is not causally involved in the occurrence of an event, the event is either not an action of hers or not an action at all. But equally important is to note that, if the agent is taken to be successful in trying to make the world the way they intend it to be, a background assumption is the possibility of failure. Once again, what I mean to indicate here is not merely the metaphysical possibility of a total failure, the "permanent potential" of an uncooperative world. Far more significant (in basic action at least) are the possibilities for an agent's failure that are simply beyond the specific bounds of the basic action she tries to perform. We can only get a grip on such a failure if we attribute to an agent a false anticipation of their SAs. That is, the failure in question is a failure to practically know the SAs of her body, where the SAs in question are specific to the basic actions that an agent tries to perform.

One way in which in the discussion so far has been deficient is that it wholly neglects that fact that the body *itself* has structure. Indeed, the reader might recall that the concept was initially discussed as a corollary to an analysis of body parthood, namely, Bermúdez's hinge analysis. A positive feature of the hinge analysis is that it forefronts the fact that parts of the body have the relational property of being interlocked with one another. Furthermore, by employing "the idea of a body part that allows one to move a further body part" in the analysis, Bermudez likely intends to indicate the importance of this property in this regard. The assumption being that it is in virtue of the fact that its body parts are interlocked with one another that a bodily agent is able to act. But this cannot be sufficient for the possibility of basic action. It is not so much the interlocking of parts that is important, but rather (as a consequence) the manner in which in which the parts causally interact, in virtue of their properties. Moreover, in absence of reasons to think otherwise, one ought to allow for the possibility of part-whole causal interaction, in addition to the possibility of part-part interaction fore-fronted by Bermudez's hinge analysis.

Here then is a fuller definition unpacking the notion of a structural affordance further:

- SA*** A structural affordance is a relation between a bodily agent b and the properties I^P and I^W of parts of its body, in virtue of which a basic action φ is possible for b .
- I^P is the property of being causally interactive with other parts $x_1, x_2, x_3, \dots, x_n$ in virtue of their properties $P_1, P_2, P_3, \dots, P_n$.
 - I^W is the property of being causally interactive with the whole body in virtue of its properties $W_1, W_2, W_3, \dots, W_n$.

This is closer to being satisfactory.¹⁶² Now the main work is in showing that reality of structural affordances is plausible. I will do this by means of a potted review of research in motor coordination.¹⁶³ The aim is to make some piecemeal progress by picking out at least a few candidate P s and W s (marking them as (P) and (W) as I go along). In doing so, I hope to highlight some of the causal processes on which SAs are dependent. I will also minimally address how something might count as a bodily agent, and thus how something can count as a basic action of a bodily agent (when I do that it will be obvious I am doing so). My treatment of these will be somewhat cursory, but sufficient to indicate the direction I think a treatment of SAs should take.

¹⁶² An alternative (suggested to me by Sascha Fink) would be to describe structural affordances literally as structures with sets of relations defined upon them. This would be something like the following:

- SA**** A structural affordance is a relation between a bodily agent b and the relations I and J governing the set of b 's body parts, in virtue of which a basic action φ is possible for b
- I is the relation of part x causally interacting with other parts $x_1, x_2, x_3, \dots, x_n$
 - J is the relation of part x causally interacting with the whole body

An interesting line of future research would be to explore the implications of this and other alternative ways of defining structural affordances.

¹⁶³ A caveat: Here follows a trail of phenomena employed to illustrate the path to an empirically real concept of a structural affordance. It should not be treated as a rigorous argument to demonstrate that it ought to lead there and not somewhere else. It also should not be treated as a rigorous defence of a dynamical systems theory of motor coordination. That task has been undertaken by several authors far more qualified to speak to the relevant issues (Kelso, 1995, 2002; Thelen & Smith, 1994; Turvey, 1990). The science of coordinated bodily movement (like any science) is a constantly evolving field, full of its own controversies. It is not hard to see that even fairly comprehensive review articles hardly manage to hide the axe that they are grinding (cf. Turvey, 1990). The devil is ever in the details of theoretical interpretation, and partly as a result I have tried to down-play the heavier aspects of the theories of the researchers whose work I draw upon. Though for some discussion of those heavier aspects, see §9.5.

7.3. The empirical reality of structural affordances

A significant property of multi-jointed agents is *motor redundancy* (see Figure 19). Latash summarises a favourite example, which he attributes to the father of the concept, Nikolai Bernstein:

Touch your nose with your right index finger. Now try to move the arm without losing the contact between the fingertip and the nose. This is easy to do. This means that one can touch the nose with very many combinations of arm joint angles. Nevertheless, when the task was presented, you did it with a particular joint combination. (Latash, 2008b, p. 35)¹⁶⁴

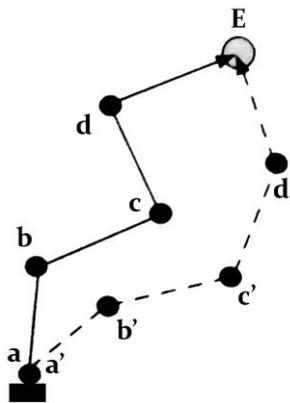


Figure 19 – Redundancy in a four joint limb

See main text.

Adapted from Latash (2008b, p. 36).

His point is that your arm has the (*P*) property of being highly redundant in a certain sense. A glance at Figure 19 can help clarify. Assume an idealisation of your arm as having only four joints (shoulder, elbow, wrist and first knuckle), where each joint has only one degree of freedom. In order to reach endpoint E, you could assume angles a, b, c & d. But you could also reach E by assuming a', b', c' & d'. Indeed, you could also reach E by assuming a'', b'', c'', d'' etc.

Redundancy thus described, gives rise to a very simplified instance of what is often known as *Bernstein's problem*. As Michael Turvey notes, when considered as a (*W*) property of the whole body, motor redundancy is all the more complex:

¹⁶⁴ Latash makes something of an understatement here. He is well aware that there are not just “very many combinations of arm joint angles” that will bring the finger to the nose. As he notes later, potentially the number of combinations is infinite (Latash, 2008b, p. 36).

As characteristic expressions of biological systems, coordinations necessarily involve bringing into proper relation multiple and different component parts (e.g. 10^{14} cellular units in 10^3 varieties), defined over multiple scales of space and time. The challenge of properly relating many different components is readily illustrated [...] There are about 792 muscles in the human body that combine to bring about energetic changes at the skeletal joints. Suppose we conceptualize the human body as an aggregate of just hinge joints like the elbow. It would then comprise about 100 mechanical degrees of freedom each characterizable by two states, position and velocity, to yield a *state space* of, minimally, 200 dimensions. (1990, p. 938)

The term Turvey uses at the end, state space, denotes a concept from the dynamical analysis of physical systems. It refers to an abstraction of all possible states that a system can assume, where each point in the space marks a potential state of the system being modelled. Suffice to say that a 200-dimensional space of possibilities (which itself is a simplification) is of mind-boggling complexity. Biological movements regularly trace a path through the high-dimensional spaces that Bernstein's problem reveals. But interestingly, they regularly exploit the variety of options; they trace *different* paths to reach the same goal. And this is the case even in stereotyped movements performed by highly trained individuals. As Latash conveys, Bernstein discovered this himself in a careful study of labour workers (Latash, 2008b, p. 31). He attached small light-bulbs at key points on the bodies of blacksmiths, as well as on their familiar hammer. Then he photographed their movements using an innovative high-speed shutter, whilst they performed a typical hammer-strike. What the photos revealed was that across strikes there was much less variability in the movement of the tool than in the various individual joints moving it. This suggests a simple and smart solution to Bernstein's problem: treat the system as if it had fewer degrees of freedom by lumping components together. J. A. Scott Kelso illustrates the idea nicely:

During a movement, the internal degrees of freedom are not controlled directly but are constrained to relate among themselves in a relatively fixed and autonomous fashion. Imagine driving a car or a truck that had a separate steering mechanism for each wheel instead of a single steering mechanism for all the wheels. Tough to say the least! Joining the components into a collective unit, however, allows the collective to be controlled as if it had fewer degrees of freedom than make up its parts, thus greatly simplifying control. (1995, p. 38)

This solution motivates a fairly autonomous conception of components of a motor task, where "elements of a system are not controlled individually, like segments of a marionette's body by attached strings, but united into task-specific [...] *structural*

units” (Latash, 2008b, p. 53, emphasis original).¹⁶⁵ According to this gloss, *task-specific structural unity* is a (*P*) property of the blacksmith’s arms. Parts of the blacksmith’s arm work in cooperation, stabilising and compensating for one another’s variable behaviour to consistently reach the target.

Structural unity can also be seen as a (*W*) property of the whole body in an activity like locomotion. To give an intuitive illustration, consider how one might approach the design of systems capable of human-like walking. Humans, like all three-dimensional objects, have a minimum of three degrees of freedom: a body can pitch forward and back, roll side-to-side, and turn (yaw) left or right. If treated as structural unit then it might be possible to keep the number of degrees of freedom in a locomotive body fairly close to three. Pitching and rolling are less technically known as leaning. Too much leaning can lead to falling over, so leaning whilst walking ought to somehow be stabilised. The problem can be conceived by imagining the walker as an inverted pendulum on either the sagittal or frontal plane. The aim is to keep the ball of the pendulum roughly perpendicular to a flat walking surface (idealized as having no incline or decline). What is required is to achieve a sustained natural pendular motion by instantiating the (*W*) property of stably coupled components. One way of doing this would be to make sure that pressure exerted upon the walking surface is kept within a safe area inside the foot edges, by making sure that the foot of the stance leg remains flat on the floor whilst the swing leg is brought forward (Wisse, 2005, pp. 113- 114).¹⁶⁶ But this is harder than it sounds. All

¹⁶⁵ Structural units are sometimes also referred to as synergies, and under that guise their study dates back to Bernstein’s work. In particular, Israel Gelfand (a mathematician) and Michael Tsetlin (a physicist), both of whom worked closely with Bernstein (see Latash, 2008b, pp. 34 - 35) developed several principles to demarcate the essence of structural units/synergies. A detailed inspection of these is not required for present purposes, but it is worth at least providing the reader with Latash’s summary

Axiom – 1. *The internal structure of a structural unit is always more complex than its interaction with the environment (which may include other structural units).*

Axiom – 2. *Part of a structural unit cannot itself be a structural unit with respect to the same group of tasks.*

Axiom – 3. *Elements of structural unit that do not work with respect to a task [either]*

Axiom – 3a are eliminated and a new structural unit is formed or

Axiom – 3b find their own places within the task.” (2008b, pp. 58 - 59)

¹⁶⁶ As the expression flat-footed connotes, this is not in fact how most humans ought to place their feet. As Wisse & van Frankenhuyzen (2006, p. 144) point out, the shape of typical human feet actually channels the centre of pressure forwards in the progression of the step cycle. This fact has been reflected and exploited in the design of prosthetic feet, and ‘passive dynamic walkers’ (see next page and next note) since McGeer’s early prototypes.

potentially destabilising elements would require continuous monitoring and control, which adds considerably to the basic three-dimensions.

Enter the *wild-walker*.¹⁶⁷ The Delft Biorobotics lab have developed a simple construction that they call *Mike*, to demonstrate that the task specified above can be more simply executed by coupling components to one another such that they collectively produce a self-stabilising behaviour.¹⁶⁸ Mike has two symmetrical pairs of legs, each leg in a pair is fused to the other, one pair moves outside the other, and each pair has a knee joint (see Figure 20A). To facilitate movement on a flat (rather than a declining sloped) surface, Mike has oscillatory pneumatic actuators either side of his outer hip joints, so called *McKibben muscles*. There is also a muscle at every knee joint extending the leg, counteracted by a spring on the other side (see Figure 20B). Muscle activity is regulated by manually tuned timing and a simple switching mechanism in the inner and outer feet that antagonistically couples the hip muscles. So, for example, when the inner foot mechanism switches, the outer knee mus-

¹⁶⁷ Otherwise known as a ‘passive-dynamic walker’, or sometimes referred to as a ‘limit-cycle walker’ as ideally it would implement self-sustaining oscillations which would resist deviations from a limit point trajectory (D. G E Hobbelen & Wisse, 2007). See Collins, Wisse & Ruina (2001, p. 608) for brief description of the ancestors of modern-day designs: clever tinker-toy “ramp walkers” that were purely passive, but were not designed to mimic natural human gait and so exhibited rather comical waddling motions. Tad McGeer (1990), likens the design approach to that taken in the development of early flying machines. Wilbur & Orville Wright (and their predecessors) initially mastered the dynamics and control of free gliding before adding a fairly unsophisticated motor (Pershey, 2005). Similarly, research in wild/passive-dynamic walking primarily involves the design, simulation and test of walking machines with minimal (if any) motor resources, making “passive-dynamic ramp walkers [...] the gliders of walking robots” (S. Collins et al., 2001, p. 609). Rather than using endogenous power to control, maintain, stabilise and co-ordinate locomotion, an appropriately designed passive dynamic walker is set in stable motion by a deft push. Gravitational forces and the inherent dynamics of physically coupled components with human-like geometry do the rest. Obviously this requires a sloped surface in *purely* passive setups, but flat surface locomotion is possible with the addition of very simple oscillatory motors to an appropriate structural context for a limit cycle (S. Collins, Ruina, Tedrake, & Wisse, 2005; S. Collins et al., 2001; D.G.E. Hobbelen & Wisse, 2008; Iida, Gómez, & Pfeifer, 2005; Iida & Pfeifer, 2004).

¹⁶⁸ Two other robots were built upon similar design principles. One capable of walking on level floors, called “Latch Walker”, so-called because its energy input is regulated by a wound spring and a latch at the hip joint alternating power transfer. The other only walks a sloped declining surface, and is named “Museon Walker” after the science museum in the Hague, possibly a consequence of its persistent selection as a demonstration of passive dynamic walking at the Delft Biorobotics lab. (Mike is probably called Mike because of his “muscles”). Videos are available at <http://dbl.tudelft.nl>.

cles are deactivated, the muscles at front of the outer hip are activated. The knee muscle is reactivated just under half a second later, and as the outer foot strikes, the mechanism switches the power from the front hip muscles to those at the back. As a result, when set to walking Mike exhibits a robust gait, with a fairly fast leg motion of even length (see Wisse, 2005, pp. 116 - 122; Wisse & Frankenhuyzen, 2006). In fact this is the key, as Mike's intrinsic dynamics essentially implement the following two principles: "You will never fall forward if you put your swing leg fast enough in front of your stance leg. In order to prevent falling backward the next step, the swing leg shouldn't be too far in front" (Wisse, 2005, p. 122, italics removed).

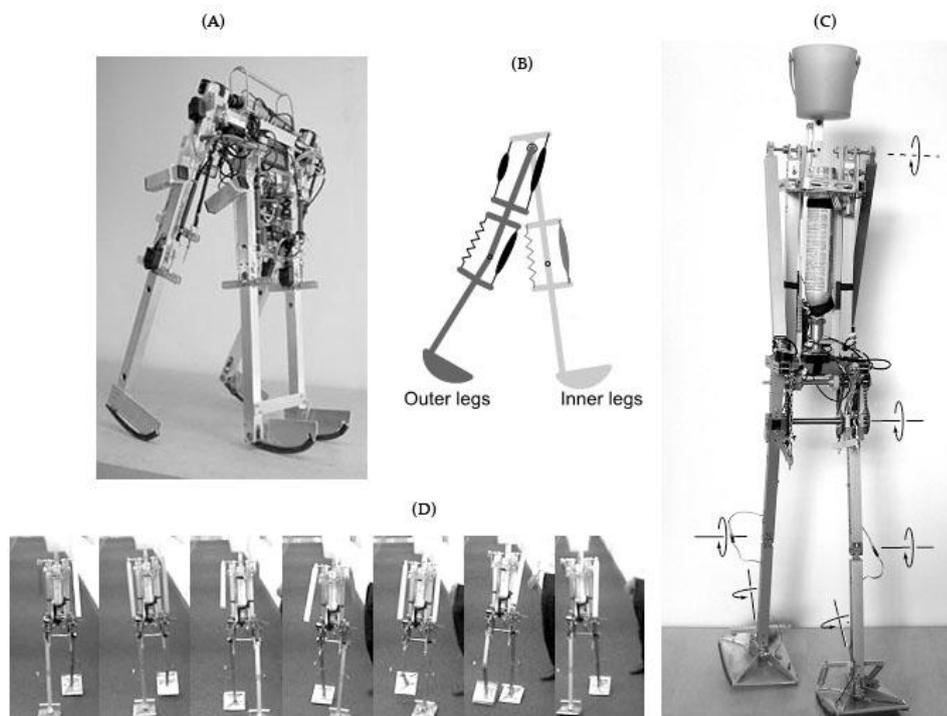


Figure 20 – Humanoid walker prototypes at the Delft Technical University Biorobotics lab

- (A) *Mike*, a quadruped two-dimensional walker with actuated hips and knees.
 - (B) "McKibben muscles" situated on *Mike*'s hips and knees (see text).
 - (C) *Denise*, a biped two-dimensional walker with unactuated knees, a passive upper body, countering arms and an ankle joint modelled on a skate-board truck.
 - (D) Video-stills of *Denise* in motion (video available at <http://dbl.tudelft.nl>).
- All pictures from Wisse (2005), reprinted with permission from the author.

Mike's structure presents a solution to a tendency for unstable pitching that keeps degrees of freedom low. In fact, he is built to have only three degrees of freedom, one at his hip, and one for each pair of knees. As a result Mike only moves in the sagittal and horizontal plane. He looks like someone marching from the side. But from the front he looks like someone shuffling on crutches, for the lateral stability inherent in his inner-outer leg design foregoes the problem of *lateral leaning*. A

slightly more humanoid solution to this would be lateral foot-placement; but a potential drawback is that reducing lateral leaning in this way could lead to an increase in pitching instability. Martijn Wisse suggests a compromise:

Similar to skateboards and bicycles, one could use *steering* (yaw) to stabilize *lean*, at least as long as the system is moving forward with sufficient velocity. The same principle is applicable to walking, and can be implemented in walking robots with an ankle joint that kinematically couples lean to yaw. (2005, p. 125)

Working on these principles the Delft team built *Denise*, a three-dimensional walker. Denise only has two feet, she also has a passive upper body, two counter-swinging arms rigidly coupled to hip angle, and a (skateboard-like) lateral leaning ankle joint, resulting in five degrees of freedom (see Figure 20C). Her ankles and knees are entirely passive, and her hip joint reciprocally couples her two legs to one another. Her hip motion is controlled in a similar manner to Mike's, but with less actuation. At each step, a switch in the striking foot activates the contralateral hip muscle, and releases a latch at the knee joint, allowing the leg to bend and then swing back to extension. Because of the ankle joint, each of Denise's steps is slightly laterally displaced. But each step drives her forward to another step: when the right foot strikes, the left knee is released, and the hip muscles start pulling the left leg forward, Denise's weight shifts forwards, the leg extends and the foot lands, repeating the process for the contralateral leg. Consequently, she swaggers along stably at around 2.5 km/h (see Figure 20D).

To the extent that Mike and Denise provide models of actual walking, they provide nice examples of whole body structural unities that could be constituent properties of an SA. From my phrasing the reader might guess that there is a caveat in the offering. It would be overly permissive to call these delicately balanced machines *agents*. Not because they are machines, but because they do not exhibit enough of the right

kind of *task-specific flexibility*.¹⁶⁹ My aim is not to impose any particularly firm legislation here. Agency is a graded phenomenon, full of subtleties that deserve their own extended treatment. But it will be useful to at least note that Mike & Denise are at the wrong end of the scale. Something I glossed over above was the fact that although Mike is a two-dimensional walker, he does have a tendency to gradually steer, and this can lead him to happily crash into a wall or onto an ill-affording surface. I also glossed over the fact that Denise falls on her front in roughly one in twenty steps, usually due to an irregularity in the surface. The solutions to these problems are fairly simple (though doubtless not so simple to implement). What Mike needs are some surface and obstacle sensors, and some way of changing his yaw angle. Denise simply needs to swing her leg forward faster when her upper body tips too far over her centre of gravity. The point here is that they do not exhibit this kind of flexibility, not that they could not.

It ought to be clear also that I am not ruling against fairly automated processes being instances of agency. Indeed, I am happy to allow that reflexes of various kinds are actions, provided that they exhibit enough task-specific flexibility. Let me illustrate something closer to the agency end of the scale by recounting the wonders of the decapitated frog. In the 18th and 19th centuries, German scientists made significant advances in vertebrate physiology by studying what these creatures could do with only their spinal and peripheral nervous system. In a brief survey of this work, Latash describes Eduard Friedrich Wilhelm Pflüger (1829 – 1910) hanging a headless frog on a frame and applying a small patch of paper soaked in weak acid solution to

¹⁶⁹ Cf. Metzinger (2003a, pp. 40 - 41, n20) for hints at a similar deflationary gesture. I fully intend the criterion that I advance to be significantly weaker than criteria usually advanced as necessary for a “voluntary” action. Hence, by stipulation in order to perform a basic action, an agent need not be a person, in *e.g.* Harry Frankfurt’s (1971) sense of the term. An agent need not be a person in Strawson’s (1959/2003, pp. 94 - 98) or in Dennett’s (1969/1983, pp. 90 - 98) sense either. However, given my sympathies with a trying analysis of basic action, I do require that a basic action performed by an agent be an instance of trying. This has the consequence that both anticipation and practical knowledge can be sub-personally attributed; though they need not be necessarily so attributed, they can also be states of a person if the agent meets the relevant conditions for personhood. For instance, if one of the sufficient conditions for personhood is the attribution of conscious states to a material object (*cf.* Strawson above), and the anticipations are of *e.g.* certain continuities in perceptual sensation, then this would be an instance in which anticipations (and practical knowledge in the veridical case) are attributed at the personal level. However, if a system does not meet requisite conditions for personhood, and/or the anticipations are of *e.g.* a predicted match between sensory input and motor output, then this would be an instance in which anticipations (and practical knowledge in the veridical case) are attributed at a sub-personal level.

a spot on its back. Soon after application, the ipsilateral hindlimb produced a smooth wiping motion, immediately removing the offending substance (see Figure 21A). Pflüger then chopped that leg off, reapplied the solvent, and observed that the other leg did the same but after longer delay (Latash, 2008b, p. 23).

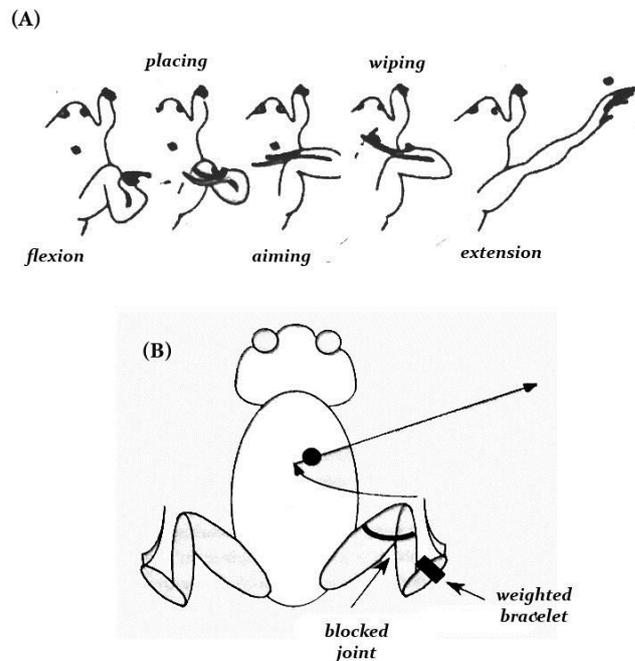


Figure 21 – Wiping reflex in the spinalised frog

- (A) Stages of the wiping reflex, adapted from Berkinblit, Feldman, & Fukson (1986).
 (B) Two perturbations of the wiping reflex studied by Berkinblit et al. (1986), adapted from Latash (2008b, p. 45).

In more recent years, work on spinalised frogs (surgically incised just above the medulla oblongata) has revealed the wiping reflex to have considerable flexibility. Berkinblit, Feldman, & Fukson (1986) applied various perturbations to the hindlimb to explore whether and how it would adapt. In one study they restricted rotation of the knee-joint to about 5° , and although usually the joint would move through about 50° , the very first wipe induced was successful. After that they placed a cast on its ankle, again a successful wipe, first time. They then applied a bracelet to the segment between the two most distal joints, equal to the weight of the entire limb itself, and the wiping reflex was still successful (see Figure 21B). Incidentally, this provides a nice example of how the very redundancy that Bernstein's problem highlights "provides an essential source of versatility" (Kelso, 1995, p. 87). But more to the present point, observing these movements must have exhibited a striking *telos*.

Apparently Pflüger was so “astonished at the perfect nature of this reaction” that he “supposed the existence of a “spinal soul”” (Fukson, Berkinblit, & Feldman, 1980, p. 1261). I would not go so far. But I would go so far as to say that these frogs are far further towards the agent end of the scale than Mike and Denise.

Despite this relatively straightforward (if permissive) criterion for agency, the presence or absence of an affordance for basic action can be rather labile. An interesting case of this is found in the development of infant locomotion. Most newborn infants exhibit alternate stepping movements if their upper body is supported, though these seem to “disappear” after a couple of months (Zelazo, Zelazo, & Kolb, 1972). Beyond this, Esther Thelen and colleagues made several further observations. First is that these movements are “not random thrashings of the legs, but rather organized movements with a recognisable structure in time and space” (Thelen & Smith, 1994, p. 11). Second is that these babies actually exhibit increased movement of their legs in the putative non-stepping period: they become rather fond of kicking their feet in the air as they lie on their back. These are rather striking when combined with a third: that these supine kicking movements exhibit the same kinematic profile (*viz.* structure in time and space) and a similar pattern of muscular activity to their precocial stepping movements (Thelen & Fisher, 1982). From these and other data points, Thelen & Smith conclude that “what had previously been considered as distinct and separate behaviors” are in fact “manifestations of the same motor output performed in two different postures” (*op. cit.*, p. 11).

So what had changed? Why do these kids stop stepping when they can perform the movement involved perfectly well? A further line of Thelen’s research indicates that the affordance fades as they lose the (*P*) property of a delicately balanced force-to-mass ratio. Newborns get fatter faster than their muscles can handle, they are simply not strong enough to keep their (perfectly healthy) chub in check. With this in mind Thelen, Fisher, & Ridley-Johnson (1984) compared stepping frequency with the rate of change in newborn infants’ body mass over the first month of life. They found that “infants who had gained the most stepped less” than infants who were gaining weight more slowly, suggesting that it was the *rate* at which body mass increased rather than simply body mass itself that caused the stepping reflex to recede (*ibid.*, p. 485). To further probe the ways in which muscle strength is an index of the bounds of movement, they investigated the extent to which stepping could be influenced by adding and relieving weight. And unsurprisingly, after being loaded with the equivalent of an extra two weeks’ worth of body mass, infant stepping decreased significantly in frequency and height, whilst submerging them in a bath of warm water (see Figure 22) produced the opposite effect (*ibid.*, p. 489).

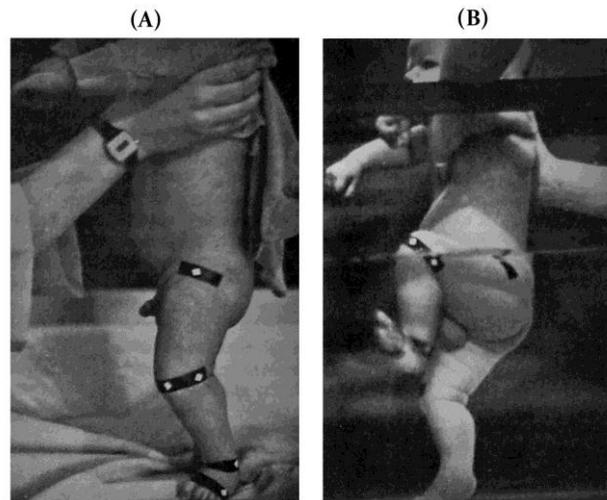


Figure 22 – Stepping reflex in the human infant

- (A) 3-month old tested for stepping with feet on table; infrared light-emitting diodes are visible on the hip, knee, ankle and toe joints.
 (B) Stepping reflex induced in the same 3-month old when submerged in warm water.
 Both from Thelen & Smith (1994, p. 12).

However, if this is to be attributed as an action, it needs to exhibit the requisite task-specific flexibility. Some indication of this again comes from Thelen's work. She discovered that 7-month-old infants (*i.e.* infants who might otherwise be thought to be at a non-stepping age), if provided with upper body support, produced pronounced and smoothly coordinated stepping movements as soon as they were placed on a treadmill (Thelen, 1986). Soon after (inspired by studies on quadruped gait) Thelen, Ulrich, & Niles (1987) placed infants of the same age on a split-belt treadmill (see Figure 23A & B), and observed smooth adjustments of swing and stance when the belts were run at different speeds. This work has been followed-up more recently in an elegant study by Yang, Lamont, & Pang (2005). From their sample of 5 -12-month old infants they report that the majority could not only rapidly adapt to belts running at 2:1 ratios, but could also produce coordinated stepping on belts running in opposite directions (see Figure 23E)!

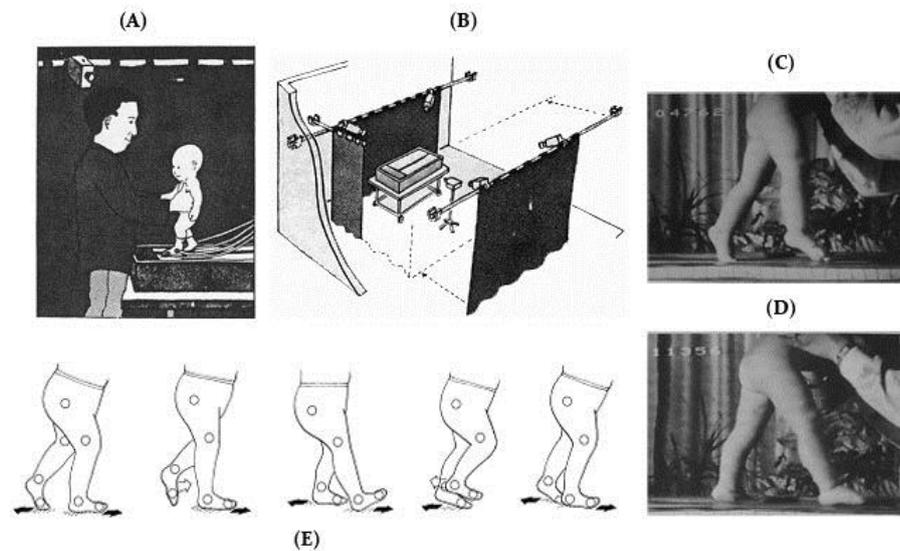


Figure 23 – Treadmill stepping patterns in pre-walking infants

- (A) Infant being supported on a split-belt treadmill.
- (B) Split-belt treadmill filmed from four angles with infrared cameras (see curtain rails) and an ordinary video camera (positioned on the floor beside the treadmill). Both from Thelen & Ulrich (1991, p. 49).
- (C) Toe-strike stepping.
- (D) Flat-foot stepping. Both from Ulrich (1997, p. 326)
- (E) Bidirectional split-belt stepping: left leg steps forward, whilst right leg steps backward. Solid arrows indicate belt-motion and foot-motion during stance. Open arrows indicate foot-motion during swing. From Yang, Lamont, & Pang (2005, p. 6874)

I persist in describing this as an instance of stepping (*qua* basic action), rather than walking, in order to be sensitive to certain reservations concerning the latter. For instance, in a review of the relation between prenatal movements and post-natal development Heinz PrechtI makes the following remarks:

Not all movements observed in the fetus belong to the category of anticipation of post-natal functions. The human fetus frequently changes its position in the uterus. There are specific movement patterns to bring this about [such as] alternating leg movements which, if proper contact is made with the uterine wall, lead to somersaults. The latter pattern lingers on for the first two months after birth and is known as neonatal stepping; it plainly represents a fetal adaptation and not a post-natal locomotor pattern. (1997, p. 49)

If PrechtI's point is valid then it is as likely that in stepping the infants are trying to walk as that they are trying to somersault! But given the fact that the infant's treadmill stepping is qualitatively more similar to adult stepping than the simple neonatal reflex (Thelen, 1986, pp. 1500 - 1501), it might be that PrechtI's ruling does not

speak to the complexities of the developmental trajectory. Typical adult-stepping involves a rolling foot motion in which the heel-strikes the ground first, moving through the flat of the foot to the toe. By contrast, neonatal stepping often involves toe-first strikes (see Figure 23C) and the occasional flat-footed contact (see Figure 23D). To investigate the intermediate stages more closely, Thelen & Ulrich (1991, p. 36ff.) looked for individual differences that might predict the emergence of stable treadmill stepping in the first year of life. They discovered a trend of poor treadmill performance associated with toe-first striking and/or inward foot rotation, whereas good swing and stance came with flat-footed contact. Only in the latter posture can the stance leg be pulled back far enough for a sufficient frequency of muscle spindle impulses to loop through the spine and activate the antagonists, so the leg can then swing far enough in front for a stable step (recall Figure 15 in §7.1, and Mike's stepping principles above). And, as Thelen & Smith explain, the flat-footed postural arrangement is only available given the (*P*) property of well-balanced relative tension of antagonistic muscles.¹⁷⁰ In particular, the tension of flexors needs to be within a certain range:

[If] the tension [in flexors] is too loose, the treadmill will not impart sufficient stretch to overcome the inertia of the leg and it will not swing forward [alternatively, if the flexors are too tight] the treadmill will not impart enough pull to stretch it. In neither case will the stretch receptors be sufficiently activated for reciprocal phasing. (Thelen & Smith, 1994, p. 112)

With that I hope to have sufficiently illustrated the delicate balance of (*P*) and (*W*) properties in virtue of which basic actions are possible, and thereby given a rudimentary sense of what structural affordances actually are. This is little more than a beginning of the study of structural affordances, for although (as reviewed above) the relational properties which they typically involve are well understood, the relations themselves are rarely identified as such.

¹⁷⁰ The developmental story perhaps runs more fully as follows:

Newborn infants have a characteristic flexor bias in their limbs; legs and arms are held tightly to the body [...] probably partially as a result of the tightly packed fetal position [...] the limbs are relaxed only over many months, and indeed extensor strength in the lengths lags behind flexor strength throughout the first year. (Thelen & Smith, 1994, p. 112)

It is likely that it is for these reasons that “[h]ighly flexed individuals and those who did not have sufficient extensor strength” could not put their foot flat on the belt, and consequently “did less well in treadmill stepping” (ibid., p. 112).

7.4. A structural affordance theory of kinaesthetic experience

In this section, I want to set the background for a *structural affordance theory of kinaesthetic experience*. Call this SA₂, so-called because in one of my only two publications to date (A. J. T. Smith, 2009), I attempted to develop a *structural affordance theory of the spatial content of bodily experience*. Call that SA₁. SA₁ has been usefully criticised by Frédérique de Vignemont (2009). As the reader might surmise, I do believe that SA₁, when properly understood, can avoid the criticisms levelled against it so far. But I do not intend to defend SA₁ here. Indeed, attention to certain aspects of de Vignemont's criticism, and the general worries they convey can help clarify the commitments of SA₂. In particular, they help to show why said worries do not bear on the latter thesis (whether or not they actually do bear on the former). In the next section, I will show how SA₂ both encompasses and serves to explain the Husserlian phenomenology of chapter 6, and certain other perceptual phenomena, through the notion of a *kinaesthetic ability*.

It will be useful to begin by explaining what I intended to do with SA₁. I wanted to find a balanced resolution of certain puzzles and complications in ascribing spatial content to the experienced location of a bodily sensation. One of these complications is that any account of the spatial content of bodily experience ought to recognise the fact that parts of the body are differentially mobile, and yet structurally interlocked (see e.g., Bermúdez, 2005, pp. 310–311). Another is that the sensorimotor cells in frontal and parietal lobes causally implicated in responding to stimuli on and around the body, employ multiple distinct egocentric frames of reference individually anchored to body parts (Graziano & Cooke, 2006). Together these suggest that the project of discerning a global frame of reference for bodily experience might well be in error. I did not give this particularly recalcitrant problem a label, so I will do so now and call it the *partiality problem*.

The critique offered by de Vignemont did not bear upon the partiality problem. Instead, she focussed on certain undesirable features of my positive proposal. The strategy of the positive proposal was to somehow employ the fact that whole-body movement (by definition) involves the body as a unity. My aim was to somehow import this essentially unifying feature into an account of how attention to a part of the body involves the experience of that part against the background of the body as a whole. However, as a result, my account bore a striking similarity to an enactive theory of bodily experience (de Vignemont, 2009, p. 101). In her more recent work, de Vignemont has clarified that there are at least three potential aims for such a theory, with respect to e.g. tactile experience:

- (i) to individuate the tactile modality (e.g., a tactile experience, by contrast with a visual one);
 - (ii) to explain the phenomenology of tactile sensations (e.g., the conscious sensation of pressure on my skin);
 - (iii) to explain the spatial content of tactile experiences (e.g., the sensation that there is an object touching me on my palm that is round).
- (de Vignemont, forthcoming-b)

My aim was something in the region of (iii). But I had no intention of explaining phenomena such as the experience something round touching one's hand. Rather my aim was to provide an account of what it is to experience one's hand (attention to which might be drawn by a tactile experience of contact) against the background of the body as a whole. In fact, this would be just one instance of a general case in which experience of part of the body involves experience of a part of an integrated whole. This deserves a label too; call it *body-mereological (BM) experience*.¹⁷¹ My aim was to try and resolve the conflicts generated by BM experience and the partiality problem, when they are conjoined with claims like the following:

the intrinsic spatiality of bodily awareness is sustained by its presenting certain parts of the subject's body as filling particular egocentric locations [...] this presentation of the body as determinately extended in physical space depends in turn on the bodily sensation itself apparently being set in that body part there (Brewer, 1995, p. 300)

What suggested to de Vignemont that I was offering an enactive theory to achieve that aim, were my claims that:

- (a) at the sub-personal level sensory information channelled through the temporal and parietal lobes achieves egocentric spatial content in virtue of providing detailed specifications for movement
- (b) at the personal level sensory information achieves egocentric spatial content in virtue of priming the selection of particular types of action
(cf. de Vignemont, 2009, p. 101; A. J. T. Smith, 2009, pp. 93 - 94).

As far as I can see these alone do not commit my earlier view to a species of enactivism. However, here (and in other places) the account suffered from ambiguous presentation. I was not clear at the time (or at least not sufficiently explicit) that by distinguishing (a) and (b) I meant to distinguish processes that are not part of the structure of experienced (*i.e.*, (a)), from processes that are (*i.e.*, (b)). It was certainly

¹⁷¹ The term "body mereology" is due to de Vignemont, Tsakiris & Haggard (2006). Though they restrict their discussion to part-part relations in neural representation of the body, they state that the term applies more generally to part-part and part-whole relations, and presumably of the body *simpliciter*.

not clear what bearing these remarks were supposed to have on issues I was discussing at the time. Thus it is perhaps unsurprising that from (a) and (b), de Vignemont infers that my intention is the rather vague one of grounding bodily experience in action (2009, p. 102ff.). The ensuing counter-examples that she brings to bear, indicate that one of her most serious worries is that I might be guilty of assuming an analogue to (what Andy Clark has called) the *assumption of experience-based control (EBC)*. Here it is appropriately modified:

[Bodily experience] presents the [body] in a richly textured way, a way that presents fine detail and that is, in virtue of this richness, especially apt for, and typically utilized in, the control and guidance of fine-tuned action (cf. Clark, 2001, p. 496)

For the sake of simplicity, let me stipulate that any enactive theory of bodily experience is committed to EBC. Here are two problematic observations for such a theory.¹⁷² The first is the existence of *numbsense*, in which cortical lesions result in anaesthesia of large areas of the body yet sensorimotor processing is retained (Rossetti, Rode, & Boisson, 1995). Jacques Paillard, speaking of his own patient R.S., recounts what is striking about individuals in this situation:

Unable to detect and to perceive any tactile stimulation delivered at various sites on her right hand when vision was prevented, this patient showed, to her own surprise, a spontaneous ability to point her left finger toward stimulated places on her deafferented right hand (2005, p. 102)

A second source of problems for EBC comes from a phenomenon recently revealed in a variation of an experimental paradigm used in the study of multi-sensory con-

¹⁷² These are both found (along with others) in de Vignemont's (forthcoming-b) in which she aims to block various options for any potential enactive theory. Clark's aim in his article is to present similar difficulties for EBC with respect to visual experience (2001, p. 499ff.) by appeal to work in the cognitive psychology and neuropsychology of vision performed under the dual-streams paradigm (see footnote 117 above). On the same basis, Jacob & Jeannerod (2003, p. 171) provide a succinct critique of O'Regan & Nöe's (2001) sensorimotor theory of visual perception, the direct descendent of which is the enactive approach to vision advanced by Nöe (2004). Pierre Jacob (2006) follows up the critique, raising similar and more general worries directly targeted at Nöe. And more recently, in his (2006; 2008, pp. 169 - 195) Clark reviews a spate of similar arguments against the "strong sensorimotor model" (essentially Nöe's view), concluding in favour of an account on which visual experience depends upon "implicit knowledge of poise over a rather coarse-grained action space" (2008, p. 191; cf. Ward, Roberts, & Clark, forthcoming). This last is a descendent of the "hypothesis of experience based selection" that Clark advances in his (2001, p. 512).

flicts, known as the *rubber-hand illusion* (Botvinick & Cohen, 1998). In a typical induction of the illusion, a subject looks at a rubber hand that lies in an anatomically congruent orientation to their own occluded hand. After around 10-15 seconds of watching the hand being stroked in synchrony with strokes applied to their unseen hands the illusion takes effect. It manifests in various measurements. Those typically recorded are a variety of qualitative changes in perceptual experience of the rubber hand, measured by questionnaire, and errors in perceptual judgement of the location of the hidden hand, biased towards the location of the rubber hand. In the original Botvinick & Cohen (1998) study, the latter was measured by a non-ballistic reaching task, which involved tracing the finger of the un-stimulated hand along a ruler under the table occluding view of the stimulated hand. In an elegant refinement of the paradigm, Kammers, de Vignemont, Verhagen, & Dijkerman (2009) employed a passive perceptual response in which the participant would watch the experimenter trace two fingers along a table covering both the participants hands until they seemed to be in line with the felt location of their own hands. They then compared the measured degree of perceptual bias with performance of various ballistic and bimanual motor responses. They found that in both bimanual grasping and ballistic reaching participants were largely accurate, whereas passive perceptual responses exhibited a typical pattern of errors.

In fact, I was well aware of the dangers of EBC, and this was precisely the reason why I made the distinction between (a) and (b).¹⁷³ But I glossed over a rather thorny issue. What I claimed to be expressing in (a) and (b) was an Evansian view on egocentric spatial content. However, Evans is singled out by Clark as guilty of assuming EBC (2001, p. 498; cf. Evans, 1985, pp. 383 - 385). As I said, it is not my intention to defend my earlier view here. But *prima facie* the issue is pressing, as I have developed a phenomenology of egocentric perceptual experience on broadly Evansian ideas. It is worth showing what it would be to be committed to EBC, and worth demonstrating at least briefly why the account I endorse at present is EBC-innocent. A further corollary of this exercise is that it will also be useful for setting the context for SA2 as an account of kinaesthetic experience that clearly does not assume EBC.

To my knowledge the first person to employ Evans' ideas in an account of the spatiality of bodily experience was Brewer, saying things like the following:

¹⁷³ I referenced Clark's article in the main text and footnoted that I intended to adopt a view of the relationship between bodily experience and the guidance of action broadly in line with Clark's (A. J. T. Smith, 2009, pp. 93 - 94 n15), for which, see the previous footnote.

When I feel a sharp pain in the back of my left hand or an itch at the end of my nose, the appropriateness of action concerning these actual bodily locations is written into the very nature of the experience itself [...] Which bodily location is involved is given at least in part as a kind of practical demonstrative: ‘there’, said as one reaches for the place in question (1995, p. 298)

He goes on to cash the experienced “appropriateness” of the “practical demonstrative” as the typical form of practical knowledge, *knowing-how*:

Knowledge of how to point to, protect, rub, or scratch the location of a sensation is not so much discovered by some comparison of the consequences of one’s flailing movements with an external picture of a bodily target as immediately present as what it amounts to for the sensation to seem to be where it is (ibid., p. 302)

The relevant question with regard to EBC is what such know-how is supposed to involve. In particular, does it involve the guidance of the action (as the contrast with flailing movements suggests)? It is not my intention to legislate on the details of how we ought to conceive of such knowing-how in general. Stanley & Williamson (2001) have argued that all know-how reduces to propositional knowledge under a practical mode of presentation. Noë (2005) demurs. Hybrid positions are possible besides these. In any case, I think it is safe to assume the default in discussion of knowing-how, which is that it consists in a set of dispositions (Ryle, 1949/2000). Grush has usefully identified two kinds of dispositions applicable in this context, “detail-specifying dispositions” and “type-selecting dispositions”.

A detail-specifying disposition is a disposition that, for any given behavior type (such as a grasp or foveation, or whatever), specifies the details of how that behavior type will be executed if it is executed. So for example will my intended grasp (behavior type) be implemented by moving my hand like this, or like that? (Grush, 2007b, p. 393)

This could potentially amount to asserting EBC, if detail specification is understood as being fine-grained specification of movement, and experiencing an object just amounts to the possession of a disposition for such fine-grained specification.

Detail-specifying dispositions are to be contrasted with type-specifying dispositions:

A type-selecting disposition is something about the stimulus that motivates the execution of this or that behavior type, as opposed to nothing or some other behavior type. For instance, a bright flash might motivate a head turn and foveation, but not a grasp; an itch might motivate an arm and hand movement and scratch, but not any eye movement (Grush, 2007b, p. 393)

In §6.5, I argued that in order to make sense of particular objects being experienced egocentrically within the constraints of the Husserlian account, it would be necessary to endorse the behavioural egocentricity claim:

- Behavioural egocentricity: there is nothing more to experiencing x as at egocentric location e , beyond a subject being disposed to perform potential orientating actions φ with regard to x

The important point is that φ are to be defined as types of action, or rather that the disposition to φ is not to be defined as the disposition to perform a movement of a specifically fine level of granularity. However, in order to clarify that, I will need to appeal to more than the intuitive contrast drawn by Grush.

Consider some experimental work on motor control biases. Fournieret & Jeannerod (1998) asked 13 right-handed subjects to draw a straight line, straight ahead, on a graphics tablet, with their right hand. They were also asked to keep their hand in contact with the surface of the tablet, and to move it at an even speed toward a target presented on the sagittal plane. The subjects could not see their hands directly; rather they were presented with a mirror situated over their arm and hand, above which was a computer interfaced with the graphics tablet (see Figure 24A & C). This allowed the experimenters to introduce a subtle bias on some trials, creating a deviation in the output of the tablet, in either the left or right direction, by 2, 5, 7 or 10°. So, for instance, if a leftward bias was introduced, a subject would have to adjust their movements rightward in order to compensate and produce a line on the screen that would reach the target. No matter the magnitude of the bias introduced, subjects were able to adjust their movements accordingly (Figure 24B). That in itself is interesting, but it is even more interesting in conjunction with their reports.

Subjects were asked, “According to your own impression, which line corresponds to the actual trajectory drawn by your hand?” They had to give a number in response, corresponding to the range of options presented on Figure 24D. All responses clustered around line no. 7. In short, subjects were not able to verbally report on the extent to which compensatory changes were made. For a non-verbal estimate, in a session before the start of the first trial, subjects were instructed to draw a line that they judged to be straight ahead. This was repeated 5 times in order to gain an estimate of each individual’s subjective straight ahead. Then after each trial they had

their hands passively placed at the original start-point and were asked to pantomime the movement they had just made, but with their eyes closed. The overall tendency in pantomimed movements was very close to the subjective straight ahead. Again, subjects were not able to report on the extent to which compensatory changes were made.

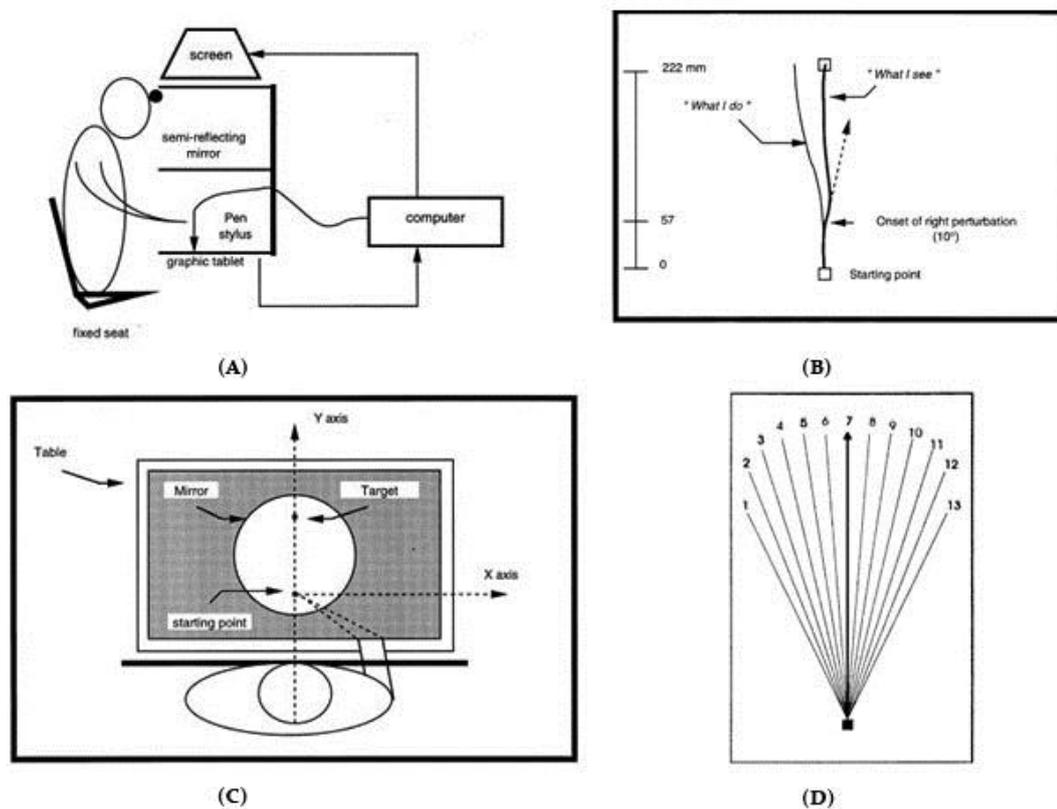


Figure 24 – An experimental paradigm for sensorimotor control biases

- (A) Schematic of the experimental set-up and apparatus
 - (B) A typical compensatory movement after the introduction of a 10° bias
 - (C) Overhead view of (A) and description of the task
 - (D) A chart used for verbal indications of subjects' movement trajectories
- Reprinted from Fournieret & Jeannerod (1998) with permission. © 1998 Elsevier.

Anti-EBC interpretations of these results typically run as follows:

although proprioceptive and internally generated action-related signals correctly operated at an automatic and unconscious level, they were not available for conscious monitoring (Fournieret & Jeannerod, 1998, p. 1138)

normal subjects appear to be unable to monitor the signals generated by their own movements [...] Subjects, when they are requested to make a conscious judgment about what they did, simply tend to adhere to the goal, but cannot access the way it has been achieved (Jeannerod, 2003, p. 134)

I think the results above weigh pretty heavily against an EBC account of kinaesthetic experience. There is a temptation to infer that the movements themselves are not experienced at all. However, it does not follow from the fact that one does not experience x in a fine-grained way, that therefore one does not experience x at all. For example, even if all I can make out of an object in the distance is a blur, or all you can hear of my voice is a faint squeak, it would still be true that I experience seeing something and that you experience hearing something. A similar point holds for the experience of movement. The movement occurred, and we have no antecedent reason for thinking that the subject is not experiencing any movement. If one is to demonstrate that, it is not sufficient to demonstrate that the subject does not experience movement in a fine-grained manner.

Here is about the right place to illustrate the kind of explanation that would be provided by SA₂. To take an example, recall the antics of the blacksmith's arm from §7.3. As an agent his possibilities for action are set by his SAs. As he brings down each strike, he anticipates the possibility of the same type of action. His arm has the (P) properties of motor redundancy and structural unity. As he repeatedly strikes the same spot, he employs a slightly different combination of joint angles each time, but to the same effect. SA₂ claims that he does not thereby experience the movement as different. In anticipating the possibility of the action he tries to perform, he anticipates a broadly continuous pattern of kinaesthetic sensory experience corresponding to that action. There are two key moves here. The first is to claim that subjects anticipate *phenomenal grooves*:

- Phenomenal groove: A broadly continuous pattern of kinaesthetic sensory experience corresponding to a type of basic action φ

This is essentially an extension of the Husserlian description, as I will clarify below. The second is to posit *kinaesthetic ability* on the part of the subject:

- Kinaesthetic ability: the ability to anticipate phenomenal grooves in virtue of anticipating SAs.

The Fournieret & Jeannerod study provides an opportunity to clarify these concepts. In order to adequately accommodate the bias introduced by the experimenter, we need to distinguish between the experience of an action-token and the phenomenal groove of an action-type. An action-token corresponds to the actual movement per-

formed by the subject, in its finest granularity. This token can be an instance of a “right-arm straight-ahead” type, or it can be an instance of another type. Now apply the notion of broad continuity. Just as sensations of a particular object can violate narrow continuity and nevertheless be experienced as the same particular object, kinaesthetic sensations can violate a certain narrow continuity and nevertheless be experienced as the same action-token. This would be in virtue of being within the phenomenal groove of a particular movement type. With this gloss, the Fournieret & Jeannerod study provides a positive insight into the experience of action. For it provides reason for thinking that the experience of movement corresponds to the anticipated experience of an action-type, *viz.* the anticipation of a phenomenal groove.

A follow-up study by Slachevsky et al. (2001) provides the opportunity to indicate the measurement of phenomenal grooves. They ran a very similar study to Fournieret & Jeannerod (1998), except that all biases introduced were rightward, and the extent to which biases could be introduced was considerably larger (up to 40°). At an average of around 14° normal subjects were able to report that their movements deviated from straight ahead; indicating that sensations of movement can only deviate up to 14° if they are to be experienced as being of the same action-type. The phenomenal groove for a “right-arm-straight-ahead” action extends to about 14° on the sagittal plane.

It is worth explicitly stating why phenomenal grooves and kinaesthetic abilities are EBC-innocent. Here is the modified version of EBC again:

[Bodily experience] presents [the body] in a richly textured way, a way that presents fine detail and that is, in virtue of this richness, especially apt for, and typically utilized in, the control and guidance of fine-tuned action (cf. Clark, 2001, p. 496)

In SA₂, no claim is made about a relationship of controlling or guiding between experience and action. Furthermore, phenomenal grooves are defined in terms of broad continuity. This is effectively the opposite of experiencing fine-detail and richness.

Additionally, the term allows one to compress certain elements of the Husserlian account. The conclusion of §6.4 was this:

- (p). Experience of particular objects requires anticipation of a broadly continuous kinaesthetic cycle.

Conjoining the behavioural egocentricity claim with (p) produces:

- experiencing x at egocentric location e involves anticipating a broadly continuous cycle of kinaesthetic sensations that would occur, were the subject to φ with regard to x

And given the definition of a phenomenal groove, the previous bullet-point translates to:

- experiencing x at egocentric location e involves anticipating a phenomenal groove that would occur, were the subject to φ with regard to x

7.5. Phenomenal grooves & kinaesthetic abilities

SA₁ and SA₂ are distinguished by their respective *explanandum* and *explanantia* (see Table 1).

Table 1 - Structural affordance theories of bodily experience

| | <i>Explanandum</i> | <i>Explanantia</i> |
|-----------------------|--|---|
| SA₁ | Body mereological experience. | Representation of parts of the body; exploiting structural unity of the body. |
| SA₂ | Structuring role of kinaesthesia in perceptual experience. | Kinaesthetic ability. |

I can now briefly show SA₂ in application: In §6.5 it was claimed egocentric locations are systematically arranged in virtue of φ being constrained by the structure and mobility of the perceptual organs. These constraints are precisely the relevant (*P*) and (*W*) properties of each kinaesthetic system. SA₂ will claim that:

- In experiencing x at egocentric location e a subject is able to anticipate the phenomenal groove that would occur, were she to φ with regard to x , in virtue of anticipating the instantiation of the SAs that enable φ .

This generalises to any case in which the agent might anticipate or try to make a type of basic action. And if the Husserlian account is on track, then this will hold for any instance in which a particular object is experienced. To convey the point, let me cherry pick two of the other claims made in chapter 6.

- (k). For every series of bodily movements, there must be an anticipation or manifestation of a proprietary series of mere kinaesthetic sensations.¹⁷⁴
- (o). Broad continuity in a series of perceptual sensations requires broad continuity in mere kinaesthetic sensations throughout a kinaesthetic cycle.

Unless claim (o) is to be absolutely empty of content, there needs to be a principled explanation of why there are bounds to a subject's anticipation, when she anticipates broad continuity in a series of kinaesthetic sensations (sc. a phenomenal groove). These bounds are set by her anticipation of SAs (sc. her kinaesthetic ability). In short, broad continuity in a series of perceptual sensations is explained by the subject's kinaesthetic ability to anticipate phenomenal grooves.

If practical knowledge is a candidate for explaining the egocentricity and particularity of perceptual experience, what about other perceptual phenomena? I think it would be unwise to claim that practical knowledge can explain every aspect of perceptual experience, or indeed every case in which one might anticipate having certain (even sensory) experiences. But there is at least one more interesting phenomenon with respect to which the idea is of some importance, which found its first expression in the 20th century in O'Shaughnessy's (1989), but has been traced by A.D. Smith (2002, pp. 153, 304–317) through 19th century German and French philosophical writings. Smith gives an initial description as follows:

¹⁷⁴ There is a sense in which claim (k) is false, as it is too generally stated. Cases such as Ian Waterman's (see §8.3.) provide obvious counterexamples:

A common problem in patients without feedback is that when they are not looking at their limbs the arms and legs start to move 'on their own'. The fingers don't remain still, but writhe in small movements, and the arms may start moving uncontrollably. If he turned his gaze away for a few seconds, his arm would often come up and hit him, or someone sitting close by. (Cole, 1995, p. 16)

Accordingly, claim (k) should actually be something like:

- (k*) For every series of bodily movements *that a subject with a healthy peripheral nervous system tries or anticipates trying to perform* there must be an anticipation or manifestation of a proprietary series of mere kinaesthetic sensations.

But this is merely claim (k) with italicised *cetera* that had previously been assumed to be *paribi*.

Although no mere impact on a sensitive surface as such will give rise to perceptual consciousness, we certainly feel objects impacting on us from without. This fact needs to be recognized in any adequate perceptual theory [...] the phenomenon that is central here [...] is that of a check or impediment to our active movement: an experienced obstacle to our animal striving, as when we push or pull against things. (2002, p. 153)

Smith's suggestion is that the latter is somehow basic to tactile experience. O'Shaughnessy comes to a similar conclusion from a different tack. He wonders why so many and various phenomena are all described as instances of tactile perceptual experience, offering the following sample.

The simplest case of all is momentarily feeling something contact a point on one's body. The next most simple case is feeling something extensive momentarily contact one. Complexity appears when time, motion, and activity appear as additional variables. Thus, one might passively feel an insect wander across one's chest. Or actively run one's hand around the outside of a box. Finally, one might feel one's way around a room in total darkness; or, if blind, navigate one's way across an entire city (O'Shaughnessy, 1989, p. 41)

The intuition he takes as obvious is that they all count as cases of the sense of touch because in all cases "the sensation of contact" is used "as access to the perceived item" (ibid., p. 41). But this he immediately rejects in the face of a counter-example: "One's right hand might be completely numb, and yet by discovering that we cannot push it through something it evidently is touching we discover the presence of that something" (ibid., p. 41). At which point he asks (rhetorically): "Then do we not perceive that object, and through touch?" (ibid., p. 41). Perhaps we do, but there is a frustrating clumsiness about O'Shaughnessy's exposition. After all, he leaves open the question of how it is "evident" that one is touching something. From all he says it could be evident to a subject because she just had a look at what impeded her movement. This equivocation obscures the main point, which is that the experience of movement being impeded is in some way primitive to tactile experience.

A. D. Smith is more careful. To illustrate the phenomenon, he considers the experience of a sightless being whose first experience is of movement through empty space:

Here experience would be, if I may so put it, of sheer “kinesis” in a void, not movement in a space that is appreciated as a realm potentially holding alien entities. There would be no sense, here, of any bodily limits beyond which things might be located. Such a limit, and hence a phenomenal body itself, and hence a tactile distinction between inner and outer, and hence a genuine felt space in which we are located along with possible other things, emerges only when contact is made with something. Such contact [...] is our sole mode of access in this modality to spatially located objects. [It] simultaneously reveals both an outer object and our own body by establishing a space in which both are located, and, thereby, confers spatial meaning on what would otherwise be meaningless kinesis. (op. cit., p. 158)

Leaving aside the potential complications introduced by vestibular sensation and somatic graviception, there is something right about this. But it is worth noting a distinction between there being limits to bodily experience, and the various ways in which the body is experienced as having limits. To begin to see this consider Bill Brewer’s interim conclusion in his (1995) battle with the modern Cartesian. Triumphant, he claims that: “Bodily awareness is intrinsically spatial: the apparent location of a sensation is as essential to its very nature as its purely qualitative feel” (Brewer, 1995, p. 300). This observation can be supplemented with Martin’s remark that the “sense one has of the location of a sensation brings with it the sense that the location in question falls within one of one’s apparent boundaries” (1995, p. 271).¹⁷⁵ But the kind of boundary that Martin has in mind brings with it a “modal contrast [...] between regions where one could currently feel sensation and those where one couldn’t”, a contrast that “is to be drawn within the content of the experiences themselves” (Martin, 1995, pp. 271-272). And he clearly intends this to be a fully universal claim.

Any region in which it seems to one that one could now be feeling sensations will thereby feel to one to fall within one of one’s boundaries; at the same time, one has the sense that there are locations outside of one’s boundaries, whatever these happen to be, since the space one feels these locations to be part of feels as if it extends beyond whatever one does feel (Martin, 1995, p. 271)

But this is precisely what the experience of Smith’s first-time mover would lack. For *ex hypothesi*, it is only once a region of space that a part of her body occupies is

¹⁷⁵ Brewer echoes the point, saying that this “spatial location of sensation comes to light only as one is aware of one’s body as determinately extending into and filling certain regions of the perceived physical world” (1995, p. 300). See also O’Shaughnessy (1980/2008, pp. 198 - 202).

forcefully abutted with a region of space occupied by another body (or another part of her body) through her own movement, that she will then have an experience of occupying space. However, an open question remains. For despite the lack of any experience of boundaries in the sense that Martin proposes, presumably she could still have some experience of the fact that her movements are constrained. Indeed, in order for there to be any significance in the fact that she experiences her body as being able to move no further, she must know (or come to know) how far her body would be able to move were it not thus impeded. In order for there to be “an experienced obstacle to [her] animal striving”, she needs to have (or come to have) some experienced anticipation of the bodily structure that affords such striving in the first place, and the extent to which it does so. She needs, in short, to have some minimal kinaesthetic ability.

Chapter 8 On bodily selfhood

8.0. Introduction

In the previous chapter, I laid out some basic ideas towards a naturalistic explanation of how kinaesthesia provides structure to the intentionality of perceptual experience, as conceived in earlier chapters. I have not described kinaesthesia as a form of self-consciousness. This might seem unprincipled, as at several points I have used the word subject and indeed the expression ‘bodily subject’. However, the reader may be unsurprised to hear that my use of this term is not intended to connote that subjects are things to be found on a final metaphysical analysis; nor do I subscribe to the contrary of that proposition. Nevertheless, the topic of bodily selfhood ought not to be dismissed entirely, and I devote this chapter to a discussion of what I understand to be the core issues.

The chapter begins by presenting the bodily self thesis, a positive metaphysical thesis about the existence of bodily subjects *qua* bodily selves. I confront the thesis with arguments found in the *Discourse* and the *Meditations* in which Descartes seeks to establish the ‘real’ distinction of himself from his body. An inevitable stalemate is reached. In order to move the dispute forward, I construct a Cartesian thesis which can be more readily addressed by the bodily self thesis. I then review the core concerns of authors who seek to defend the bodily self thesis, drawing upon Evans’ work in order to show how they might do so. Having established a clear line of defence against the Cartesian, I then construct a dilemma for defendants of the bodily self thesis, which I do not believe to be so easily overcome. The dilemma leaves the bodily self thesis with an open challenge: to specify the nature of the body that is claimed to be the self. In closing the chapter, I turn to the more general discussion of whether subjects of experience exist at all, *i.e.*, whether there is such a thing as a self. I conclude that again the dispute is likely to remain unsettled, and welcome the idea that the more fruitful topics of discussion are to be found elsewhere.

- 8.1 *Descartes himself*
- 8.2 *Cartesian selfhood*
- 8.3 *Anti-Cartesian selfhood*
- 8.4 *Being one body*
- 8.5 *Being no body*

8.1. Descartes himself

My treatment of the intentional objects of experience is such that I do not take a stance on their existence; only their seeming existence is deemed relevant. Thus far I have managed to gloss over questions concerning the metaphysical nature of the subject of experience. Although the issues are rather different, my stance here is the same. Just as intentional objects are not posited as entities of any kind, so also subjects of perceptual experience intentionally directed at such objects enjoy the same neutral status as far as this dissertation is concerned.

But so far we have not come across any background against which such neutrality could be claimed. For instance, puzzles concerning the existence of intentional objects concerned cases of hallucination and the worship of Ancient Greek gods: what corresponding issue could there be as regards subjects of experience? After all, in such cases, it is never at issue whether the subject suffering hallucination or engaged in worship has some queer non-actual status. Indeed, given remarks at the end of §6.3, a dense (but fairly accurate) gloss on the content of §6.4 and §6.5 is this: A bodily subject experiences particular objects in virtue of anticipating a cycle of kinaesthetic sensations affecting and effecting visual sensations and enabling anticipations of continuity and unity across experiences of the object. It seems like the account posited is committed in some way to the idea of a bodily subject. Why not embrace its existence wholeheartedly? Why not, in short, embrace the *bodily-self thesis (BST)*:

- Bodily subjects of experience exist as bodily selves

From the way I frame the thesis, the reader can surely glean that I will call any subject of experience that is held to exist, a self. The metaphysical status of selves is an issue that is just as problematic as the status of intentional objects; and the existence of bodily subjects more so. This is not to state that the problems cannot be solved (or dissolved), merely to state that they are somewhat vexed, and arise on not one but two fronts. So the question that many begin with is not: what is a bodily self? But rather, what is a self, such that it is (or is not) bodily?

Here is a characteristic remark that suggests that attributing BST to Husserl is not too far off track:

In seeing, the eyes are directed upon the seen and run over its edges, surfaces *etc.* When it touches objects, the hand slides over them. Moving myself, I bring my ear closer in order to hear [...] given with the localization of the kinesthetic series in the relevant moving member of the Body is the fact that in all perception and perceptual exhibition (experience) the Body is involved as freely moved sense organ, as freely moved totality of sense organs (Husserl, 1952/1989, p. 61 [56], italics removed)

Another source of quotes that hint at a metaphysical account of BST is to be found in the French philosophical tradition. For instance, witness Maurice Merleau-Ponty declaring that “I am a body which rises toward the world” (1945/1962, p. 75), and Jean-Paul Sartre asserting that “I am my body to the extent that I am; I am not my body to the extent that I am not what I am” (1943/1992, p. 326). Whatever the intended connotations of these last remarks, they stand in thorough contrast with an inference inscribed earlier by another French author, René Descartes: the famous *ego cogito, ergo sum*. The reasoning is found in his *Discourse on Method* (1637/1985); having discovered what later came to be known as the *cogito* as a solid ground from which to proceed, he immediately follows with an explicit rejection of BST:

Next I examined attentively what I was. I saw that while I could pretend that I had no body and that there was no world and no place for me to be in, I could not for all that pretend that I did not exist. I saw on the contrary that from the mere fact that I thought of doubting the truth of other things, it followed quite evidently and certainly that I existed; whereas if I had merely ceased thinking, even if everything else I had ever imagined had been true, I should have had no reason to believe that I existed. From this I knew I was a substance whose whole essence or nature is simply to think, and which does not require any place, or depend on any material thing, in order to exist. Accordingly this ‘I’, - that is, the soul by which I am what I am - is entirely distinct from the body, and indeed is easier to know than the body, and would not fail to be whatever it is, even if the body did not exist. (Descartes, 1637/1985, p. 127)

I should decompose some of the moves made here. Begin with “from the mere fact that I thought of doubting [...] it followed quite evidently and certainly that I existed”. This expresses the claim that thinking provides sufficient warrant for belief in the existence of a self. And then, “whereas if I had merely ceased thinking [...] I should have had no reason to believe that I existed” expresses the claim that thinking is a necessary condition on warranted belief in the existence of a self, at least in so far as one is rational. Neither of these suggests a claim about the identity or non-

identity of the self with the body. However, Descartes then claims to know that he is “a substance whose whole essence or nature is simply to think, and which does not require any place, or depend on any material thing, in order to exist”. And from these he draws the conclusion that the self is “entirely distinct from the body [...] and would not fail to be whatever it is, even if the body did not exist”. Thus, far from being neutral on questions of identity, he asserts the existence of the self as an immaterial substance, wholly distinct from the body.¹⁷⁶

This argument moves from various epistemological premises (that all hinge on the assumption that there is something epistemically special about thought), to an ontological distinction between selves and bodies. The natural response for a fan of BST is to deny that the epistemological premises matter, or rather to say that they are irrelevant. She could thus assert the reality of the bodily self, claiming that it is real in precisely the sense that its status is determined in independence of our epistemic capacities. As McDowell remarks, “one’s bodily being need not always impress itself on one” (1994, p. 104 n25). This would be to say that it does not follow from the fact that I do not know at present (or even, could never know) that I am a body, that I am not a body.

However, Descartes of the *Meditations* has a response available. In particular, he appeals to a methodological principle in asserting the real distinction of mind and body, namely: “the fact that I can clearly and distinctly understand one thing apart from another is enough to make me certain that the two things are distinct” (Descartes, 1642/1984, p. 54). And he continues:

[Simply] by knowing that I exist and [clearly and distinctly] seeing at the same time that absolutely nothing else belongs to my nature or essence except that I am a thinking thing, I can infer correctly that my essence consists solely in the fact that I am a thinking thing. (ibid., p. 54)

The 6th meditation, from whence this quotation comes, is also where Descartes begins to rebuild the world on the firm (or perhaps, merely, systematic) principles he has established in the course of his reflections. The first of these is the existence of his body in which he experiences sensations. Not wishing to now deny this, he continues:

¹⁷⁶ See Hatfield (2003, pp. 103 - 106) for a discussion of these various elements as they appear in the 2nd Meditation.

It is true that I may have (or, to anticipate, that I certainly have) a body that is very closely joined to me. But nevertheless, on the one hand I have a clear and distinct idea of myself, insofar as I am simply a thinking, non-extended thing; and on the other hand I have a distinct idea of body, insofar as this is simply an extended, non-thinking thing. (ibid., p. 54)

On this basis, he concludes that “it is certain that I am really distinct from my body, and can exist without it” (ibid., p. 54). This fuller conclusion certainly has the intention of ruling out the possibility suggested by the retort above. I cannot be such that my bodily being is unknown (the conclusion urges), for it is certain, by the method of clear and distinct perception, that I can exist without a body.

There are many, many points at which one could disagree with Descartes’ reasoning. One potential weak-point is the conflation of metaphysical truth with certainty, and indeed the experience of certainty, in using clear and distinct ideas to discern metaphysical insights.¹⁷⁷ Another is the ground (or lack thereof) of clear and distinct ideas.¹⁷⁸ But these would both be disputes of method. Much better would be to establish BST on common ground. For that I want to focus on his seeming concession that “It is true that I may have (or, to anticipate, that I certainly have) a body that is very closely joined to me”. This is also usually construed as a fundamental weak-point in his argument. That is, in large part the issues here are with the fundamentals of Descartes dualism, namely, whether properties of mind and properties of matter (such as extension) are incompatible, and how they might nevertheless causally interact. Again, this would not be a debate so much on the point at issue, but the broader metaphysical background.¹⁷⁹

¹⁷⁷ I am grateful to Jenny Windt for this suggestion (see also Metzinger, 2003a, p. 132). Janet Broughton has also argued resourcefully that Descartes employs a form of argument persistently throughout the *Meditations* (and several other writings) according to which “indubitability establishes truth” (2002, p. 166, see esp. pp. 97 - 107).

¹⁷⁸ This is something of cottage industry in Descartes scholarship, see Rickless (2005) for a good discussion and reference on the topic.

¹⁷⁹ But for a nice expose of Descartes’ interrogation on the topic by Princess Elizabeth of Bohemia, see Hatfield (2003, pp. 266 - 269). And for discussion of Descartes’ oscillating position, see Wilson (1978, pp. 179 - 193).

8.2. Cartesian selfhood

In order to facilitate a more direct confrontation, I want to switch from talking about Descartes' method, or what he may or may not have been justified in claiming, to talking about the received "Cartesian" view of the nature of selfhood. In particular, consider the following adapted quotation as a fairly Cartesian view of embodiment:

part of what it means to mean to say that a [self] is embodied in a particular body [...] leaves it a purely contingent fact that the causal connections between [selves] and bodies are such that [selves] count as being embodied in the bodies. (Shoemaker, 2003, p. 114)¹⁸⁰

One can also extract a broad picture of body-self interaction from Shoemaker's remarks as follows:

a [self] is "volitionally embodied" in a certain body to the extent that volitions of the [self] produce in that body movements that conform to them or fulfil them, that is, movements that the [self] is trying to produce or which are constitutive of actions he is trying to perform

[...]

a [self] is "sensorily embodied" in a certain body to the extent that the interactions of that body with its surroundings produce in the [self] sense-experiences corresponding to, and constituting veridical perceptions of, aspects of those surroundings. (ibid., p. 117)

With this framework in place, the Cartesian can *prima facie* accommodate all the phenomena discussed in chapter 6. But this gives no reason to favour one over the other. If one leaves aside methodological issues, and issues concerning the coherence of dualism, one has something of an *impasse*. If the Cartesian is going to cut any ice against BST she needs to find an edge in discerning the nature of selfhood.

To further make her case, the Cartesian could stake a claim to the true reference of the first-person singular concept 'I', in distinguishing the true nature of the self. Wittgenstein seems to express a helpful thought in some notes for his students, known as *The blue book*, saying that "the idea that the real I lives in my body is connected with the peculiar grammar of the word "I", and the misunderstandings this

¹⁸⁰ I have exchanged Shoemaker's references to persons for selves in order to facilitate the point. It should accordingly be noted that in the article Shoemaker is concerned with the logical possibility of the disembodiment of persons (and indeed minds more generally) not selves *per se*.

grammar is liable to give rise to” (1958, p. 66). To illustrate this “peculiar grammar” one might take expressions like ‘I see’, ‘I speak’, ‘I move’, ‘I feel pressure’. In so far as reference to the body is required these can all be decomposed. Again, Shoemaker’s remarks illustrate:

My body is the body from whose eyes I see, the body whose mouth emits sounds when I speak, the body whose arm goes up when I raise my arm, the body that has something pressing against it when I feel pressure, and so on. (Shoemaker, 1968, p. 567)

An anti-Cartesian way of reading this sentence would be to say that in referring to my eyes, I thereby refer to a part of myself. But here is a deliberately Cartesian way of reading the sentence: the body (and each of its parts) is a relatum in a relation of ownership. It is the other relatum, ‘I’, that is the subject proper; the two terms refer distinctly.

The Cartesian might further elaborate, by claiming that there are two patterns of use of the word ‘I’ (or ‘my’), which refer distinctly. There is that which Wittgenstein calls *use as object* e.g. “My arm is broken”, “I have grown six inches”, “I have a bump on my forehead”, “The wind blows my hair about”. And another which he calls *use as subject* e.g. “I see so-and-so”, “I hear so-and-so”, “I try to lift my arm”, “I think it will rain”, “I have a toothache” (1958, pp. 66 - 67, italics original). The problem with all uses of ‘I’ (or indeed ‘my’) ‘as object’ is that they involve a potentially erroneous process of identifying the referent by description.¹⁸¹ This would not be a problem for the notion of a bodily subject, but for the fact that uses of ‘I’ ‘as subject’ do not seem to involve such a process.¹⁸²

¹⁸¹ Descriptive reference is not the only mode of reference that can fail to adequately capture self-reference. Hector-Neri Castañeda (1966/2001), argues extensively for the irreducibility of reference to oneself *as oneself* (to signify this distinctive manner of reference he uses the device “*” applied to personal pronouns). John Perry (1979) adduces a range of similar arguments to argue for the irreducibility of certain “I”-thoughts (*viz.* those that express beliefs about where, when and who one is) to propositions, or *de re* attributions of belief. Castañeda indicates that his interest was first drawn to the issue by some observations made by Peter Geach (1957) on the attribution of beliefs to others about themselves.

¹⁸² Shoemaker remarks: “Ordinarily a question of the form “Which body is S’s body?” would ask for the identification of a corpse” (2003, p. 117 n7). Existential phenomenologists (cf. also Husserl’s notion of *Leib*) are concerned to reject any straightforward identification of the body as an object for closely related reasons. But it is not clear that this would be a fruitful line to take against the Cartesian.

Take a case such as ‘I have been seen’. If all goes well ‘I’ picks out myself as a body. An instance where I might actually think a thought expressible so, would be upon seeing someone pointing and thinking of “the thing that she is pointing at” – call this *a* – and believing that thing to have been seen – call this property *F*. If based upon such thoughts, the judgement

- *I am F*

is based upon an identification of *a* as *b*, and *b* as myself. This is a process of identification. In this process there are really three judgements

- *a is F, b is F, & I am b*

In order to yield the conclusion that “*I am F*”, these must rest upon two identity propositions

- *a ≡ b, & b ≡ myself*

But mix-ups happen. The person may be pointing at something far more interesting behind my head. As a mere product of vanity (or fear), the identification fails, and so the self-reference fails. And we cannot resolve the possibility of reference failure by a recursive process of identification, as each identification may be inadequate (it may have latched onto the wrong object or none at all) and thus require a further identification, which itself might require a further identification, and so on *ad infinitum* (Russell, 1910-1911, pp. 110 - 111, 119 - 120; Shoemaker, 1968, p. 561; 1996, p. 13).¹⁸³

Hence, in such cases “the possibility of an error has been provided for” (Wittgenstein, 1958, p. 67). Following Wittgenstein, Sydney Shoemaker describes this as the possibility of “error relative to the first-person pronoun” (Shoemaker, 1968, pp. 556 - 557). Such error is possible iff. one judges some *a* to be *F*, but may be

¹⁸³ One could assume that in descriptive singular reference, the subject’s knowledge of which object is in question is ultimately determined by a definite description, such as “The *X*” uniquely satisfied by *a*. Thus every judgement of the form *a is F* would rest upon only the pair of judgements “*a = The X*” & “The *X is F*”. It is still possible that I realise that “*X is φ*” without realising that “I am *X*” and therefore that “I am *F*” (see Brewer, 1995, pp. 293 - 294). In fact, as many have noted, this model allows for cases in which “speaking of’ or ‘referring to’ oneself is compatible with not knowing that the object one speaks of is oneself” (Anscombe, 1975/1991, p. 72). For instance, I may be standing in line at my local shop and give an idle glance at a closed circuit television screen presenting an image of the shop floor. In doing so I may notice that the bald man (‘the *X*’) is getting his pocket picked (‘is *φ*’), but yet not realise it is my pocket being picked (‘I am *F*’) as I had forgotten that I just had my hair cut (see Perry, 1979, p. 3 for a similar example).

mistaken, for the exclusive reason that one believes *a* to be oneself.¹⁸⁴ By contrast, Shoemaker and Wittgenstein hold this kind of error to be impossible when one refers to oneself *as a* subject. If I say “I smell a rat” it would be absurd for someone to ask me “Are you sure it is *you* who smells a rat?” One can ask of course, but a degree of irrationality is implicated (on the part of the subject in question) in the expectation of any possible negative answer. For when I refer to myself as a subject my reference is *immune to error through misidentification relative to the first person pronoun*.

Encouraged, the Cartesian can continue to urge that on this principle the body and the subject ought to be distinguished. Take the statement:

- I see with my eyes

BST ought to take this as equivalent to:

- I visually experience as a body

But in light of the contrasting uses of “I” above, the Cartesian can claim it is a complex statement that ought to be further decomposed. One component is an ego statement declaring that I see. Another, distinct, component is a body statement declaring that my body has eyes. She might then triumphantly pronounce that ego statements are (strictly speaking) the only correct instantiation of self-reference, on the basis that all and only Ego statements cannot fail to refer to the subject, precisely because they *only* attempt to ascribe properties to *the subject*.¹⁸⁵

8.3. Anti-Cartesian selfhood

This line of argument attempts to achieve, on the part of the Cartesian account, the status of inference to the best explanation: our patterns of reference in using the term I to refer to our bodies are precarious, precisely because we cannot know ourselves as bodies; for *ex hypothesi* we are not our bodies at all. But in fact the propo-

¹⁸⁴ So one might attribute *F* to another and not commit the error in question. Or one might misattribute *F* when one should have attributed *G* and not commit the error in question. Or one could misattribute the attitude or mode of one’s relation (believing instead of hoping, hearing instead of seeing) and still not commit the error in question.

¹⁸⁵ See Brewer (1992, pp. 295 - 297). The Cartesian theme is also inspired by Anscombe’s worry that “if “I” is a referring expression, then Descartes was right. But now the troubles start” (1975/1991, p. 78). However, see Evans (1985, pp. 224 - 235) for a rather different moral that might be drawn from such a discussion.

ment of BST could easily appeal to cases in which ‘I’ is used as subject in the self-ascription of bodily properties. And these could be bolstered by a positive account of a mode of reference that guarantees against reference failure.

A key feature of the potential reference failure in the case above was that self-ascription of the predicate *F* occurred through a process of identification. In particular, the process involved establishing the identity of descriptions. At each stage the identity could fail, and thus the reference could fail. In contrast, Evans proposes a model of self-identification roughly along the lines of his account of demonstrative thought.¹⁸⁶ Instead of ascribing *F* as part of a mediate description of the object in question, discrimination by demonstrative is direct, in that it does not involve anything like the process of identification described above. Evans calls it “identification-free” in the sense that the subject does not come to know that a predicate is being instantiated and only then indirectly identify an object by means of some description involving that predicate. Rather the very means by which the subject comes to know that a predicate is instantiated is exactly the means by which the subject comes to know directly which object instantiates that predicate (Evans, 1982, pp. 179 - 181).

The directness characteristic of identification-free reference necessitates a particular relationship between referrer and referred: an *informational link*. As Evans puts it

¹⁸⁶ He suggests that we see self-identification on the model of ‘here’-thoughts, rather than ‘this’-thoughts, largely to accommodate for cases of potential lag in the receipt of information updating the thought. Though this suggestion is not meant to bar there being distinctive ways of gaining information about oneself that inform bodily self-ascription (1982, pp. 151 - 170, 215 - 216).

As a side note, although Evans’ work has been influential in this area, the literature on immunity to error through misidentification relative to the first person pronoun is now rather large. For a good reference on recent work, and an exploration of how a (roughly) Evansian account fares in the light of various illusions and delusions, see de Vignemont (forthcoming-a).

distinctively, demonstrative thoughts take place in the context of a continuing informational link between subject and object: the subject has an evolving conception of the object, and is so situated vis-à-vis the object that the conception which controls his thinking is disposed to evolve according to changes in the information he receives from the object. (1982, p. 146)

This requires further comment. In order for the presence of an information link to be sufficient for thought about an object, the subject must be able to locate the object in space on the basis of the information received (*ibid.*, p. 149). The idea of such a disposition is broad enough to allow for the limit case in which there is a lag in the receipt of information. In such a case, the subject's thinking nevertheless rests upon an information-link such that "his thinking [...] will be controlled by the information yielded by the link *if any* [information] *emerges*" (*ibid.*, p. 153 n20). Such a relationship (between informational input and behavioural output) is best specified as functioning in independence from any description that the subject believes to hold concerning that relationship. This is on pain of the object being presented by a description such as "the object being presented *via* such and such an information-link". To capture this constraint, we will name such a function from information to behaviour as *non-descriptive*. For a mechanism to be non-descriptive it is sufficient that it is sub-personal, though this is not necessary. What is necessary is that the process must not involve (or indeed be) a process of identification. And, finally, in any case this process must determine the subject's conscious thoughts concerning that object (*ibid.*, p. 146 n8).

The result of such an information-link (and an appropriate set of dispositions) would be that if a subject claimed that

- a is F

on the basis of information received via this link, there can be no question of whether it is a that her thought concerns.

Applying this model to bodily self-ascription requires that one be able to specify an information link that meets the specified conditions. In particular, the input-output process must be:

- (i). non-descriptive;
- (ii). provide ongoing spatial information;
- (iii). be proprietary to the object (the body); and,
- (iv). determine the subject's conscious self-ascriptive behaviour.

Evans evidently thought that it would be possible to find information-links that met such conditions:

it seems equally not to make sense for a subject to utter ‘Someone’s legs are crossed, but is it I whose legs are crossed?’, when the first component is expressive of knowledge which the subject has gained about the position of his limbs, available to him in the normal way. (1982, p. 216)¹⁸⁷

we are able to know our position, orientation, and relation to other objects in the world on the basis of our perceptions of the world. Included here are such things as [...] knowing that one is moving in a train by seeing the world slide by; knowing that there is a tree in front of one, or to the right or left by seeing it; and so on. Once again, none of the following utterances appears to make sense when the first component expresses knowledge gained in this way [...] ‘Someone is moving, but is it I?’, ‘Someone is standing in front of a tree, but is it I?’ (1982, p. 222)¹⁸⁸

Amongst those who have been most explicit about BST, there is a recurrent worry about conceptualising the bodily self as an object. Call this the *body-as-object (BO)* problem. Worries about BO are expressed in a famous statement of Merleau-ponty’s

I observe external objects with my body, I handle them, examine them, walk around them, but my body itself is a thing which I do not observe: in order to do so, I should need the use of a second body which itself would be unobservable. (1945/1962, p. 91)

Similarly Sartre remarks

¹⁸⁷ Here the reference to ownership ought to be given the anti-Cartesian reading broached in the last section.

¹⁸⁸ There is a thorny issue that I am suppressing here. Evans thought that for an informational-link embodied in a perceptual system to yield consciousness, it must input to a concept-using system. As he puts it

we arrive at conscious perceptual experience when sensory input is not only connected to behavioural dispositions in the way I have been describing – perhaps in some phylogenetically more ancient part of the brain – but also serves as input to a thinking, concept-applying, and reasoning system; so that the subject’s thoughts, plans, and deliberations are also systematically dependent on the informational properties of the input (Evans, 1982, p. 158)

To avoid taking a stance on the issue of whether or not this is the right way to distinguish between perceptual content and non-conscious informational content, I invite the reader to figure their preferred account into the dispositional background.

It is true that I see and touch my legs and my hands. Moreover nothing prevents me from imagining an arrangement of the sense organs such that a living being could see one of his eyes while the eye which was seen was directing its glance upon the world. But it is to be noted that in this case [...] I apprehend it as a sense organ constituted in the world in a particular way, but I cannot “see the seeing”; that is, I cannot apprehend it in the process of revealing an aspect of the world to me. Either it is a thing among other things, or else it is that by which things are revealed to me. But it cannot be both at the same time. (1943/1992, p. 304)

Consider a similar worry in the present context. Construing the body as an object of perceptual experience opens up the way to a Cartesian distance between the subject and the body. Along these lines, Bill Brewer expresses concerns about a Cartesian dualist strategy which

[...] transposes Evans’ general account of perceptual-demonstrative reference [...] into an explanation of the immunity of certain bodily “self”-ascriptions to error through misidentification. The basic idea would be that [body] judgments like ‘I am being prodded just above the right knee’ are effectively of the form ‘That knee is being prodded’, where the reference-fixing quasi-perceptual information-link is provided by bodily experience. (1995, p. 297)

What the BST requires is some means of discerning an account of bodily-self ascription that is both immune to error relative to the first person pronoun and insulated from Cartesian riposte described by Brewer. A strategy like this would involve finding an Evansian information link, and demonstrating that it can yield bodily-self ascription on some non-perceptual basis. Shaun Gallagher, summarising the work of Brian O’Shaughnessy (1980/2008, pp. 179 - 202; 2000, pp. 628 - 655) and the phenomenological authors lately cited, marks such a perceptual/non-perceptual contrast as the difference between the experience of attending to something and the experience of the (unattended) means of that attending:

I touch with my fingers, I have tactile experience, and I perceive the shape of the object in my hand, precisely when I am not perceiving my fingers. The tactile perception of an object is not accomplished through my perceptual awareness of the changing spatial properties of my fingers; awareness of my fingers is not equivalent to my tactile awareness of the object (2003, p. 61)

In the terminology that we have developed in earlier chapters, the difference here is none other than the difference between mere sensations and perceptual sensations. In these terms, Gallagher’s point is that in the act of perceptually experiencing

something, the body as an organ enabling that experience is itself only experienced in mere sensation. With a similar sentiment Dan Zahavi declares that when he is “directed at and occupied with objects”, his “perceptual act and its bodily roots are generally passed over in favor of the perceived”, elaborating to say that his body “tends to efface itself on its way to its intentional goal” (1999, p. 98). Another simple way of describing this situation is to say that the body, as a subject, is non-intentionally experienced. It is experienced but does not count as an object of experience in any sense.

What makes for the underlying tension is that the body is an object like many others, such as other bodies of the same species. Along these lines Dorothee Legrand (also inspired by the French phenomenological tradition) coins the term “pre-reflective immune bodily self-consciousness” (2006, p. 102). She means two things by this. Firstly she means to denote a non-perceptual experience of the body as a subject. In particular, she wants to mark out kinaesthetic experience of the body as a form of self-consciousness (Legrand, 2006, p. 95ff.). Secondly, the very point of specifying self-consciousness of the body as a subject is to open up the possibility that the body could be experienced in a manner that is immune to errors of identification relative to the first-person pronoun.

Husserl’s concepts of *Leib* and kinaesthesia take on an obvious significance here. Kinaesthetic sensations are the mere sensations that enable perceptual sensations, and kinaesthesia is the anticipation of those sensations unfolding in broadly continuous manner. *Der Leib* is the bodily subject of experience, and in metaphysical status, the bodily self. Connecting *Leib* and kinaesthesia renders the latter as an ongoing source of self-consciousness in episodes of perceptually experiencing particular objects; it is anticipations of continuity in such self-consciousness that enable the requisite continuity in perceptual sensation.

Legrand is particularly sensitive to the BO problem, which she expresses as a tension between “(1) a description of the body as a physical object and (2) a determination of a bodily form of self-consciousness that does not imply the identification of the body as an object” (Legrand, 2006, p. 96). But arguably the two are not ultimately incompatible. In fact, an Evansian information-link underlying pre-reflective bodily self-consciousness is precisely what might deliver (2). The first condition is not a necessary condition for all accounts which would claim the BST. But something like it is a necessary condition for any naturalistic account that hopes to give an account of the biological mechanisms that realise an information-link that delivers (2). So one must find mechanisms that do double duty; they must both enable a general account of kinaesthesia *and* ground an Evansian information link.

As the reader might have surmised already, a defendant of BST taking this strategy could readily appeal to some of the research reviewed in the last chapter. Take, for instance, the ‘internal proprioceptive systems’ (from §7.1) which might consist of central predictive processes supplied by various information channels finding their origin in muscle spindles, golgi tendon organs *etc.* These would fulfil the criteria as follows:

- (i). They are non-descriptive in that they are embedded in the deep structure of the mammalian peripheral and central nervous system.
- (ii). They would provide ongoing spatial information about the position of limbs and their movement.
- (iii). They are proprietary to the body, as they are enabled by dedicated afferent channels combined with central processes running predictions about the ongoing state of the very same body.
- (iv). And collectively these mechanisms determine the subject’s conscious self-ascriptions of limb position and movement.

Moreover, the various ‘Gibsonian’ proprioceptive sources (at the end of §7.1), including agent-environmental affordances (at the beginning of §7.2), would fulfil the criteria as follows:

- (i). They are non-descriptive in that they are either sub-personal or instantiated by relations that need not be descriptively identified.
- (ii). They would provide ongoing spatial information about the location and orientation of the body, its movement, and/or its possibilities and limitations for action.
- (iii). They are proprietary to the body, as they provide information about specific relations between that particular body (the body of the perceiver) and the environment.
- (iv). And collectively these mechanisms determine the subject’s conscious self-ascriptions of location, orientation, movement, and/or possibilities and limitations for action in the environment.

8.4. Being one body

If these claims hold, then with these resources BST looks to be on strong grounds. However, now I want to consider various lines of scepticism concerning BST that do not simply stem from a Cartesian account of selfhood.

To set the stage, consider some recent work on the development of brain-machine interfaces. Carmena, et al. (2003) trained macaque monkeys to perform a virtual reaching task involving a robot-manipulator arm, initially controlled by a joystick in the monkey’s hand. As monkeys learnt to perform the task they used recordings of frontoparietal activity in conjunction with recordings of hand position, grip force and hand velocity to generate predictive models that were later used to allow the monkey to manipulate the robotic arm in a “brain control” mode. Eventually, in this latter condition, the monkeys stopped moving their real arm in performing the task (ibid., pp. 194 - 197). Extrapolate from this, add in corresponding somatosensory feedback (the monkeys were controlling by visual feedback from a display), and well trained forward and inverse models. Now imagine yourself in the situation. Furthermore, stipulate that you have been anaesthetised and are otherwise disposed to take the faux somatosensory feedback to be genuine. You try and move your arm, somewhere a robotic arm moves, and you, *via* an information-link are disposed to judge

- My arm is moving

Is this judgement immune to error through misidentification relative to the first-person pronoun? Evans' has the material for an initial answer

we cannot think of the kinaesthetic and proprioceptive system as gaining knowledge of truths about the condition of a body which leaves the question of the identity of the body open. If the subject does not know that [his arm has moved] on this basis (because he is in the situation described), then he does not know anything on this basis. (To judge that someone has his legs bent would be a wild shot in the dark.) (1982, p. 221)

Evans' point is that a hidden premise behind the question is that someone's arm is picked out by the statement, *i.e.* it is assumed that the expression "my arm is moving" is genuinely a judgement of some state of affairs. Evans denies this premise. But this dodge misses the deeper point at issue, which is expressed by the more direct question: what is it in the good case that makes it such that when someone expresses such a thought, they pick out a part of their body as a part of themselves?

Quassim Cassam (1997) discusses "alien limb" cases with roughly this question in mind.¹⁸⁹ In doing so he develops and rejects what he calls an *idealist account of body-ownership* attributable to Locke. His developments of Locke's view make use of O'Shaughnessy's discussion of proprioceptively experienced body parts as being *immediately present*. So I will introduce that briefly before turning to Cassam.

O'Shaughnessy's phrase 'immediately present' stems from his rejection of what he calls a "volition theory of action", a theory that moves from the claim that all action is "a producing by means of voliting" to the conclusion that "there can merely be a difference of degree between voliting limb movement and the mysterious putative voliting of movement in extra-bodily objects" (1980/2008, p. 98). This allowance for the conceptual possibility of voluntary movement of extra-bodily objects stems from an ultimately Cartesian origin (*cf.* the volitional embodiment discussed in §8.1.), in that it sees the relationship between willed movement and the particular body that moves to be ultimately contingent. Now it is one thing to admit that the possibility that in trying to move, one's trying might be a total failure. But this kind of contin-

¹⁸⁹ "Alien limbs" in this context ought not to be confused with the phenomenon of Alien-hand syndrome, a condition in which one's hand simply feels foreign, which Tony Marcel (2006) usefully distinguishes from the Anarchic-hand sign, more akin to the struggles exhibited by Peter Sellars character *Dr. Strangelove*. Marcel does seem to think that cases of Anarchic-hand syndrome provide counter examples to immunity to error through misidentification relative to the first-person pronoun (*ibid.*, p. 81). He is usefully corrected on this count by Christopher Peacocke (2006, p. 109),

gency comes with the assumption that one only tries to do what one sincerely believes is possible. This latter assumption rules out (at least in those that are rational) the belief that one can will action upon non-bodily objects (as if by magic). The question then is how to characterise the special relationship that holds between a trying agent and its body, such that its body is deemed to be exclusively and primarily the means of basic action. His solution is that “the ϕ one wills and hence also the limb in which that ϕ occurs must in a special sense [be] ‘immediately present’ to the willing subject” (ibid., 1980/2008, p. 181). He soon spells out various conditions on the immediate presence of a body part, two of which are of most interest; firstly, “one has *feeling* in it”; and secondly, “the part is for one a *differentiated part of the totality, one’s body*” (ibid., 1980/2008, p. 182).

Return now to Cassam’s enriched ‘idealist’ account of body-ownership. It consists in the following two conditions being met:

(a*) to experience a limb or a body-part as a part of one is for it to be immediately present to one, and (b*) the immediate presence to one of a limb or body-part is necessary and sufficient for it to *be* a part of one (Cassam, 1997, p. 65)

His main worry with (b*) is that it does not seem adequate to rule out the good case from the bad case, namely, that ascriptions made on this basis¹⁹⁰

cannot be immune [to error through misidentification relative to the first-person pronoun] because it is logically possible that the immediately present limb actually belongs, say, to one’s twin on the other side of the room, and that it is immediately present simply because one’s brain is registering information from it. (ibid., p. 65)

However, his solution (for characterising the good case) seems rather confused. He remarks that the failure of the idealist account is that it “fails to respect the intuition that a limb with which one is not materially united cannot be a part of one” (ibid., p. 65). He then indicates that the importance of material unity in this case is spatial proximity in virtue of “local conjunction”. But at the end of that very sentence he footnotes a reference to Michael Ayers discussion of the importance of keeping material unity and local conjunction conceptually *distinct*. Nevertheless, he ploughs on

¹⁹⁰ Cassam does have another worry, namely that not all of our body parts seem to be immediately present to us. However, this is hardly a concern when it comes to applying the model to scenarios in which the subject is supposedly self-ascribing a property in virtue of being disposed to respond to the outputs of an information-link. More plainly: a simple response to his worry is that a bodily subject only self-ascribes livers, hearts and stomachs *as such* on the basis of a description.

to suggest his own “*realist* alternative”: “for a limb or a body-part to be a part of one, it is necessary and sufficient that one is materially united with it” (ibid., p. 66). He continues by noting an interesting feature of the view. In its stress upon material unity there is “an important sense in which it is the bodily self rather than individual body-parts which is the presented subject”, which is to say that it is “the materially united whole which is, as it were, the *ultimate* presented subject” (ibid., p. 66).

Perhaps there is something right about the material unity constraint. But even if so, note that it gives rise to a serious instance of the BO problem. For what it seems to require is simply that the “bodily self” as “a materially united object” is the “ultimate presented subject”.

I am not sure how this issue could be resolved, but to tease out some further problems, consider another sci-fi scenario, originally designed by Tim Bayne.¹⁹¹ I will let Bayne recount the thought experiment for the most part. He asks us to imagine “a creature with three bodies and a single mind”, called Borgy:

Borgy’s mind is (or is implemented in) his three brains [...] Borgy’s brains communicate by means of miniature radio transmitters, and are functionally integrated to the same degree that our two neural hemispheres are. Because he has three bodies, Borgy can be in three non-contiguous places at once; he can sunbathe on Bondi beach in Sydney, hike in an Arizonan desert, and have breakfast in a Parisian café all at the same time. Borgy’s perceptual experiences are structured around each of his three bodies: he sees a dog as standing thus-and-so with respect to body A, he hears a car as moving away from body B, and so on. (Bayne, 2004, p. 225)

One objection that might be raised (by a BST proponent) already at this point is that Borgy is being described in manner that suggests he is distinct from his bodies. In order to accommodate such a worry, I will dub his three bodies as Borgy A, Borgy B and Borgy C respectively and modify the original text accordingly. With that said, here is the real problem for BST:

¹⁹¹ Bayne’s concerns are admittedly slightly orthogonal to ours here. In his paper, he is attempting to evaluate what kinds of constraints, if any, that self-consciousness might place upon the unity of consciousness. The scenario to follow shortly was originally designed to put pressure on what he calls the *weak ecological constraint*, which amounts to the claim that “co-conscious experiences cannot be ecologically structured around *different* ecological selves if they are to be unified” (2004, p. 223).

Although Borgy has three bodies – and is thus either a scattered physical object or a set of physical objects – he is a single subject of thought and action. (ibid., p. 225)

Even under a non-question-begging description of the scenario, a proponent of BST seems forced to say that either the bodily self can be a single scattered physical object, or it can be a set of physical objects. The former is incompatible with any resolution to the alien limb issue that requires material unity. To see why the latter is problematic consider a little more detail:

Borgy’s perceptual states feed into a unitary cognitive system, and he has direct control over each of his three bodies (this, in part, is what makes these three bodies *his* bodies). He acts with one (or more) of his bodies in the way that you and I act with one (or more) of our limbs. It is Borgy (and not Borgy A), that sees the tree that is visually apparent to Borgy A; it is Borgy (and not Borgy B) that plays tennis with Borgy B. Information derived from each of Borgy’s three bodies is non-inferentially available – via his unified cognitive system – for actions involving any one of his three bodies. (ibid., p. 225)

This kind of global availability is important for Bayne’s purposes, for his own purpose in constructing the scenario is to evaluate the claim that “co-conscious experiences cannot be ecologically structured around different ecological selves if they are to be unified”. In short, Bayne wants to suggest that “Borgy’s perceptual experiences could be *phenomenally* unified” despite the fact that they are structured around distinct bodies (ibid., p. 225). Now although it is not the unity of consciousness *per se* that we are interested in here, this is certainly a difficult case for BST. For if the case at hand is coherent, then a single subject, Borgy, could instantiate various spatial locations, and thus various perceptual perspectives. As Bayne claims:

Borgy experiences the world from three discontinuous spatial perspectives [...] subsumed by a single phenomenal perspective. The unity of this phenomenal perspective would enable him to integrate the contents of states that occur in distinct perceptual fields. (ibid., pp. 225 - 226)

Borgy could, on the basis of the visual sensing of Borgy A, self-ascribe the property of being in front of a tree. But would he be self-ascribing the property to himself as a bodily self? If so then it would require that Borgy A be understood as simply a part of Borgy, which leaves following dilemma for BST proponents: either they must provide an account of the unity of the body that can rule out cases of alien limbs (in which case Borgy stands as a counter-example) or they must provide an account of

the unity of the body that can rule out Borgy (in which case alien limbs stand as a counter-example).¹⁹²

8.5. Being no body

I now turn to another source of problems for BST. The entire discussion so far has assumed that selves exist, and that the main point of issue for BST is in defending the claim that the self can be coherently conceived as bodily. However, there is a famous line of dissent on the very first assumption. Call this the *no-self thesis (NST)*:

- Subjects of experience do not exist.¹⁹³

Prima facie NST is rather hard to swallow. How does one even take seriously being told that what they take to be themselves does not exist? It seems rather strange to even consider the idea, or even what such an idea might amount to. Naturally then, when Metzinger asserts that: “No such things as selves or subjects of experience exist in the world” (2003a, p. 577), he is often met with an incredulous stare. But, of course, he is not the only one to hold a view on which the existence of the self is denied. Indeed Varela, Thompson and Rosch claim that “all of the reflective traditions in human history – philosophy, science, psychoanalysis, religion, meditation – have challenged the naive sense of self.” (1991, p. 59).¹⁹⁴ Still, there are a number of things it is important to understand upon encountering versions of NST. Most important to understand is that NST ought to be aimed at *theoretical definitions* of

¹⁹² Here I have been raising the possibility of multiple bodies to a self, but there is a further issue (not explored here, but equally problematic for BST) of the possibility of multiple selves to a body. For some discussion, see Dennett (1991, pp. 419 - 426).

¹⁹³ This statement can be read as an ellipsis of a more complex statement. I keep the simpler statement for the sake of generality.

¹⁹⁴ It is important to separate no-self theses from the thesis that selves are elusive with regard to perception. This latter thesis is expressed by David Hume, when he says:

For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never catch myself at any time without a perception, and never can observe anything but the perception (1739 - 1740/1960, Book I, Part IV, §VI, p. 252)

It is perfectly consistent with realism about selfhood to claim that the self is something that persistently evades our perception in some peculiar way (Howell, forthcoming).

selfhood, as (chiefly) contrasted with *descriptive definitions*. Ruth Garret Millikan describes the contrast as follows:

Descriptive definitions are thought to describe marks that people actually attend to when applying terms. Conceptual analysts take themselves to be attempting descriptive definitions. [...] A theoretical definition is the sort the scientist gives you in saying that water is HOH, that gold is the element with atomic number 79 or that consumption was, in reality, several varieties of respiratory disease, the chief being tuberculosis, which is an infection caused by the *bacterium bacillus tuberculosis*. (1989b, p. 291)

On this gloss, a theoretical definition is aimed giving an account of something in the world in virtue of a theory about its underlying structure. I do not mean to rule out the possibility that we can get at the structure of the world by analysing the structure of our concepts. But a theoretical definition ought to stand as true or fall as false quite apart from how we think. This is important, as NST is often posed as either or both of the following:

- (a). nothing exists that possesses the properties of selfhood folk psychologically understood;

and/or

- (b). nothing exists that possesses the properties of selfhood classically conceived.

I use an inclusive-or as it is not always clear which of these is being advocated, if not both. In claiming to illustrate (a) Metzinger provides the following examples:

I experience *my* leg subjectively as always having belonged to me; I always experience *my* thoughts, *my* focal attention, and *my* emotions as part of *my* own stream of consciousness; Voluntary acts are initiated by *myself* [...] I am *someone*; I experience myself as being *identical* through time (2003a, p. 302, emphases original, quotation marks removed)

And as regards (b), Albahari (forthcoming) lists said properties as follows:

Thinks thoughts, owns experiences, initiates actions.

The self exists prior to the thoughts, *etc.* – it thinks the thoughts; it is not constructed by the thoughts.

The thoughts, experiences and actions belong to the one subject – so the self is a focus of unity.

Every self is a unique and bounded individual, a thing with boundaries that separate it from other things – ‘there could only be one of it’

The self endures over time – when you wake up, it the very same you as the one who went to sleep.

The self observes many things – but, although possessing phenomenal character, it cannot directly observe itself. It is curiously elusive in this way.

(Albahari, forthcoming)

Many of these properties seem to overlap with those listed above as (a) properties (cf. Metzinger, 2003a, p. 626). But whether or not the folk psychologically understood and the classically conceived notions of selfhood ascribe different properties, the key is that if they are to be worthwhile targets for NST, they must do so under a theoretical definition. In short, it is only worthwhile for NST to claim (a) or (b) to the extent that there is genuinely a theoretical definition which NST can demonstrate to be false.

It is also important to distinguish NST from any kind of anti-realism about *subjective experience*. NSTs are often borne out of theories of consciousness that aim to provide substantive accounts of subjective experience (cf. MacKenzie, 2008; Metzinger, 2003b). They can thus accept the sentiment that “it makes no sense to say that the subjectivity of [...] experience is something that can be detached or isolated from the experience, or to say that it is something it can lack” (Zahavi, 2005, p. 126). The claim is that despite there being a compelling sense of self somehow inherent in the subjectivity of experience, this sense (it is argued) does not imply the existence of anything real that one has a sense of. At their best, NST theorists are more careful on this point than their opponents:

There is a distinct *phenomenology of singularity*, a non-sensory phenomenology of ‘thisness’—for example, in the phenomenology of meditation, but also in bodily self-consciousness. If we look closely enough, we can discover the phenomenology of primitive ‘thisness’ in our own subjective experience [...] But phenomenological structure *per se* will never determine metaphysics (Metzinger, 2011)

That last sentence is the key point of issue, as a fan of selfhood is bound to respond that:

If we were to wholeheartedly endorse such a restrictive metaphysical principle, we would declare illusory most of the world we live in and know and care about. Why not rather insist that the self is real if it has experiential reality and that the validity of our account of the self is to be measured by its ability to be faithful to our experience, by its ability to capture and articulate (invariant) experiential structures? (Zahavi, 2005, p. 128)

There are three points made here, and all help to illustrate the stalemate between NST and this particular kind of opponent. Let us take them in reverse. Firstly, as we just saw, proponents of NST do indeed have it as their aim to “capture and articulate (invariant) experiential structures”.¹⁹⁵ But they will claim that these structures are no more than appearances, they have no purchase on reality. Again, the slogan is that “phenomenological structure *per se* will never determine metaphysics”. This brings us to the second point. Zahavi’s suggestion is that the self is “real if it has experiential reality”. If the suggestion is endorsed, this would be the claim that self-consciousness is sufficient for the existence of a self (Zahavi, 2005, pp. 115 - 132). More explicitly, on this view, “the self is claimed to possess experiential reality, is taken to be linked to the first-person perspective, and is, in fact, identified with the very first-personal *givenness* of the experiential phenomena” (Zahavi, 2005, p. 106). Given that NST wishes to provide an account of the very same experiential phenomena, to identify the self with such phenomena might seem like begging the question. But then if all parties agree to the existence of the experiential phenomena, and one party wishes to define the self as nothing over and above said phenomena, it is hard to see how there is anything more than a semantic disagreement. Thirdly, although the declaration that “most of the world we live in and know and care about” is illusory might be seen as a motivation for NST, what is required is something even stronger. Certainly, it would be a small step from concluding that what

¹⁹⁵ Witness *e.g.* Metzinger’s remark that “what makes consciously experienced selfhood special, and different from all the other forms of experiential content, is the fact that [...] it is highly invariant. It is *always* there” (2003a, p. 626).

we take to be reality is different from how it appears, to the claim that what we take to be the self is different from how it appears. But even this is not quite enough for NST, what would really need to be claimed is not that the self is an illusion, but rather more akin to an hallucination. For an illusion involves merely being mistaken about the properties that are ascribable to something; it is only hallucination that properly involves being mistaken as to the existence of something.¹⁹⁶

All of this suggests the importance of NST being targeted at a *bona fide* theoretical definition. Identifying the self with an experiential dimension is likely no more than a descriptive definition. As such it simply cannot be a target of NST, and it cuts no ice against NST. Any dispute in this territory is bound to involve talking at cross-purposes, certainly not a substantial debate.

But then what would count as a theoretical definition of selfhood? One way forward would be to demonstrate that folk psychology (or perhaps, folk phenomenology) genuinely constitutes a theoretical definition of self-hood and to work out in detail what that theory is. As Stephen Stich remarks: “we could hardly hope to show that a theory is false (or to show that it is true) unless we have a reasonably accurate account of what the theory says” (Stich, 1991, p. 236). However, the difficulties here are likely to parallel those of a view which famously sought to deny the reality of mental states by construing folk psychology as a theory (P. M. Churchland, 1981). The basic problem is that the answer to questions such as

- Do subjects of experience exist?

will either be indeterminate or idiosyncratic. This at least is Stich’s thesis, and it rests on the claim that any theory of how and whether terms refer will actually be no more than a description of the psychology of those doing the referring (1991, p. 236ff.). The result is that the question boils down to a matter of intuition, and that the answer either is indiscernible (*i.e.* statements such as “x exists” have no deter-

¹⁹⁶ Metzinger is careful to make exactly this stronger claim: *e.g.* “all selves are either hallucinated (phenomenologically), or elements of inaccurate, reificatory phenomenological descriptions”; and later he thus points out that on his view there is “no one *whose* illusion the conscious self could be, no one who is confusing herself with anything” (2003a, pp. 462, 634, emphases original).

minate truth-value) or trivial (*i.e.* statements such as “*x* exists” are only false according to the idiosyncrasies of a restricted class of psychological subjects).¹⁹⁷

According to some proponents of the view, the most thoroughly worked out versions of NST ought to take it as their remit to explain why the thesis is counter-intuitive (see Metzinger, 2011, §2). Metzinger’s explanation is strikingly close to the sources of indeterminacy and triviality that Stich mentions. For instance, on his view, NST is counter-intuitive in virtue of being a “phenomenal impossibility” (Metzinger, 2003a, p. 626). Indeed, he defines intuitive plausibility as phenomenal possibility, the latter being “a property of every thought or idea which we can successfully transform into the content of a coherent phenomenal simulation” (*ibid.*, p. 55). And phenomenal possibilities can be both indeterminate and idiosyncratic

The result of a certain thought experiment, say, of Swampman traveling to Inverted Earth [...] may intuitively appear as plausible to us, whereas a dream, in retrospect, may look bizarre [...] the reverse is possible as well [...]

phenomenal possibility is always relative to a certain class of concrete representational systems (*ibid.*, p. 55)

In respect of this last point, it is no wonder that Metzinger confesses that the headline-grabbing thesis that selves do not exist “is only an answer to the crude traditional metaphysics of selfhood”, and that the concept of being no one (or in respect to BST, the concept of being nobody) “is a rather trivial one” (2003a, p. 626). In a slightly more optimistic vein, he closes a symposium on his (2003a) with the following suggestion:

It may be more fruitful to investigate the representational and functional deep structure of phenomenal self-consciousness from a truly interdisciplinary perspective, to focus on systematic detail questions and fine-grained, empirical bottom-up constraints, than to get lost in a competition of theories about what the appropriate weak notion of “self” is [...] Ontology and the big picture will eventually fall into place all by themselves. (Metzinger, 2006b, p. 4)

There is a sentiment here that is exactly in line with the official stance of this dissertation: complete neutrality on selfhood, *i.e.* complete neutrality on the actual exist-

¹⁹⁷ Note that a proponent of NST *can* claim that “I” is a referring expression. For on their view, “I” might refer to conventionally defined entities that are not real (MacKenzie, 2008, pp. 253 - 254). But the possibility might still remain that the “real” referent of the term might be indeterminate or idiosyncratic.

ence of subjects. Clearly Metzinger's scepticism about the self stems from a deep scepticism about whether phenomenology can determine metaphysics. And from here, against certain other assumptions, he concludes that selves do not exist. I am not embracing that conclusion, for I intend to remain neutral on the question. Part of the motivation for this neutrality is simply to remain on topic. If the rest of this dissertation were concerned with whether or not selves exist and whether or not they are bodily, I would not be talking about the bodily nature of perceptual experience anymore, I would be talking about the metaphysics of selfhood. That is an interesting question in its own right, but it ought to be treated elsewhere.

Chapter 9 Clearing the ground

9.0. Introduction

I concluded the last chapter by noting that the specific issue of the existence of subjects of experience (bodily or otherwise) is not a fruitful one to pursue. In this chapter, I want to lay out the issues I do believe to be fruitful in pursuit of a naturalistic explanation of how bodily experience might play a structuring role in perceptual experience. The issues are all clustered around a central dispute between two views on body representation. These views take a contrasting stance on the relationship between properties of the body as a whole and the representation of the body. And potentially, they take a contrasting stance on whether the body itself is indispensable in an explanation of how certain representational capacities are achieved.

I begin with an overview of a theory of subjective experience whose architect has recently identified the specific relationship between representation of the body and the most minimal form of subjectivity as a fruitful research target. I use the theory as a foil for discerning certain general questions about the relationship between the body and its representation, *viz.* the extent to which body representations are embodied. In the next section, I outline two kinds of view, a local view and a global view, that are distinguished by their contrasting stance on whether or not the body is represented as a whole, and potentially also by their contrasting stance on whether or not body representation is embodied. I provide a further means for distinguishing variants of each view, and the differences between them, by developing various forms of individualistic cognitive scientific explanation. In the last two sections, I argue for the virtues of certain shared assumptions about what explanation implies in this context, and certain shared constraints with respect to positing representations of and within a dynamical physical process.

- 9.1 *Bodily self-models*
- 9.2 *Representing the body*
- 9.3 *Neural vs. non-neural individuals*
- 9.4 *Laws vs. mechanism*
- 9.5 *Representation vs. dynamics*

9.1. Bodily self-models

Since the publication of his *magnum opus*, *Being no one* (2003a), Metzinger has turned to several detail questions. These have ranged from study of the representational, functional and neurobiological mechanisms involved in rudimentary social cognition (Metzinger and Gallese, 2003), to corresponding questions concerning the experience of volition (Metzinger, 2006a). But by far he has paid the most attention to discerning the nature of the simplest form of self-consciousness, and its relation to the body (Blanke & Metzinger, 2009; Lenggenhager, Tadi, Metzinger, & Blanke, 2007; Metzinger, 2005a; Metzinger, Lenggenhager, Tadi, & Blanke, 2007). This shows Metzinger keeping in lockstep with advances in contemporary science, specifically the body representation boom that has occurred in just the last decade.¹⁹⁸ However, this work is also in part an extension of ideas to be found in his (2003a). So, before moving on to the “detail questions”, I will give a brief and somewhat superficial account of these ideas, largely relying on the words of Metzinger himself to minimise errors of exposition.

Metzinger develops a multi-level theory of subjective experience as a complex representational process, on the basis of three theoretical constructs: *the phenomenal self-model (PSM)*; *the world-model (WM)*; and *the phenomenal model of the intentionality relation (PMIR)*. In particular, he urges that the PSM and PMIR will not only be discovered by the sciences of mind, but furthermore, that forging a path to their discovery is the only way in which a science of subjectivity can get any purchase (Metzinger, 2003a, pp. 9, 427). Whilst the idea of a WM can be traced to a general representationalist approach to consciousness, the PSM and the PMIR are the distinctive posits of Metzinger’s theory, the *self-model theory of subjectivity (SMT)*. He provides a succinct definition of a self-model as follows:

¹⁹⁸ As testament to the boom, several special issues have recently been published on body representation and related topics: *Neuropsychologia* “The Sense of Body” (48, no. 3, February 2010); *Experimental Brain Research*, “Body Representation” (203, no. 3, July 2010); *Cognitive Neuroscience*, “The Body in the Brain: Body Representations, Processes and Neural Mechanisms” (to be published). And these come in addition to edited volumes and monographs on the same (Gallagher, 2005; Klatzky, MacWhinney, & Behrmann, 2008; Knöblich, Thornton, Grosjean, & Shiffrar, 2006).

[A] self-model is an integrated model of the very representational system, which is currently activating it within itself, as a whole. Typically it will possess a bottom-up component driven by sensory input (self-presentation). This input perturbs or modulates the incessant activity of top-down processes continuously generating new hypotheses about the current state of the system (self-simulation), thereby arriving at a functionally more or less adequate internal image of the system's overall, actual situation (self-representation). (Metzinger, 2005b, p. 18)

Metzinger uses the notion of a model (2003a), to describe perceptual experience in representational terms, *e.g.*, “[i]f you now look at the book in your hands, you are not aware of the highly complex neural process in your visual cortex, but of the content of a phenomenal mental model” (Metzinger, 2003a, p. 22, and *passim* until p. 208 where the concept is officially introduced). But this is actually the product of the development of several concepts of representation, a subset of which, phenomenal representations, have contents that characterise a rich variety of conscious states. First there is the basic notion of *mental/phenomenal representation*, which involves a three-place relationship between a *representandum*, represented by a *representatum* (a time-slice of an information process) for an information processing-system (*ibid.*, pp. 21 - 30). Two other notions derive from this. The first is *mental/phenomenal presentation*, the traditional philosophical notion of a *quale* rendered scientifically respectable as a stimulus correlated internal state with working memory constraints characteristic of early sensory processing (*ibid.*, pp. 86 - 93). The second is *mental/phenomenal simulation*, a virtual process of modelling potentially measurable, observable states of a given target. Simulation is largely driven by spontaneous activity of the system, and its function is to enable the planning, imagining and/or dreaming of various possibilities (*ibid.*, pp. 43 - 62). *Phenomenal mental models* (inspired by Philip Johnson-Laird’s work on mental models) bridge the dreamt-up simulations with anchored presentations, as structures that integrate presentational content. This process itself accords to a variety of constraints on how the information carried must be transformed and processed to yield the variety of conscious contents comprising the WM (*ibid.*, pp. 117 - 211). To understand *self-modelling* as a particular variety of *self-representation* requires a further conceptual tool:

A simple and clear way to explicate the notion of self-representation consists in introducing the notion of *emulation* while distinguishing three cases. An information-processing system S can represent a physical object in its environment. Call this process “object representation.” In some cases, the object component will be another information-processing system: an information-processing system S_1 can represent another information-processing system S_2 in its environment. Call this “emulation.” If S_1 [is identical to] S_2 , then we have a case in which one information-processing system internally emulates itself. Call this process “self-representation.” (*ibid.*, p. 269)

Emulation is distinguished from *simulation* in just those cases in which a system reproduces not only directly measurable behaviour of the target system but also the more abstract processes that give rise to that behaviour. Although much of Metzinger’s work could be related to material on many pages of this dissertation, the concept of PSM, *qua* self-emulative self-representation, leads Metzinger to a range of interesting conclusions that bear directly on discussions above. Bearing in mind worries about the body as object, for instance, consider:

A self-modeling information-processing system internally and continuously simulates its own observable output as well as it emulates abstract properties of its own internal information processing—and it does so for itself. [...] In human beings, it is particularly interesting to note how the self-model simultaneously treats the target system “as an object” (e.g., by using proprioceptive feedback in internally simulating ongoing bodily movements) and “as a subject” (e.g., by emulating its own cognitive processing in a way that makes it available for conscious access). This is what “embodiment” means [...] (*ibid.*, p. 301)

The breadth of the concept is such that it enables speculation on virtually every aspect of self-consciousness as philosophically conceived, where in each case this is achieved by transforming that aspect into a principle or a constraint on the self-modelling process. It also enables speculation on the bases of a number of pathological cases which ostensibly present missing or deviant partitions of the PSM, allowing further differentiation of the concept. But more to the present point, it leads Metzinger to make some striking claims about the nature of bodily experience:

You are never in contact with your own body—as an embodied, conscious entity you are the contents of an image, a dynamical image that constantly changes in a very high number of different dimensions. However, this image is at the same time a physical part of your body, as it invariably possesses a true neurobiological description. (*ibid.*, pp. 301 – 302)

The very process of modelling the states of the body in which the PSM is realised, drives a conceptual distance between the output of the modelling process and its presentational input. According to Metzinger, an almost inescapable result is a “special form of inner darkness” which “consists in the fact that the representational character of the contents of self-consciousness is not accessible to subjective experience” (*ibid.*, p. 331). The result being that the self-model undergoing subjective experience is in a state of perpetual error, or as Metzinger puts it, “a naïve realistic self-misunderstanding” (*ibid.*, p. 279).

The basis for this claim (*i.e.* the basis upon which self-consciousness is held to be epistemically impoverished) is chiefly to be found in the endorsement of a distinction between phenomenal and intentional content.

The intentional content of the state in your head depends on the fact of your hands really existing or on the state being a reliable instrument for gaining knowledge about yourself in general. If the selfrepresentational vehicle [...] currently is a good and reliably functioning instrument of self-knowledge, then it allows you, precisely due to its transparency, to directly look and feel “through it,” onto your own hands. It makes the information carried by it globally available in an integrated fashion without you having to care about how this actually happens. (*ibid.*, p. 334)

This idea, that knowledge is made possible by means unknown to the knower, is exactly the kind of analysis that direct realists wish to resist. Nevertheless, Metzinger’s reasons for making the claim are plain:

The phenomenal content of your hand representation, however, is one component which stays invariant, regardless of whether your hands exist or not [...]. It does not matter if all this is a dream or an out-of-body experience, or if you are using two phantom limbs to hold a hallucinated book right now, because the phenomenal content of your bodily self-representation can in principle stay the same. (*ibid.*, p. 334)

Indeed, take any aspect of the intentionality of perceptual experience as conceived by direct realists. With the full-blown SMT to hand Metzinger can both accommo-

date said aspect, whilst distinguishing between phenomenal and intentional content. This is precisely due to the final component of the SMT, the PMIR:

The central defining characteristic of phenomenal models of the intentionality-relation is that they depict a certain relationship as currently holding between the system as a whole, as transparently represented to itself, and an object-component. [A PMIR would thus allow] a system to consciously experience itself as being not only a part of the world, but of being fully immersed in it through a dense network of causal, perceptual, cognitive, attentional, and agentic relations. (Metzinger, 2005, p. 5)

The content of a PMIR is a special form of phenomenal content, but phenomenal content nonetheless. Accordingly, the PMIR could represent an intentional relation to a concrete object even where no such relation obtained. One such case is that of an out of body experience (OBE). Metzinger translates a report of one such case for his readers:

I awoke at night—it must have been at about 3 a.m. — and realized that I was completely unable to move. I was absolutely certain I was not dreaming, as I was enjoying full consciousness. Filled with fear about my current condition, I had only one goal, namely to be able to move my body again. I concentrated all my will-power and tried to roll over to one side: Something rolled, but not my body — something that was me, my whole consciousness including all of its sensations. I rolled onto the floor beside the bed. While this happened, I did not feel bodiless, but as if my body consisted of a substance in between the gaseous and the liquid state. To the present day, I have never forgotten the combination of amazement and great surprise that gripped me when I felt myself falling onto the floor, but without the expected thud. Had the movement actually unfolded in my normal physical body, my head would have had to collide with the edge of my bedside table. Lying on the floor, I was overcome by terrible fear and panic. I knew that I possessed a body, and I only had one great desire — to be able to control it again. With a sudden jolt, I regained control, without knowing how I managed to get back into it. (Waeltli, 1983 p. 25, as cited & translated by Metzinger 2003a, p. 491)

What Waeltli describes through the medium of Metzinger is just one of many *autoscopic phenomena*: hallucinatory episodes in which a subject sees his or her own body (Blanke & Mohr, 2005). With respect to seeing the whole body, these are classified under three types, The first of these are *autoscopic out of body experiences*, such as described by Waeltli, in which a subject reports having the feeling of being at an elevated location some distance from what they believe to be their actual body,

whilst they view that body from that location (see Figure 25A). Another form is the basic *autosopic hallucination*, in which a subject reports seeing a double, a body that looks like their own, but without accompanying distortions in their spatial relations to the seen environment (see Figure 25B). And a third is *heutoscopy*, in which the subject reports oscillating between seeing a double and seeing a body which they believe to be their actual body, changing their orientation respectively (see Figure 25C).

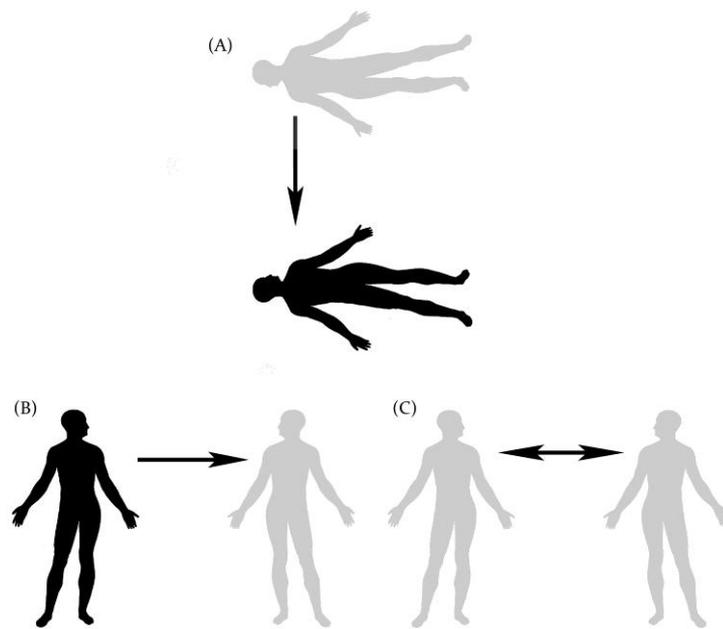


Figure 25 – Autosopic phenomena

- (A) Out of body experience
- (B) Autosopic hallucination
- (C) Heutoscopy

See text for description.

All based on Blanke & Mohr (2005, pp. 186 – 187).

Cases such as these are of interest to Metzinger in his recent work because he believes they provide a window into understanding the simplest form of self-consciousness, which he dubs *minimal phenomenal selfhood (MPS)* (Blanke & Metzinger, 2009, p. 7; Metzinger 2009b, p. 257). MPS is held to consist in a *weak first person perspective (weak 1PP)* anchored by a *global representation (GB-rep)* of the spatially situated body experienced as a whole. Although my focus is not on the weak 1pp *per se*, some points I have made earlier have some bearing. So I will note them briefly.

Subjective experience is often held to be *perspectival experience*. In a strong sense of that expression, perspectival experience connotes several capacities: to conceive of oneself as oneself, as distinct from others, and as distinct from the world that one perceives; to be capable of entertaining a variety of attitudes to a variety of objects, and to iterate that capacity as applied to one's own thoughts, states and relations, and those of others (Baker, 1998, 2000; Metzinger, 2003a, pp. 395 – 400, 411 – 412 and *passim*; Newen & Vogeley, 2003) The notion of a strong 1PP (and each of its various connotations) is a research target of a much higher complexity than MPS. MPS is associated with a weak sense of the expression 'perspectival experience', connoting merely that the immediate spatial contents of perceptual experience are organised in an egocentric field. The specific notion of a weak 1PP that MPS is associated with in Metzinger's work is a certain phenomenological_D claim, namely that perceptual experience is perspectival; though it is thought to have functional implications. As Blanke & Metzinger put it: "A weak 1PP is a purely geometrical feature of a perceptual or imagined model of reality possessing a point of projection functioning as its origin in sensory and mental processing" (2009, p. 7; cf. Metzinger 2009b, p. 257).

As I discussed in §6.5, the spatiality of perceptual experience is typically understood in terms of an egocentric frame of reference, not just by Husserl, but by several contemporary authors (e.g. Peacocke 1992, Campbell 1994, Cassam 1997). I argued above that this understanding cannot reconcile the claim that the objects of perceptual experience are located by reference to a point of origin, and the claim that said point of origin falls within the body of the perceiver. In the case of MPS, the corresponding claim would be that the point of origin is functionally anchored in a representation of the body's global spatial properties. Although this is a rarely disputed point, I believe that it likely rests upon the assumption that the spatiality of perceptual experience can be adequately conceived unimodally. It is an open question whether, if that is wrong, that spatiality ought to then be conceived multi-modally or supramodally. But in any case, I presented lines of argument above against the unimodal conception. These were to the effect that the postulated anchoring of the frame of reference would either be *ad hoc*, or that it would lead to claiming the possibility of there being mutually exclusive egocentric terms applicable in description of one perceptual experience (*i.e.*, both 'in front' and 'to the right'). I will not convey the point further here; instead I will move on to discuss the other component of MPS, GB-rep.

The notion of a GB-rep has some ambiguities that are not frequently noted.¹⁹⁹ My purpose in the remainder of this section will be to explore these ambiguities by developing an opposing stance. The hope is that in doing so, I can both highlight the future research issues that need to be better understood, and develop a novel conception of the relationship between body representation and the body. Let me be clear though, I do not intend this exercise to be seen as an attempted critique on SMT; I intend to treat the claims of MPS in conceptual isolation. Indeed, what I hoped to have expressed above is the deep complexity of SMT. Although, *prima facie*, the theory can be summarised in a fairly accessible fashion, its actual specification confronts one with a plethora of technical devices that Metzinger uses to further his theoretical aims. One of these is the distinction between phenomenal and intentional content. Phenomenal content is phenomenology_M with regard to this distinction. Hence it is a distinction that is unavailable to me in the neutral stance that I have taken on the metaphysics of content.

This makes a number of points of dispute somewhat orthogonal. In particular, Metzinger's variously placed claims to the effect that the experience of being a body is epistemically unjustified will not be evaluated. I believe these claims validly follow from the specific way in which phenomenal content is defined; hence evaluation of the claim would lead to evaluation of the definition, which is not my remit. Nevertheless, I do believe that an interesting point of issue can be raised with respect to the extent to which explanations of body representational capacities require appeal to their *embodiment*. That is a somewhat overused term, and in fact I only have use of the term with respect to body representation, so let me stipulate a condition that is both necessary and sufficient for the embodiment of body representation:

- A body representation is embodied iff. reference to the actual body (and/or its properties and/or its relations) is indispensable in an explanation of how the representation achieves its function

The sense in which reference to the body is held to indispensable is something I hope to convey in the course of discussing the questions I want to focus on for the remainder of this chapter. Those questions are these:

- What would lead one to question the embodiment of body representation?
- And how might one evaluate the embodiment of body representation?

¹⁹⁹ One ambiguity already might be the term 'global representation'. Although I am adopting the term from Blanke & Metzinger (2009, pp. 10, 12), in the interest of disambiguation I note what they clearly mean it convey: a global representation is a representation of global properties of the body (*cf.* 2009, p. 9).

9.2. Representing the body

The embodiment of body representation might naturally be questioned by appeal to OBEs. Shortly, I hope it will be clear why it is this kind of case, and not cases in which only specific parts of the body are illusorily experienced or are the objects of hallucination, that is required to motivate the disembodiment of body representation. However, the question to ask first is this:

- What justification is there in positing a GB-rep of the body in order to explain OBEs?

An initial worry might stem from a basic denial of the phenomenon, in suggesting (perhaps) that the reports, such as the one translated by Metzinger that I quoted above, are in fact confabulations. Confabulation is a perfectly general epistemic deficiency, to which individuals are particularly liable when employing autobiographical memory (Hirstein, 2005, pp. 43 - 68, 177 - 212). But this line of thinking can be readily halted through appraisal of the fact that out of body experiences can be reported as they occur. For instance, Blanke et al. (2002) stimulated the right angular gyrus of an epilepsy sufferer's, who then reported of a visual experience of her body from above. Although the authors do not convey the extent of the time-delay between stimulation and report, it is not a wild thought to assume that it occurred fairly soon after.

In any case, the issue of whether the reports are valid and not corrupted by unreliable memory mechanisms is not one that I want to dispute. Rather, what I want to resist the claim that the reported experiences themselves justify positing a GB-rep. More specifically in fact, what I want to resist is the move from the claim that "MPS is associated with global, fully embodied self-consciousness and is experienced as a single feature" to the claim that there is "a coherent representation of the whole, spatially situated body" (Blanke & Metzinger, 2009, p. 9). To some this might be thought as just a matter of conceptual truth: if experiencing is representing, then whatever is experienced is represented; if global properties are experienced, then they must be represented. What I want to resist is the intuition that prompts the question: How could it be any other way?

This might sound like I am setting up an attack on the very idea that the brain represents the body. I am not. In fact, what I am claiming is that there is no need to employ a representation of the body as a whole when adequate representation of parts will serve in its stead. Call this a *local view* on body representation. The local view I have in mind is the most ambitious variant: a thoroughly general view on which only representations of parts and their properties are required for any given task in which representation of the body is required at all. Call these representa-

tions of parts *LB-reps*. The local view contrasts with any view that posits GB-reps. Call such a view a *global view* on body representation. Rudimentary versions of the global view come in at least two varieties. The first simply posits a GB-rep. The second posits both GB-reps and LB-reps.

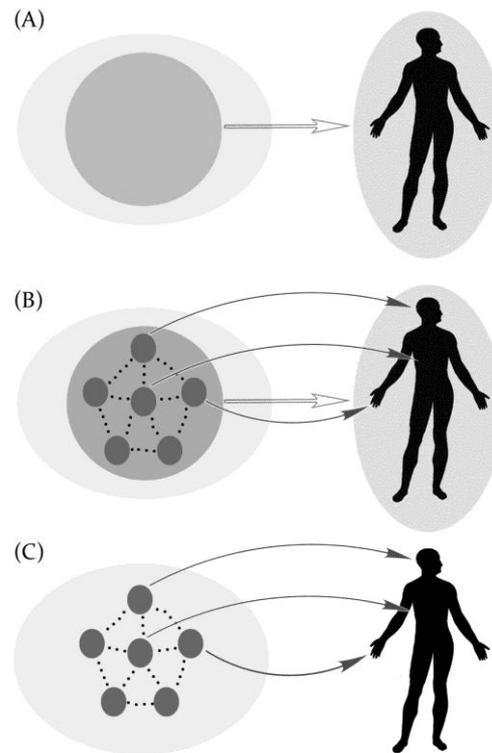


Figure 26 - Global and local views on body representation

Representational relations indicated by arrows: between GB-rep and global properties of the body by open arrow; between LB-rep and body parts and their properties shown by filled arrows. Potential causal interactions between LB-reps shown by dotted lines.

- (A) A global view that only posits a GB-rep.
- (B) A global view that posits both LB-reps and a GB-rep.
- (C) A local view that posits only LB-reps.

If the second of these simplified global views were the only formulation available, and if the ambitious local view achieved its ambitious aims, then the local view ought to be ruled the status of best explanation, in virtue of its parsimony relative to the others. However, that is a piece of idle speculation at this point. I do not assume that the two simplified global views exhaust the options in this area. Indeed, one ought to leave the possibility of different kinds of GB-rep, differentiated by content, format *etc.*, posited for different kinds of task; and overall a rather more complex and precise theory than either of these global views amount to. Moreover, an issue

which I will not address is that of potential causal relationships between internal representations of parts of the body and the implications this may or may not have for positing GB-reps. I am focussed on the very first hurdle here: getting the discussion going, in order to prompt further specification of possible global views, and open up the possibility of exploring local views.

I ought to note, in the interest of disambiguation, that various manifestations of the global view enjoy a fairly established and orthodox status. Two concepts, often conflated, are closely associated with the idea of a GB-rep: the *body schema*, and the *body image*. Summarising his own and other comprehensive reviews, Shaun Gallagher notes that in the literature of disciplines ranging from medicine to robotics

[...] the schema or image of the body is alternately characterized as a physiological functioning, a conscious model or mental representation, an unconscious image, a manner of organizing bodily experiences, an artificially induced reflection, a collection of thoughts, feelings, and memories, a set of objectively defined physical positions, a neuronal map or cortical representation, and an ideational/conceptual activity. (2005, p. 22)

And in light of all this he remarks

[...] it does not seem possible that the body schema/body image is at once or even at different times all of these things. The variety of proposals considered here suggests that, rather than one complex concept with a plurality of names, there is, over and above the terminological ambiguity, a basic conceptual confusion. (Gallagher, 2005, p. 22)

Despite this apparent confusion, it is still reasonable to say that the terms implicate GB-reps for some (see Paillard, 2005 for a particularly clear case). This would be roughly the kind of orthodoxy that a local view would serve to resist, by taking it as an open question whether tasks that are claimed to require GB-reps actually do require them.²⁰⁰

Here is some *prima facie* support for the local view. The local view claims that parts of the body are represented in the nervous system. In fact, this is probably the most secure claim to emerge from the body representation literature. In particular, the local view can make appeal to the study of spatial representation of body parts. A strong basis to begin with is the fact that single neuron recording studies have re-

²⁰⁰ For a state of the art review of the body image and body schema distinction, and other potential taxonomies of body representation, see de Vignemont (2010).

peatedly documented both cortical and subcortical neural populations with multi-modal receptor fields centred upon particular body parts. For example, Fogassi et al. (1996) report that 56% of the cells in area F4 of the ventral premotor cortex have both visual and somatosensory receptor fields centred upon the arms, face, neck, and torso. And likewise, Graziano & Gross (1993) report that 20-30% of cells in area 7b of the posterior parietal cortex, and 24% of cells in the putamen, have similar properties.

There is a range of psychophysical data that is convergent with the neurophysiological data in this regard. For instance, Spence et al. (2004) asked subjects to hold multisensory stimulus cubes containing vibrotactile stimulators, placed where they gripped the cube with their forefinger and thumb respectively, with LEDs visible at respective forefinger and thumb locations. There were thus four possible stimulus locations, for two possible stimulus modalities. While holding the cubes participants were required to fixate a central point situated midway between their two hands, held equidistant from the midline. Their task was to determine the location of a single tactile stimulus delivered either to the thumb or the forefinger of either the left or right hand, while ignoring a visual distracter presented simultaneously at one of the four locations. This setup reliably produced a *crossmodal congruency effect*: when visual stimuli appeared at the same location as tactile stimuli, reaction times were drastically faster and fewer tactile discrimination errors occurred (see Spence et al., 2004). Again this suggests, at the very least, a dense integration of visual and tactile information concerning the relevant region.

The point is also illustrated by some excellent neuropsychological studies. Certain patients with right-hemisphere lesions are able to detect individual stimuli (light flashes, touches) on either side of their bodies, on or near their hands for instance. But when presented with simultaneous stimuli on symmetrically opposite sides of the body they are only able to detect a stimulus on their right (ipsilesional) side, a phenomenon known as *extinction*. Extinction may occur within a particular modality, such as vision or touch – known as *unimodal extinction* – or it can occur across modalities, such as vision and touch – known as *crossmodal extinction*, in this particular case *visuotactile extinction*. Visuotactile extinction has been reported in case studies involving visual stimuli presented in spatial regions proximal to the hands (di Pellegrino, Làdavas, & Farnè, 1997), and also in regions surrounding the arms, the face and the head (Làdavas, 2002; Mattingley, Driver, Beschin, & Robertson, 1997). All of which suggests that the brain systematically integrates tactile information, concerning the superficial surface and/or orientation of a particular body part, with visual information concerning the space surrounding that part. Generally speaking, bodily proximity is an important variable in these studies (roughly $\leq 70\text{cm}$: see Làdavas, Farnè, Zeloni & di Pellegrino (2000) for some investigation).

This is all only to show that the very idea that parts of the body are represented is not without basis. A more general theory of representation is required to marshal studies like these into the service of a local view. Indeed, the nature of the LB-reps posited by an ambitious local view awaits further specification. But with the possibility of LB-reps in mind, consider now the *full-body illusion paradigm* that is standardly thought to involve manipulation of a GB-rep. In a series of studies Olaf Blanke and his colleagues present participants with a virtual image of a full-size body (or a body-sized cube in control conditions) being visibly stroked on the rear surface of the torso (*i.e.*, its back), whilst they are synchronously or asynchronously stroked at the same location on their own torso (Aspell, Lenggenhager, & Blanke, 2009; Lenggenhager, Blanke, & Mouthon, 2009; Lenggenhager et al., 2007).

The aim of the paradigm is to introduce a conflict between vision and touch, in order to induce a sense of ownership for the virtual body that is seen being touched and to create an error of perceived location relative to the subject's actual location. A questionnaire is used in order to measure the extent to which a sense of ownership is induced. In the synchronous condition, answers are consistent with the claim that subjects experience a sense of ownership for the virtual body that they see being stroked. The measurement of perceived location is more implicit. For instance, in one study participants are blindfolded and passively walked backwards a few steps, and then asked to return to what they believe to be their original location. In the synchronous condition participants' perceptual judgements of their original location are significantly closer to the location of the virtual body than their actual location during the experiment.

The difficulty here is that there is little assurance that this is a manipulation of a GB-rep. There is no measure of whether, or even the extent to which the effect is localised to particular parts. This is pertinent, because to claim that the illusion is a manipulation of a GB-rep implicates the assumption that it is not localised to particular parts (*cf.* Blanke & Metzinger, 2009, p. 9). The difficulty becomes vivid when confronting recent work on the rubber-hand illusion (RHI), of which the "full-body illusion" paradigm is a modification. As described in §7.4, in the RHI paradigm, multi-sensory conflict is established by stroking a presented rubber or virtual hand and synchronously stroking a participant's own hand (hidden from sight). An implicit measure of perceived location shift is conducted by passively moving the participant's hand (still hidden) and asking them to replace it to the original location. Now, the point is not merely that the RHI paradigm plausibly studies LB-reps. The point is that the RHI turns out to be (in some cases) not in fact an illusion localised to the hand, but an illusion localised to the finger. With essentially these issues in mind, Tsakiris, Prabhu & Haggard hypothesised that:

[If] RHI is entirely localised, then the perceptual shift for a non-stimulated finger should be zero. If the RHI transfers fully from the stimulated finger to other non-stimulated fingers, then the perceptual shift should be equal for both fingers. (2006, p. 427)

And indeed, Tsakiris and Haggard (2005) and Tsakiris et al. (2006) found a pattern of localised perceptual shifts, where

[...] the perceived location of the stimulated' finger shifted towards the video image location in the same way as in the original RHI [...] when participants judged the proprioceptive position of another finger which had not been stimulated, the shifts were significantly reduced. (Tsakiris et al., 2006, p. 427)

The issue then is whether a similar pattern of partial localisation would be found in the full-body illusion paradigm. The questions here are straightforward and likely to be answered soon enough. For instance: if it were not the torso, but perhaps the arm that were stroked, would the results of the self-localisation measure be the same or different? And would there be the same or different reports illicit? Suffice to say that until it can be incontrovertibly shown that the illusion does not localise to parts of the body, talk of the fullness of the body illusion is misleading, and the name of the paradigm a misnomer.

But actually, I think the issue between local and global views is more complicated than the above suggests. For what I see to be the fundamental difference between the two views is that the global view takes global properties of the body to be properties that need representing, whereas the local view (at least a potential local view) takes them to be properties that can be exploited. The notion of *exploitative representation* is owed to Robert A. Wilson. To convey the sense of exploitation here, consider his example, in which he compares two ways of building a device for keeping a tally of how far a car has travelled:

One way it could do this would be for the assumption that 1 rotation = x meters to be part of its calculational machinery [...] Another way of achieving this end would be to be built simply to record x meters for every rotation, thus exploiting the fact that 1 rotation = x meters. In the first case it encodes a representational assumption, and uses this to compute its output. In the second, it contains no such encoding but instead uses an existing relationship between its structure and the structure of the world (Wilson, 2004, p. 163)²⁰¹

Wilson's second device might not employ any representations at all. However, I am suggesting that a representational system can represent aspects of its target and also use a non-representational strategy along the lines of the second device Wilson describes. But in this case, it is one that uses an existing relationship within the holistic structure of the body. Hence, the exploitable properties can be indicated with reference to the rudimentary definition of a structural affordance from §7.2:

SA* A structural affordance is a relation between a bodily agent b and the properties I^P and I^W of parts of its body, in virtue of which a basic action φ is possible for b .

- I^P is the property of being causally interactive with other parts $x_1, x_2, x_3, \dots, x_n$ in virtue of their properties $P_1, P_2, P_3, \dots, P_n$.
- I^W is the property of being causally interactive with the whole body in virtue of its properties $W_1, W_2, W_3, \dots, W_n$.

The claim is that a system could, in each case in which it represents the body, represent individual parts of the body and either the property I^P or some property P and in doing so exploit the fact that those very same parts possess the property I^W . Such a system would employ the holistic structure of the body itself in achieving a given task, precisely by not representing that structure as an interconnected whole, but only in each case as a connected part. This would amount to an explanation of a body representational capacity that required appeal to its embodiment. For in such a case, the actual body and its properties and relations would be indispensable terms in an explanation of how these capacities achieve their function. A contrasting global view would claim that a system requires a GB-rep of either some W or the property I^W to achieve certain tasks. If W properties are represented, then the closest of the three views pictured is Figure 26A. If either the property I^W is represented, or the property I^W and some property W , then the closest is Figure 26B.

²⁰¹ Cf. also the discussion of 'minimal memory strategies' in Ballard, Hayhoe, Pook and Ra's (1997, p. 732)

9.3. Neural vs. non-neural individuals

Similar ideas to that espoused in the local view detailed above are readily found. This allows me to clarify what it would be to deny the embodiment of body representation and claim that reference to the body is dispensable in an explanation of certain representational capacities. It would be, in effect, to claim that structural affordances present us with a case of *causal spread*, but not *explanatory spread*. Although these two concepts will take a little unpacking, they are neatly summarised by Matteo Mameli as follows:

Causal spread occurs when we discover some new factor causally involved in the occurrence of a phenomenon [...] *explanatory spread* occurs when we realize that some factor that was not taken to be part of a sufficient explanation of a phenomenon needs to be included in such explanation. (2005, p. 388 emphases modified)

So what is the relationship between the two? Mameli elaborates:

Since the fact that something is causally required does not entail that it is also explanatorily required, causal spread does not necessarily lead to explanatory spread. But in cases where the newly discovered causal factor is deemed to be an *important* one, causal spread is likely to generate the inclusion of the newly discovered factor in any sufficient explanation of phenomenon to which this factor causally contributes. That is, in these cases, causal spread leads to explanatory spread (2005, p. 388 emphasis mine)

Causal spread is necessary for explanatory spread, but not sufficient. To achieve sufficiency, it seems like “importance” is the difference that makes the difference. In fact, the best way of grasping what is deemed to be important is to get a handle on what the talk of “spread” amounts to. Mameli adopts the terms (causal and explanatory spread) from an article by Mike Wheeler & Andy Clark, where they attempt to convey the purported significance of cases in which “causal contributions made to online adaptive success by environmental and (non-neural) bodily happenings are on a par with those made by neural happenings” (Wheeler & Clark, 1999, p.108). The moral, they believe, is that in such cases “no aspect of the extended brain-body-environment causal system should be *explanatorily* privileged in the cognitive-scientific understanding of the observed behaviour” (ibid., p. 108 emphasis original).

These claims come directly after an exegesis of Thelen & Smith’s treatment of the development of infant locomotion (see §7.3); and in particular, frequently occurring rhetoric like the following:

Without a context, *there is no essence* of leg movements during the first year. Leg coordination patterns are entirely situation dependent [...] There is, likewise, no essence of locomotion either in the motor cortex or in the spinal cord. Indeed, it would be equally credible to assign the essence of walking to the treadmill than to the neural structure, because it is the action of the treadmill that elicits the most locomotor-like behaviour. (Thelen & Smith, 1994, pp. 16 - 17 emphasis original)

What Thelen & Smith are railing against is a certain style of explaining infant development that dominated for much of the 20th century. In one form, this style manifests as describing the infant as passing through stages of a genetically determined developmental plan which unfolds as a consequence of brain maturation alone (McGraw, 1940). In another form, this style manifests as describing the changes in the infants endogenous activity (*i.e.* the “disappearance” of stepping) as a direct consequence of global changes in the infant brain’s information processing capacity (Zelazo, 1984). A common thread between these accounts, according to Thelen & Smith, is the “widespread and seductive, but ultimately illusory” thought that “behaviour can be reduced to an *essential* that is represented in some privileged form within the organism” (1994, p. 8). It is this rejection that Wheeler & Clark attempt to express when they say that

This sharing-out of the explanatory weight – call it *explanatory spread* – is manifestly at odds with cognitive scientific tradition, which is to seek explanations of intelligent behaviour that appeal fundamentally, and usually exclusively, to strictly agent-internal neural phenomena (Wheeler & Clark, 1999, p. 108)

A key point here, though not emphasised as such, is that it is only relative to an appropriate contrast with “cognitive scientific tradition” that the causal nexus can be seen as spreading. And as causal spread is necessary for explanatory spread, the same goes for that too. Furthermore, what is regarded as important in the theoretical framework in which the spreading is identified must not have been identified as important in the framework relative to which the spreading occurs. There are hints of this in yet another variant of the “spreading” idiom, when Mike Wheeler has his reader consider the “*nontrivial causal spread*” that occurs when causally spread factors “reveal themselves to be at the root of some distinctive target feature of the phenomenon of interest” (Wheeler, 2005, p. 207 emphasis original). Explanatory spread *qua* non-trivial causal spread, feeds off controversy, or at the very least contrast.

I want to move towards a minimal sense of rigour in identifying the relevant contrast between the global and local views mentioned. I think it would be best under-

stood as a dispute over the nature of the *individual* in a given cognitive scientific explanation. That is, the issue can be fruitfully understood as a dispute between two theories that are committed to *individualistic* cognitive scientific explanation of some kind. Individualism in explanation of mind in general has seen a lot of discussion. Wilson expresses the intuitions behind it as follows:

Where does the mind begin and end? We think of the mind as tied to and delimited by individuals. Minds do not float free in the air or belong to larger, amorphous entities, such as groups, societies, or cultures. No they are tightly coupled with individuals (2004, p. 3)

Individualism can have application with respect to the classification or the location of mental states. With respect to classification, a famous instance is Jerry Fodor's recommendation that psychology ought to abstract away from details of the environment in classifying mental states.²⁰² The classification thesis is usually (though need not be) run together with a location thesis which assumes that states of mind are located within the boundaries of some canonical object of scientific study. It is the location thesis that is the more useful focus here.

There are three assumptions to individualism about location. The first is that there is an individual: some well-defined entity, perhaps a clearly demarcated system (Sterelny, 1990, pp. 82, 104 - 108). The second is that it is to the individual alone which the properties of interest are attributable. These assumptions are of a very general kind, and have application in various domains of scientific inquiry.²⁰³ And to the extent that these assumptions are normative, they employ the *ought* of good practice, rather than *a priori* deduction, stemming from a history of influential scientific research (Rupert, 2009, pp. 38 - 41; R. A. Wilson, 2004, pp. 40 - 44). A third assumption is also usefully expressed by Wilson:

²⁰² This is a large and complicated topic initiated originally by Fodor's (1980) article. Burge (1986) and Stich (1980, 1983) provide very different kinds of response, the former rejecting individualism, the latter accepting individualism to the detriment of the representational theory of mind. For some the debate has reached the stage of scholasticism, and should be left to the history of philosophy in favour of a philosophy of mind *qua* cognitive science (Chemero & Silberstein, 2008). In any case, see Kim (1996, pp. 184 - 201) for a nice introduction and bibliography.

²⁰³ Another area where individualistic theses have seen rich discussion is in the philosophy of biology. See Sterelny & Griffiths (1999, pp. 53 - 111) for an overview. See Wilson (2005) for the advancement of anti-individualist theses in that context.

Minds exist inside individuals [...] we might quibble about how far throughout the brain and central nervous system the mind extends spatially. But again, the boundary of the mind is no greater than the boundary of the individual (2004, p. 3)

Individualism then, is the sum of three assumptions:

- (a). There is an individual *i*.
- (b). Causal explanatory properties of kind *x* are exclusively attributable to *i*.
- (c). Causal explanatory properties of kind *x* are spatially located within *i*.

The historical contingency underlying the first two assumptions can make the idea of the boundaries of the individual (and thus the extent of its location) somewhat fluid and perhaps accidental. Again, as regards individualism about the mind, Wilson characterises the received view as one of two options: “If it doesn’t stop further in, in the brain, then it at least stops at the skin” (2004, p. 3). Perhaps there are many more varieties of individual than just these two. But these are the two that we will consider. The same three options are possible for cognitive scientific explanation. In fact, it is in this context that individualism about the mind has seen most discussion. From now on I will restrict discussion to this arena. Here, very briefly, are some examples of these three options from the recent literature.

An “intracranial” construal of the boundaries of cognition identifies the boundary of the cognitive individual (the cognitive system) with the cranium (Adams & Aizawa, 2001). The individual within those bounds is the brain. Call this a *neural individual*. Global views such as briefly described above *prima facie* propose a neural individual. An alternative conception is to see the individual as “individuated by organismic boundaries” (Rupert, 2004, p. 393). Call this an *organismic individual*. The local view mentioned above proposes an organismic individual. Perhaps a useful way of thinking about the difference between the two is provided by analogy with the spinalised frogs described in §7.3. The task-specific flexibility enabled by the (*P*) properties of these otherwise helpless creatures could motivate positing either a spinal individual, or simply an organismic individual, depending on one’s theoretical proclivities. Analogously, tasks involving the *W* properties of an organism’s body could motivate positing either a neural or an organismic individual, depending on one’s penchant for exploitative representation.

The discussion has provided two ways of filling out assumption (a), corresponding to two varieties of individual (see Figure 27).

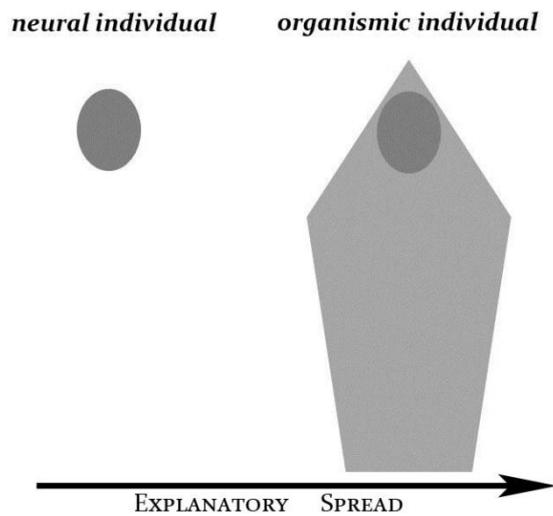


Figure 27 - Two varieties of individual

There are also, then, at least two rudimentary varieties of individualism at hand, neural individualism and organismic individualism, where the latter constitutes explanatory spread relative to the former. I call them rudimentary varieties in the same vein that I called the global views above rudimentary, to indicate that they could be and indeed ought to be more sophisticated, and complicated as a result. Nevertheless, before saying why and how that would be so, I will briefly state the two views. Reading *b* as the brain, neural individualism would be:

- (a). There is an individual *b*.
- (b). Causal explanatory properties of kind *x* are exclusively attributable to *b*.
- (c). Causal explanatory properties of kind *x* are spatially located within *b*.

And reading *o* as the organism, organismic individualism would be:

- (a). There is an individual *o*.
- (b). Causal explanatory properties of kind *x* are exclusively attributable to *o*.
- (c). Causal explanatory properties of kind *x* are spatially located within *o*.

But one might want to hold that things can get more complicated when filling out assumptions (b) and (c). One reason for doing so would depend on the endorsement of a particular view of realisation. Realisation is often understood as a determinative relation running in the opposite direction to supervenience, *i.e.* from realisers to supervenients. Wilson (2004, pp. 100 - 143) complains that the standard

views of realisation (usually implicit in discussions of supervenience) conflate the claim that realisers are metaphysically sufficient for the properties or states that they realise with the claim that realisers of states or properties are wholly constituted by the individual that bears them. By contrast, on what Carl Gillett (2002) calls a *dimensioned-view of realisation*, the realisers of properties can vary independently of the bearers of the properties realised. Wilson develops a similar view, on which the realisers of properties extend beyond the individual that possesses said properties in cases of what he calls *context-sensitive realisation*. If dimensioned accounts of realisation such as Wilson's context-sensitive view are correct then one ought to make room for answers to (b) & (c) to differ. One might deny (c), claiming that the realisers of the properties in question extend beyond the bounds of the individual identified in (a), to which the properties are attributed in (b).

One way of doing so, but preserving individualism about location, would be to call for a distinction between *strong* and *weak forms of individualism*. A strong form has all three assumptions line up together. A weak form replaces (c), to allow that one might attribute the properties in question to some bearer located within the boundaries of a broader system identified in locating the properties in question. Hence, weak individualism would require the possibility of replacing (c) with something like the following:

- (d). Realisers of properties of kind x are located within a system S

This would allow one to distinguish between the location of the individual to whom the states or properties are attributed, and a potentially broader system within which the individual is located. It would likely involve the claim that whilst the properties belong to the individual, they do not in the same sense belong to the system that is metaphysically sufficient for their realisation.

Alternatively, one might want to analyse individuals as systems. But then one might still want to locate the properties of interest beyond the bounds of the individual held to possess them, because the individual's boundaries (*qua* system) are somewhat irregular. To give a sense of how this might occur, here is a handy primer on a form of systems analysis in which irregular boundaries of a system are somewhat innocent:

First, a system is defined by its *organization*—that is, the functional relations among its elements. These relations cannot be changed without changing the identity of the system. Next, systems can be described as either *facultative* or *obligate*. *Facultative* systems are temporary, organized for a particular occasion and disbanded readily. *Obligate* systems, on the other hand, are more or less permanent, at least relative to the lifetime of their parts (M. L. Wilson, 2002, p. 630)

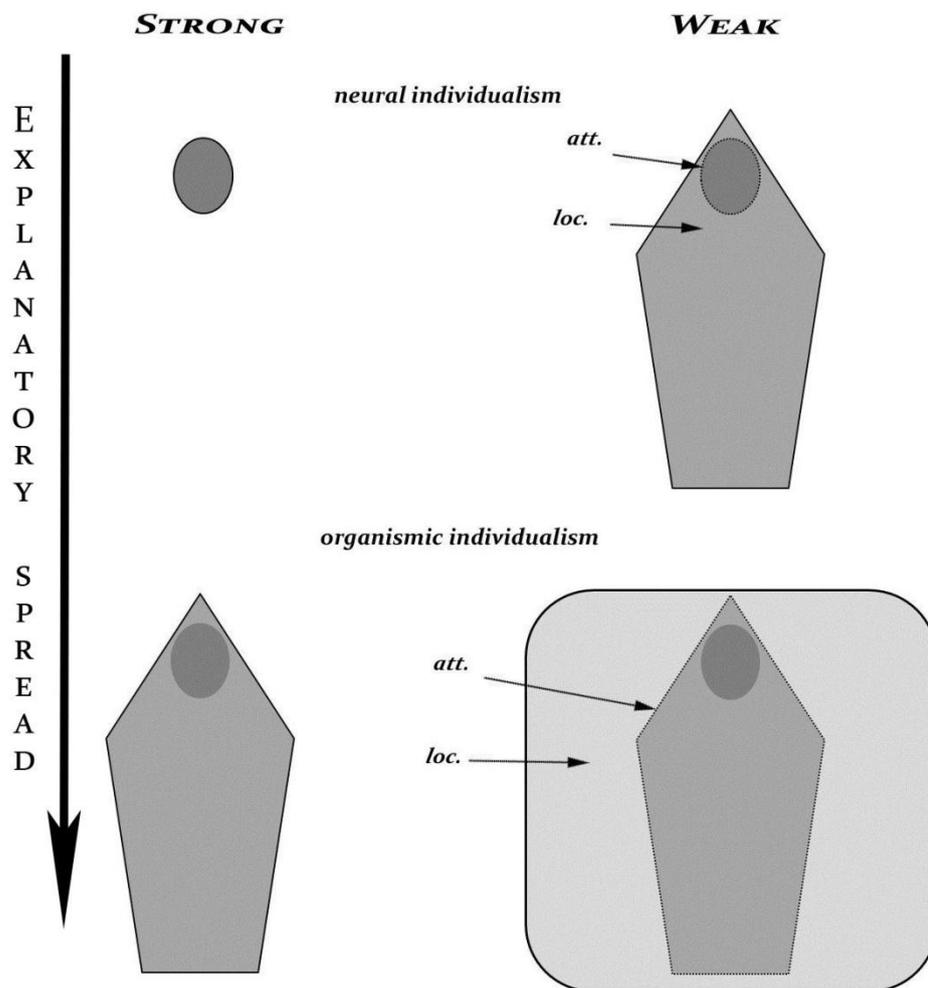


Figure 28 – Varieties of individualism

Attributions can be made to any putative individual within the boundary indicated by the attribution (*att.*) arrow. Locations are identified in reference to determinate spatiotemporal regions. Solid lines indicate obligate systems, dotted lines (on the right) indicate facultative systems (see text).

Although this is a distinct motivation for dissociating (b) and (c), I see it to be to the same effect. A view on which the individual is facultative might well have trouble locating the boundaries of the individual in order to locate the properties within it. Obligate individuals would not present such trouble. For taxonomic purposes I treat the latter as entity-like systems, equivalent to determinate regions of space that remain stable over time, or are clearly delineated at a given time. On a final analysis, this stipulation might need to be rejected, along with the assumption that if locat-

ing x is possible, the location of x must be such a determinate spatio-temporal region (see Figure 28, right-hand side).

A last thing to note is that the taxonomy is fully intended to pay little to no heed to the extant terminology that refers to cognition variously as embodied and/or embedded and/or extended. These terms now have fully achieved the status of buzzwords. They are hardly of much use in identifying viable theoretical options, by means of which one can draw the basic contrasts required for marking explanatory spread systematically. Having said that, here is a gesture at locating these terms within the framework, moving from the easiest to locate to the hardest: Embedded cognition, in the hands of Rob Rupert is most certainly a form of strong organismic individualism (2004, 2009). Extended cognition in the hands of Andy Clark motivates a new kind of individual, an ‘extended individual’, and espouses thus either a strong or a weak extended individualism (2003, 2008). Embodied cognition is hardest to locate. The variety of uses of the term “embodiment” can place it anywhere from weak neural individualism, to weak extended individualism (see Prinz, 2009 for useful suggestions; and M. L. Wilson, 2002 for a good review).

9.4. Laws vs. mechanism

I have been talking about local and global views, and indeed, neural and organismic individualisms, as contrasting approaches to cognitive scientific explanation. However, it is crucial that these approaches can agree upon what cognitive scientific explanation should involve. I want to promote a view on scientific explanation in general that has seen some fruitful developments recently. But first I will outline a rather more canonical model of explanation and its shortcomings.

Explanations are given in many different contexts. As Robert Wilson and Frank Keil note, they are “ubiquitous, pervading our activities from the most simple and mundane (“Just going to the store to buy some milk”) to the most sophisticated and unusual” (2000, p. 87). Sophistication is certainly an aim of *philosophical* explanation, and unusualness is often an outcome (perhaps even by design). But for all that, philosophical work on explanation has tended to focus on *scientific* explanation. In some form or other, such work stems back to the birth of natural philosophy in the discussions of the Ancients.²⁰⁴ But in the modern era, much of the discussion has

²⁰⁴ E.g. for a brief survey of Aristotle’s account of causal explanation see Psillos (2007, pp. 100 - 102). And for a comparison of its similarities to the DN model (discussed in the main text above), see Jeffrey (1971, pp. 19 - 20).

been held captive by the *deductive-nomological (DN)* model of explanation championed most notably by Carl Hempel. The DN model is structured around two basic ideas. The first is that nature is characterised by regular patterns. The second is that any natural event is sufficiently explained by demonstrating its occurrence as a logical consequence of one of these patterns. In slightly more detail, a DN explanation involves two elements

- * *Explanans*: a sentence (or class of sentences) “adduced to account for the phenomenon”
- † *Explanandum*: a sentence (or class of sentences) that describes some phenomenon to be explained (Hempel & Oppenheim, 1948, pp. 136 - 137)

From here there is all the work to do. If (*) is to sufficiently explain (†) it ought to meet certain further conditions. In its classic statement, DN provides several further conditions that are indeed characteristic of the model. Firstly, any (†) must be a logical consequence of the (*) and the sentences constituting (*) must be true. Accordingly, the ensuing explanation would be a sound deduction. Secondly, and crucially, the sentence (or class) in (*) must do more than simply state antecedent background conditions: it must state a law of nature in virtue of which the deduction is valid (ibid., p. 137). On a classical DN conception, natural laws are no more than summaries of regularly observed patterns of events. Thus a summary of a “causal” explanation looks like this:

If *E* describes a particular event, then the antecedent circumstances described in the sentences C_1, C_2, \dots, C_k may be said jointly to “cause” that event, in the sense that there are certain empirical regularities, expressed by the laws L_1, L_2, \dots, L_r , which imply that whenever conditions of the kind indicated by C_1, C_2, \dots, C_k occur, an event of the kind described in *E* will take place. (Hempel & Oppenheim, 1948, p. 139)²⁰⁵

These “empirical regularities” are assumed to pick out the form of nature, so scientific explanation ought to be a rational reconstruction of the latter in the form of an argument, *i.e.*:

²⁰⁵ There is a Humean strand that is implicit in Hempel & Oppenheim (1948) but nevertheless present. Indeed, according to some the only justification the model can find is its correspondence with an empiricist conception of causation, assumed to be antecedently correct (e.g., Boyd, 1991, pp. 355 - 359). Though I recognise the (especially historical) importance of concepts of causation in accounts of explanation, it would take us too far afield to explore them in any depth. For more on Hume’s views and subsequent influence in this area, see Psillos (2007, pp. 110 - 114).

$$\frac{L_1, L_2, \dots, L_r}{C_1, C_2, \dots, C_k} \therefore E$$

Thus if one follows the DN model, the real conceptual work in scientific explanation is in giving “a precise characterization of the logical relation between the *L*’s and *C*’s on the one hand and *E* on the other” (Kim, 1963, p. 286). If one has that, then one can argue that the phenomenon is to be expected, given that the law holds true. In respect of this basic advertence to laws in explaining phenomena, the DN model is often called a “covering law” model of explanation; indeed, Hempel & Oppenheim talk briefly of the “subsumption” of the *explanandum* under a set of laws (1948, p. 139). But as Robert Cummins complains, this is a potential source of problems for the DN model:

No laws are explanatory in the sense required by DN. Laws simply tell us what happens; they do not tell us why or how. Molière, satirizing the appeals to occult properties and “virtues”, tweaks the doctors of his time for explaining that opium puts people to sleep because it has a dormitival virtue. But isn’t this just what subsumption under law always amounts to? (2000, p. 119)

A defender of DN might say that what Molière’s doctors refer to are *non-explanatory laws*, and that the business of scientific explanation is in finding necessary and sufficient conditions for laws to be genuinely explanatory. But if they did, they would miss his point, which is simply that this cannot be done. In any case, what might be of more interest is the fact that it is not being done. That is to say, it does not look like scientists themselves are undertaking the task of finding explanatory laws, and yet they seem to be engaging in fruitful explanation. Indeed, in psychophysics for instance, where regular patterns (often labelled “effects”) are discovered, they are *explananda* rather than *explanantia*. Cummins underlines the point in reference to a famous auditory illusion (McGurk & Macdonald, 1976):

no one thinks that the McGurk effect explains the data it subsumes. No one not in the grip of the DN model would suppose that one could *explain* why someone hears a consonant like the speaking mouth appears to make by appeal to the McGurk effect. That just *is* the McGurk effect (op. cit., p. 119)

Another respect in which the DN model might be in error is in the fact that it treats explanation and prediction as entirely symmetrical. As Hempel & Oppenheim note

the same formal analysis, applies to scientific prediction as well as to explanation. The difference between the two is of a pragmatic character. If E is given, *i.e.* if we know that the phenomenon described by E has occurred, and a suitable set of statements $C_1, C_2, \dots, C_k, L_1, L_2, \dots, L_r$, is provided afterwards, we speak of an explanation of the phenomenon in question. If the latter statements are given and E is derived prior to the occurrence of the phenomenon it describes, we speak of a prediction (1948, p. 138)

But explanation can occur without prediction and vice versa. Indeed, by the lights of the DN model, if one has all the relevant L 's, one ought to be able to derive any given E that is observed as a logical consequence, and thus provide the requisite explanatory argument. But without any C 's, it would be hard to predict which E would occur and when. Hempel & Oppenheim seem wise to this, and thus they stipulate that “an explanation is not fully adequate unless its explanans, if taken account of in time, could have served as a basis for predicting the phenomenon under consideration” (1948, p. 138). However, it is certainly possible to provide some explanation of a phenomenon without predicting it. For a text-book case, consider the fact that a horizontal layer of fluid heated from below will exhibit convection rolls at a certain temperature. Here is an explanation: the temperature applied rises, naturally liquid at the bottom of the layer becomes warmer than at the top; the cooler liquid (of a greater density) begins to fall whilst the warmer liquid (of a lesser density) rises, and the competing forces result in a rolling motion, ordering the elements of the liquid on a macroscopic level into what are known as *Bénard cells* (see Figure 29). This is a shallow explanation (but an explanation nonetheless) of what is often called a *pitchfork bifurcation* in a *self-organising system*.²⁰⁶ And, as Kelso relates, these are full of surprises:

²⁰⁶ I borrow the term “shallow explanation” from Wilson & Keil (2000). They argue that all explanations are shallow when unsupplemented by theory, as situation which they dub the “theoretical abyss” (*ibid.*, pp. 98 - 100). However, they argue that this is the norm in most explanatory practice and develop an externalist account of explanatory knowledge:

Although we, as individuals, are faced with the theoretical abyss as the norm, the theoretical knowledge we lack exists in others, just not in us [...] explanation and theories that underwrite its depth, are “wide”, that is, they do not supervene on an individual’s intrinsic, physical properties. (R. Wilson & Keil, 2000, p. 103)

I think this is right, but I cannot argue the point here, and it strays from the main issue in any case.

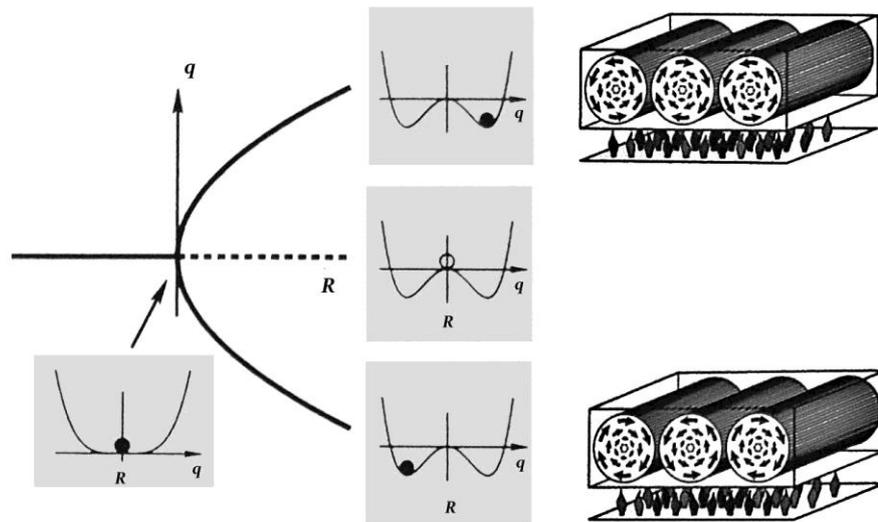


Figure 29 – A pitchfork bifurcation

R represents the temperature gradient (control parameter). q represents the state of the fluid (collective variable). Solid lines and balls represent stable potential states, and the broken line and open ball represent unstable potential states. At a critical point in temperature increase, the system moves from stability (grey box left) to instability (grey box right-middle), and can then move into a particular pattern of rolling motion (right, grey boxes right top and bottom). Adapted from Kelso (Kelso, 1995)

If we look at the arrangement of the convection rolls we see that their motion can be either in one direction or the other [...] Once this direction of motion begins in a particular cell, it will not change. But how does the fluid decide which way to go? The answer is Lady Luck herself. (1995, p. 10)

Kelso is being a bit cryptic here, but what he means is that “if one had a perfect system it would be equally probable that it would go in one direction or the other” (1995, p. 10). If this is right, then it would be impossible to predict which direction the rolls would take, whilst in either case we can nevertheless explain why the rolling motion occurred.

Cummins’s point above about the vacuity of the suggestion that the McGurk effect explains the data it subsumes is a simple statement of the fact that prediction can occur without explanation. One can predict that if I look like I am making a ‘gaga’ sound, and if I sound like I am making ‘baba’ sound, then you will hear a ‘dada’

sound. That just is the McGurk effect. More generally, appraised of both *L* and *C* one ought to be able to deduce and thus predict *E*. But that will be no more than a description of one instance of *L* (the McGurk effect), and it is just that that needs explaining. Accordingly, it is hard to see how the DN model would meet Hempel & Oppenheim's own dictum that an explanation ought "[t]o explain the phenomena in the world of our experience, to answer the question "why?" rather than only the question "what?" (1948, p. 135).

But perhaps the most damning argument against the DN model, certainly from the current perspective, is that it can license 'explanatory' inferences that are trivial, due to the inclusion of trivial premises in the inferential chain. Wesley Salmon provides a classic example:

John Jones avoided becoming pregnant during the past year, for he has taken his wife's birth control pills regularly, and every man who regularly takes birth control pills avoids pregnancy. (1971, p. 34)

This can be reconstructed in a manner that makes the steps of the argument more obvious, and more obviously in accordance with the DN model:

L: Every male (that regularly takes birth control pills) avoids pregnancy
 C: John Jones is male (and has taken birth control pills regularly)
 ∴ E: John Jones avoids pregnancy

The parathetical statements indicate irrelevant laws and conditions. They point to the deepest problem for DN, that of specifying which laws and conditions are relevant to which phenomena. Indeed, the issue generalises beyond this rather obvious case. Unless the DN model can provide principled conditions that rule cases like these out, it will forever be plagued by the possibility of explanations that are more subtly trivial, but trivial nonetheless.

Perhaps these criticisms are not fatal. In so far as they stem from a failure to adequately describe scientific practice, they could probably be avoided by weakening the aim of a philosophical account of scientific explanation. That is, the aim might simply be to serve as a "rational reconstruction" of scientific explanation, a context of justification distinct from the context of discovery (Reichenbach, 1938/1961, pp. 6 - 7). But with respect to adjudicating over disputes between rival theories, such as that between local and global views, DN is irrevocably flawed. The flaw is in the fact that DN explanations are arguments. For the status of an argument is wholly unaffected by including any number of premises that are wholly irrelevant (whether or not a law is included as a premise). For instance, Carl Craver (discussing his favourite example) writes that it is perfectly legitimate to wonder

[...] whether an action potential was caused by the injection of current, or the injection of a volume of fluid, or the physical disruption of the membrane [all theoretical options at one point in the history of studying the action potential]. Such considerations are part of the reason why neuroscientists run controlled experiments. They try to determine which factors make a difference and which do not. (2007, p. 37)

It is certainly not clear how the DN model would allow one to thus adjudicate which factors make a difference and which do not, and thus which of the competing explanations offered by rival theories ought to be endorsed.

I now want to turn positive, to describe a model of explanation that I believe to be promising and the most suitable for present purposes: the *compositional mechanistic* model of explanation, roughly as developed by Craver (2007).²⁰⁷ The CM model does not appeal to the structure of arguments as an appropriate structure for an explanation. Rather it appeals to the structure of mechanism. Certainly, mechanistic explanation can take the form of a deductive argument. For instance, Descartes thought that one could describe the “earth and indeed the whole visible universe as if it were a machine” by appeal to “principles which are known to all and admitted by all, namely the shape, size, position and motion of particles of matter” and in doing so one would realise that

[...] there is nothing in the whole of nature (nothing, that is, which should be referred to purely corporeal causes, i.e. those devoid of thought and mind) which is incapable of being deductively explained on the basis of these selfsame principles. (1644/1985, p. 279)²⁰⁸

However, a modern compositional mechanistic approach proceeds instead by appeal to structures that are doubly hostage to empirical fortune, both as regards their *explanandum* and their *explanans*. The *explanandum* of a mechanistic explanation is what Carl Craver (2007) calls the *explanandum phenomenon*. For our purposes, this can be judged as a holistic description of the behaviour of a mechanism. A mechanistic explanation can fail at this level, simply by failing to pick out a real phenomenon. For instance, Craver writes:

²⁰⁷ I am more confident that the compositional mechanistic model is suitable for my purposes than that it is, generally speaking, *the best* of all the options. For a fuller defence of a modern mechanistic view of explanation, see Craver (2007, pp. 28 - 62).

²⁰⁸ For a summary of Descartes views on mechanistic explanation, see Psillos (2007, pp. 102 - 105).

Descartes [...] believed that nerves are hollow conduits for the flow of animal spirits, and that they activate muscles by inflating them. Starting with this idea, one would be led to search for mechanisms that explain, for example, how nerves shunt the flow of animal spirits into this nerve or that, how they activate muscles, and how light or auditory stimuli impact upon this hydraulic machine (2007, p. 123)²⁰⁹

A concomitant of this failure would be the individuation of a fictional set of *explanantia*, viz. the components of the mechanism by means of which the behaviour is to be explained. In this case these would be, *e.g.*, components whose activity is responsible for the inflation of muscles, or elastic sensory nerve fibres that open cavities in the brain which influence the flow of animal spirits through the pineal gland.²¹⁰

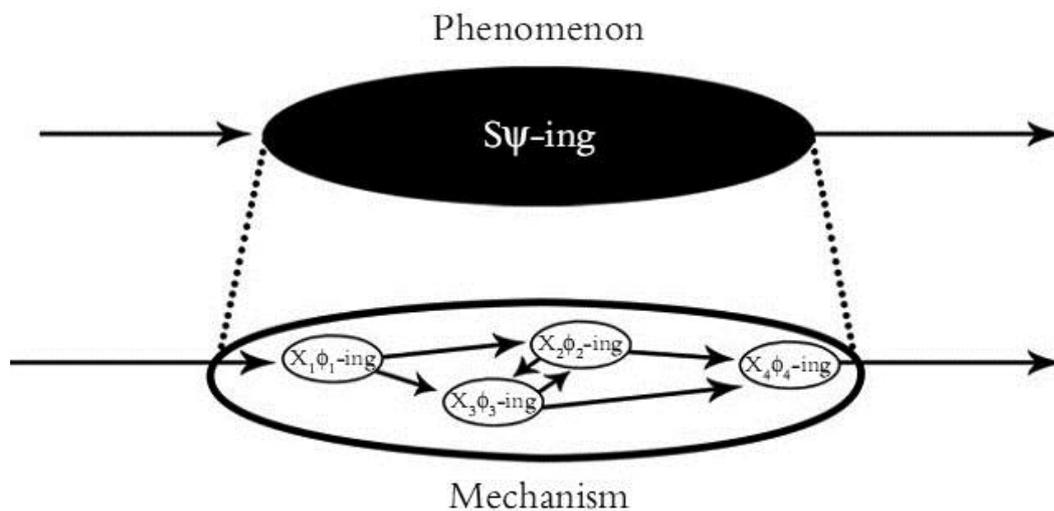


Figure 30 – Craver's psi-phi model of mechanistic explanation

From Craver (2007, p. 121)

That the failure occurs at both levels is testament to the fact that the components of a mechanism are mereologically related to its behaviour (as parts to the whole). Slightly more formally, the behaviour ψ of a mechanism S is explained by the pro-

²⁰⁹ Other related ways in which a mechanistic explanation can fail are by the mischaracterising or only partially characterising the explanandum phenomenon (2007, pp. 123 - 128).

²¹⁰ For a sympathetic reconstruction of Descartes' views on mechanism, that provides a reading on which the fictional *components* that Descartes posits are mere artefacts of his time that do not bear upon the structure of the phenomena he identifies, see Wheeler (2005, pp. 30 - 38).

ductive activities ($\varphi_1, \varphi_2, \dots, \varphi_n$) of S 's components (X_1, X_2, \dots, X_m) in producing ψ (Craver, 2007, p. 138 and passim) as depicted in Figure 30. *Activity* here means both positive causal interactions such as activation and negative causal interactions such as inhibition of a process. And the *productivity* of components' activity indicates that their causal interactions are potentially exploitable for manipulation and control (ibid., pp. 6, 63 - 106). In modelling or describing the mechanism, one will thus be describing the causal relations between components in terms of their relationships of manipulability, corresponding to the arrows in between smaller ellipses, in the lower major ellipse in Figure 30. Furthermore, in order to ensure that a component is genuinely a component – *i.e.* genuinely a part of the mechanism – both part and whole ought to stand in a symmetrical relation of *mutual manipulability*. That is to say that something like the following two conditionals should hold (Craver, 2007, pp. 155, 159):²¹¹

- α If φ is set to the value φ_I in an intervention, then ψ takes on the value $f(\varphi_I)$
- β If ψ is set to the value ψ_I in an intervention, then φ takes on the value $f(\psi_I)$.

Colloquially, Craver expresses the idea as follows:

a component is relevant to the behavior of a mechanism as a whole when one can wiggle the behavior of the whole by wiggling the behavior of the component *and* one can wiggle the behavior of the component by wiggling the behaviour as a whole. (Craver, 2007, p. 153)

Though the idea itself is simple, it is general enough to accommodate various kinds of experimental intervention. Moreover, and this is the key, it is general enough to provide a framework for both local and global views to investigate which components are actually relevant to the mechanism that enables the representational capacities in question. If there is to be progress on the potential disputes between these views, I believe that it will need to be conducted under the mutually agreed assumption that explanation is mechanistic.

²¹¹ I say “something like”, as Craver’s discussion is highly sensitive to both the conditions relative to which an explanation is required, and the ideal conditions under which an intervention is made (2007, pp. 153 - 160).

9.5. Representation vs. dynamics

The dispute between global and local views is a dispute within the auspices of a *representationalist* approach cognitive scientific explanation. I have in mind the theoretical construct of representation that plays a central explanatory role in artificial intelligence, cognitive psychology, cognitive neuroscience, cognitive ethology, social psychology and linguistics. Distinguish this from representationalism in the philosophy of language, the view that the essence of language is its capacity to be directed at the way things are. Also distinguish this from representationalism in the philosophy of perception and consciousness (discussed in Chapters 4 & 5): the view that “the phenomenal character of an experience just is its representational content, where that representational content can itself be understood and characterized without appeal to phenomenal character” (Block, 2007a, p. 611). Block calls this “representationism”: again, this is not the view that is discussed here.

Representationalism (R), as discussed here, is the view that the behaviour of certain systems is best explained as achieving certain crucial functions by computation over representations. But given the fairly liberal use of the term (as indicated above), perhaps Searle is right when he remarks: “There is probably no more abused a term in the history of philosophy than ‘representation’” (1983, p. 11).²¹² Accordingly, it might be unsurprising that a number of authors that I have drawn upon in illustrating the empirical reality of structural affordances have been particularly reticent to

²¹² Representationalism has been around a while, though the ancestry of the term ‘representation’ is unclear, or at least there is some room for debate; see for instance:

Modern cognitive science was launched when the claim that cognitive processes are computational in character was annexed to the representational theory of mind. The latter doctrine (which goes back at least as far as Plato—the term “idea” was the precursor to the term “representation”) is the view according to which mental states are, for the most part, conceived as inner representational states (Wheeler, 2005, p. 6)

And compare:

*The first safely documented occurrence of the concept in the Western history of ideas can be found in Cicero, who uses *repraesentatio* predominantly in his letters and speeches and less in his philosophical writings. A Greek prototype of the Latin concept of *repraesentatio*, which could be clearly denoted, does not exist. However, it seems as if all current semantic elements of “representation” already appear in its Latin version. For the Romans *repraesentare*, in a very literal sense, meant to bring something back into the present that had previously been absent (Metzinger, 2003a, p. 20 n7).*

So if you think that Platonic Ideas correspond to a viable concept of representation, then the concept goes back at least as far as Plato’s time. If you do not, then Cicero’s era is a good bet.

posit representations in their explanations. Thus, for instance, Thelen & Smith pose the question: “How does the organism continually adapt and create new solutions to new problems?” To which they respond: “The answer we present [...] makes no appeal to the use of representations” (Thelen & Smith, 1994, p. 42). What I believe a local view should embrace is the idea that the intrinsic dynamics of the body (reviewed in §7.3) can be exploited in representation of the body. But what that requires is a *dynamic theory of representation*, a theory of representation on which the targets of a representation can be dynamical processes and the representations themselves are sub-systems in a broader dynamical system including the target systems represented. This ought to be available to a global view also. But on such a view the contrasting stance would be that every dynamical process relevant to the execution of a task must be represented. Again, in order for such a dispute to move forward, a shared basis is required. But it is important to have a minimal degree of care in positing representations of and within dynamical systems. So I urge the adoption of a dynamical theory of representation somewhat tentatively, and in doing so I hope to clarify some guidelines for positing representations at all.

As noted above, ‘representation’ is a polysemic term, and R has been challenged in several ways that correspond to the various notions of representation that have been developed in the short history of cognitive science. However, in the mid-nineties, Tim Van Gelder developed a line of criticism that he thought applied against R across the board. He saw his arguments to be

[...] not based on an unduly restrictive definition of the notion of representation; they go through on pretty much any reasonable characterization, based around a core idea of some state of a system which, by virtue of some general representational scheme, stands in for some further state of affairs, thereby enabling the system to behave appropriately with respect to that state of affairs (Van Gelder, 1995, p. 351)

Van Gelder gets this “core idea” from some passing remarks made by John Haugeland (1992/1998, pp. 172 - 173).²¹³ Before I get to his arguments against R, I should clarify certain aspects of Haugeland’s treatment. In fact, the most useful outcome

²¹³ Haugeland devotes just two pages of a twenty-seven page piece to providing “a few sketchy and dogmatic remarks” of a family resemblance concept of representation (1992/1998, p. 172). Nevertheless, his remarks have been adopted by several authors including Clark (1997), Grush (2003), Van Gelder (1995), and Wheeler (2005). Given the brevity of Haugeland’s treatment, some commentators find this rather odd (e.g. Chemero, 2009, p. 55). Though equally, it may indicate how little one needs to say if one says the right thing; an admirable skill indeed.

Van Gelder's critique results from an insight buried therein, and indeed it actually shows how to accommodate his worries. The gist of Haugeland's criteria is usefully summarised by Clark, as saying that a system employs representations internal to the system itself just in case:

- (1) It must coordinate its behaviours with environmental features that are not always "reliably present to the system".
- (2) It copes with such cases by having something else (in place of a signal directly received from the environment) "stand in" and guide behaviour in its stead.
- (3) That "something else" is part of a more general representational scheme that allows the standing in to occur systematically and allows for a variety of related representational states. (1997, p. 144)

Collectively these are held to be sufficient conditions for representations. In fact, it is claim (1) that does the real work here, and not simply because (2) and (3) indirectly refer back to it. Rather (1) is essential for an instance of representation because it is from this that it follows that system makes use of some state as a representation.²¹⁴ It is only this that allows an R style explanation to meet what William Ramsey calls the *job-description challenge*: "the challenge of explaining how a physical state actually fulfils the role of representing [...] accounting for the way something actually serves as a representation in a cognitive system" (2007, p. xv). Haugeland provides a way of meeting the challenge. Filling out the details of (1) he draws a contrast to add a little clarity:

²¹⁴ Clark (1997, pp. 144 - 145) disagrees, arguing that the decouplability that (1) and (2) require is too strong. (3) he thinks is enough, urging that a warranted ascription of an instance of representation "requires only that we confront some kind of encoding *system*" (Clark, 1997, p. 145 emphasis original), such as found, for example, in a pool of cells in the rat hippocampus that respond to changes in head-direction (Taube, Muller, & Ranck, 1990). The issue here is a microcosm of the broader issue discussed below. But let me say briefly that the fact that the cells stand in systematic causal relations to other states in the rat's neural economy can be neatly captured by simply admitting that the cells are causal mediators. The claim that the systematicity is in virtue of an encoding scheme is what does all the work here. But as urged below, what really needs to be demonstrated is that the state is being used or consumed for its informational properties, rather than its causal properties alone.

[Plants] that track the sun with their leaves needn't represent it or its position, because the tracking can be guided directly by the sun itself. But if the relevant features are not always present (manifest), then they can, at least in some cases, be represented; that is, something else can stand in for them, with the power to guide behavior in their stead. That which stands in for something else in this way is a *representation*; that which it stands in for is its *content*; and its standing in for that content is its *representing* it (Haugeland, 1992/1998, p. 172)

According to some, remarks like these imply an overly restrictive condition on representation. I will come back to that. But first I return to Van Gelder's line of argument. It hinges around his central example of James Watt's solution to the engineering problem of regulating the emissions of a steam valve in order to keep the speed of a steam-powered engine constant, despite variation in fuel and load (Van Gelder, 1995, pp. 349 - 350). His solution was a beautifully simple system that exploited mechanical coupling of centrifugal and gravitational forces, known as the *Watt or centrifugal governor* (see Figure 31). It consisted of two spherical weights at the end of two scissor arms connected to a central spindle via sliding collar. The spindle was geared to an input shaft, at the base of which is a pulley, belted to a flywheel transferring power from the steam engine. The weighted arms were also connected to a throttle valve modulating steam input to the engine. As the flywheel speed increased, the weights flew upward (according to centrifugal forces), sliding the collar downwards, closing the throttle valve, reducing steam input, reducing power to the engine. As a consequence, flywheel rotation speed would decrease, spindle speed would decrease, the weights would move downwards according to gravitational forces, and the throttle valve would open. With the right balance of these components at the right settings, the governor proved to be a highly effective solution.

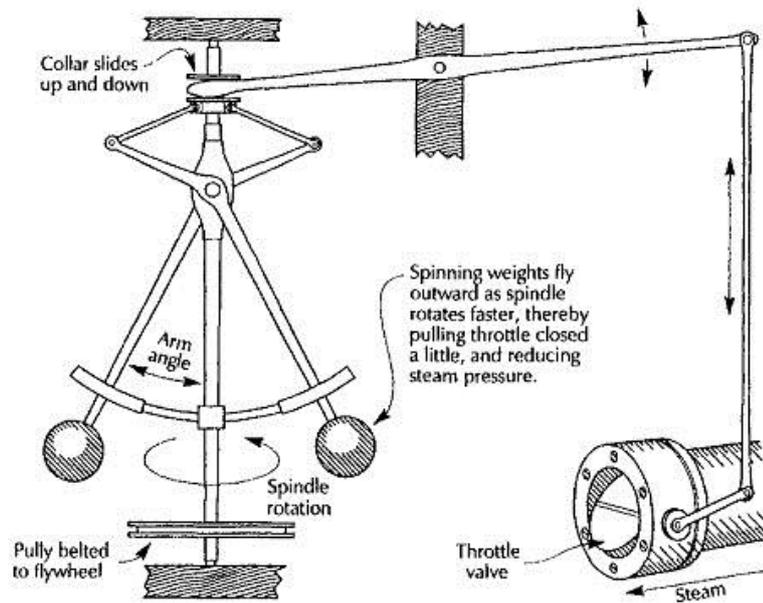


Figure 31 – James Watt's centrifugal governor

Van Gelder discusses another kind of solution to the governing problem inspired by R. If one were to build a device, a *computational governor*, that solved the problem by computation over representation, it would likely implement an algorithm similar to the following:

1. Measure the speed of the flywheel.
2. Compare the actual speed against the desired speed.
3. If there is no discrepancy, return to step 1. Otherwise
 - a. measure the current steam pressure;
 - b. calculate the desired alteration in steam pressure;
 - c. calculate the necessary throttle valve adjustment.
4. Make the throttle valve adjustment.

Return to step 1. (Van Gelder, 1995, p. 348)

This solution has all the hallmarks of a classic R style explanation. It involves steps of measurement, computation and resultant action. Corresponding to each of these there would be subsystems which individually perform specific operations, and collectively compose the regulating system. The subsystems would achieve their tasks by creating tokens that stand in for, *i.e.*, represent flywheel speed, steam pressure, throttle valve adjustments *etc.* And to achieve the task, they would communicate by passing said tokens in a sequential fashion, enabling the next subsystem to execute

the next stage in the process according to the rule of their cyclic organisation (Van Gelder, 1995, pp. 348, 350 - 351).²¹⁵

Van Gelder argues that the fact that the engineering problem was not solved in this way ought to give us pause for thought. When we confront the actual governor, we do not find any components passing representations to perform the functions proposed by the computational governor. Instead, he suggests, the key to explaining the behaviour of the centrifugal governor is to understand the basic principles according to which the arm's angular velocity changes over time. As this depends upon the rates of change in the speed of the flywheel, one needs to understand the rates of change in the former as a function of the latter. However, the rates of change in speed of the flywheel are a function of the rates of change in the arm's angular velocity. The regular behaviour arises due to the fact that the two are coupled to one another and mutually modulate one another's behaviour over time.

Van Gelder points out that a powerful way of further specifying such a closely coupled relationship is by applying the tools of *dynamical systems theory (DST)*. Certain key concepts are of especial importance for expressing the rudimentary ideas, all of which I have already presented in one form or another. Recall the concept (briefly expressed in §9.3.) of a *state space*: the set of all the possible states that a system can assume. The dimensions of this space are determined by its *state variables*. Bernstein's problem arises because the state space for even the most rudimentary movements made by real biological systems will involve so many variables (*e.g.* joint angle rotations) as to make the state space extraordinarily high-dimensional. A third key concept is that of a *control parameter*. The control parameters of a system drive it through its state space. For instance, in the Rayleigh-Bernard convection (the beginning of which I described in §9.4, see Figure 29), the temperature gradient is the control parameter: when the control parameter reaches a certain critical value, the system meets a bifurcation point at which it is unstable and disposed to transform into one of two states. Another key concept is that of a *collective variable*. Collective variables characterize the way in which global patterns of a system evolve over time. Again, in the Rayleigh-Bernard convection, all the molecules of the liquid are drawn into an ordered global pattern, and this behaviour can be described as a collective variable of the system. A further concept is that of an *attractor*, a region of state space towards which the trajectory of the system is disposed to evolve. The simple robots built at Delft Technical University provide nice examples of attractors manifest in the observable behaviour of a system. Ideally the balance between their components is such that they implement a sustained oscillatory activity. This would be

²¹⁵ For a useful discussion of this mode of explanation as generally applied in cognitive psychology, see Haugeland (1981/1998 esp., pp. 17 - 28).

describable as a trajectory in state space, where that trajectory moves towards a periodic cycle around a particular point in that space, observable as a stable walking pattern.²¹⁶

In a full analysis, these and other concepts are formally denoted as the elements and products of differential equations that mathematically describe the evolution of the system modelled. These *equations of evolution* will specify the rate of change at a given moment of time of some variable (on one side of the equation) as a function of the contemporaneous values of other variables and parameters (on the other side). This analysis is highly general and can very readily be applied to the centrifugal governor. If considered independently of its coupling with the throttle valve, on one side of the equation there will be parameters and variables such as the speed of the engine, the gravitational constant, the gearing constant, the friction constant and the length of the spindle arm. And the correct calculation of these will describe the instantaneous acceleration of the angular velocity of the spindle arms. In the regulation of engine speed the governor is connected to the throttle valve, modulating the engine's speed, and thereby modulating the angular velocity of the arms. Accordingly, engine speed will be a parameter in a rather more complex equation determining the rate at which the governor changes its state. A specification of the engine's speed will also involve a number of further variables, including the setting of the throttle valve, the parameter of which is the angular velocity of spindle arms. Hence, angular velocity is a variable in one equation in which engine speed is a parameter, and engine speed is a variable in another equation in which angular velocity is a parameter (Van Gelder, 1995, pp. 355 - 357).

So how much ice does a dynamical systems analysis of the centrifugal governor cut against R? Van Gelder sees it to be a "noteworthy fact about standard explanations of how the governor works is [...] that they never talk about representations". Citing his own account, and classic and contemporary treatments of the governor as instances of non-representational explanation, he claims that the reason why representations are absent in the discussion, is simply because "the governor contains no representations" (Van Gelder, 1995, p. 352). And later he elaborates to say that because "the arm angle and engine speed are at all times both determined by, and determining, each other's behaviour" their relationship is "much more subtle and complex" than can be adequately explained by the notion of representation. Hence, "when we fully understand the relationship between engine speed and arm angle,

²¹⁶ For useful introduction to these concepts (though not the formal mathematical analysis itself), see part I of Abraham & Shaw (1992). Also see Thelen & Smith (1994, pp. 45 - 69) for an overview of applications and further references.

we see that the notion of representation is just the wrong sort of conceptual tool to apply” (Van Gelder, 1995, p. 353).

However, some certainly do not see that the notion of representation is misplaced here. For instance, William Bechtel writes:

The fact that the angle of the spindle arms represents the speed of the flywheel becomes more clear when we consider why it was inserted into the mechanism to begin with. The flywheel turns at a specific speed, but there is no way to use this directly to open and close the valve. The spindle and arms were inserted so as to encode information about the speed in a format that could be used by the valve opening mechanism (1998, p. 305)

And speaking to the lack of representation-talk that Van Gelder highlights, he offers the following diagnosis:

The reason no one has to comment explicitly on the fact that the arm angles stand in for and thus represent the speed of the flywheel is that this system is very simple, and most people see the connection directly. But if someone does not understand how the governor works, the first thing one would draw attention to is how the spindle arm angle registers the speed of the flywheel (Bechtel, 1998, p. 305)

Bechtel leans on a weak-point in Van Gelder’s discussion. Van Gelder’s implication is that the centrifugal governor cannot be given the kind of componential analysis that an explanation of the computational governor’s capacities must trade in. But in fact, his first explanation of how the governor works (and my own, above) trades in rather simple engineering talk of causal relations between the flywheel, the spindle, the arms, the collar, the throttle valve *etc.* Although modelling the system by means of DST provides a more precise and detailed description of the governor, the explanatory payoff is not that large. As William Ramsey remarks, “had [Van Gelder] offered only the DST account of the governor’s operations, I suspect most readers would be scratching their heads wondering how the system *actually works*” (2007, p. 210).

Van Gelder does certainly allow for the possibility that elements of a dynamical system could be called representations if one so wishes. Indeed, in line with the sentiments of Dennett (1987), it should be noted that it is always possible to describe something as a representation. But doing so might not be worth much. Here Van Gelder offers a simple way of avoiding vacuous triviality (or indeed complication):

A useful criterion of representation – a reliable way of telling whether a system contains them or not – is to ask whether there is any explanatory utility in describing the system in representational terms. If you really can make substantially more sense of how a system works by concretely describing various identifiable parts or aspects of it as representations [...] that is the best evidence you could have that the system really does contain representations (1995, p. 352)

Bechtel's description does not meet this simple criterion. To show as much, I need to outline a little more detail on what his description is. The basics of his account draw upon insights made by Dretske (1981) and Millikan (1993).²¹⁷ What Bechtel takes from Dretske is the claim that any effect can carry information about (or more strongly, can be about) its cause provided that it is nomically dependent upon that cause.²¹⁸ In more deflationary terms, information is cheap and ubiquitous. But in more optimistic terms (at least for the naturalist), "there is something *in* nature (not merely in the minds that struggle to comprehend nature), some objective, observer-independent fact or set of facts, that forms the basis of one thing's meaning or indicating something about another" (Dretske, 1988, p. 58). Bechtel (1998, p. 298; 2001, p. 336) does not yet take this to be sufficient for representation, he draws Millikan for a supplementary analysis. Though he is somewhat selective about what he takes from Millikan's view, important elements of which are succinctly summarised by Tony Chemero as follows:

A feature R_o of a system S is a *Representation for S* if and only if:

(R1) R_o stands between a representation producer P and a representation consumer C that have been [designed] to fit one another.

(R2) R_o has as its function to adapt the representation consumer C to some aspect A_o of the environment, in particular by leading S to behave appropriately with respect to A_o , even when A_o is not the case.

(R3) There are (in addition to R_o) transformations of R_o , R_1 ... R_n , that have as their function to adapt the representation consumer C to corresponding transformations of A_o , A_1 ... A_n (2009, p. 54)

²¹⁷ See Bechtel (1998, 2001). Bechtel (2008, pp. 159 - 200) contains all the core elements of his previous treatments, as well as a discussion of the notion of representation more generally. All contain (especially the latter) a typically rich treatment of the development of the concept of representation in the history of studying the sensorimotor cortex. However, to recount these virtues would (sadly) be redundant here.

²¹⁸ See Dretske (1981, pp. 63 - 82).

Bechtel takes two analytic requirements from this. The first is that representation requires a *triadic analysis*.²¹⁹ Something, such as a Dretsian indication, “becomes a representation because of how it is used by a system in controlling its behaviour” (Bechtel, 2001, p. 336). The second is that representation requires a *teleological analysis*. It is “because a system is *designed* to use a state to inform it about something distal that makes the state a representation” (*ibid.*, 2001, p. 336). Putting the pieces together then:

Representations are found only in those systems in which there is another process (a consumer) designed to use the representation in generating its behaviour (in the simplest cases, to coordinate its behaviour with respect to what is represented) and where the fact that the representation carried that information was the reason the down-line process was designed to rely on the representation (Bechtel, 2001, p. 337)

And these principles are then applied to the operation of the centrifugal governor (see Figure 32).

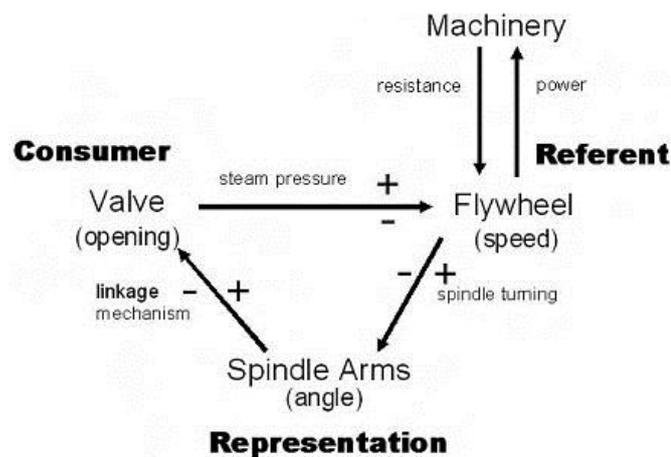


Figure 32 – Bechtel's representational governor

A schematic description of the spindle arms representing the speed of the flywheel for the valve.
From Bechtel (2008, p. 191)

²¹⁹ The triadic analysis was originally advanced by Charles Sanders Peirce (1839 – 1914). For a good discussion see Von Eckardt (1993, pp. 145 – 160).

With this description in mind Bechtel muses:

Someone examining Watt's invention might ask: What do the spindle arms do in the governor? The answer would be: They represent information as to whether the flywheel is moving too fast or too slow and pass this information to the valve that controls the steam flow. (2008, p. 342)

Now to the problems, all of which follow from a lack of respect for the job-description challenge.²²⁰ What Bechtel provides is at most several necessary conditions for representation, each of which he applies to the description of the governor. But what is missing is any reason for thinking that these conditions are even jointly sufficient. Essentially there are three conditions involved in Bechtel's account. One is that a state carries information about another state in virtue of being nomically dependent upon it. Although Bechtel does not explicitly trade on the representational connotations of information talk, he does so implicitly in describing the spindle arms as representing the flywheel speed, and then passing "this information" on to the valve. But this adds nothing to the original non-DST, non-R description. The real answer to what the spindle arms do in the governor is that they cause the throttle valve to either open or close. They might carry information, but it is a further issue as to whether that information is being used as such. For instance, perhaps Nelson's Column in London's Trafalgar Square carries information about (and thus represents) the life-achievements and glorious death of the naval hero. Perhaps the direction he faces might well indicate (represent) South, to the lost traveller, or the cardinal direction in which Nelson's last flagship HMS Victory lies, to a lover of trivia. But none of this is demonstrated by me putting the column to use as shade from the sun on a hot summer's day.

This brings me to the second and third conditions. It is not sufficient for representation that a nomically dependent state be selected for its nomic dependence. A state could be selected for its function as a nomically dependent causal mediator alone. What is supposed to do the extra work here is a consumer putting the state to use. However, again, the state could be (and, in the case of the governor, actually is) put to use for any number of its *non*-representational properties. To see the point, we can adapt the example above (adopted from Ramsey (2007, p. 136)). Suppose my grandfather wants shade in his garden at around afternoon-tea time. Instead of building a shade, he plants a tree whose branches are full of bushy and easily-pruned leaves. By paying attention to the location of the sun in the sky, and pruning the branches appropriately, he has the right length and breadth of shade at the right

²²⁰ This paragraph and the next are inspired by Ramsey (2007, pp. 118 - 150, 210 - 217).

time. Sadly, a fire spreads from the neighbour's house, destroying the tree. But never mind, using seeds from the first, he plants another tree of the same species in the same place. This tree, like the first, has been selected because of the height it grows to and the manageability of its branches. It has been selected for a certain job, to provide shade. Now, a glance at the tree's shadow could represent the fact that it is (or is not) tea time. Indeed, one could "consume" the shadow to tell any time of day. But that is not the use to which it is being put. The point, of course, is that representations must be put to use *qua* representations; they must be put to use for their representational properties; they must meet the job-description challenge.

Bechtel's representational description adds nothing to a non-representational description. Worse still, it fails to actually identify a state that is unambiguously a representation. As Ramsey points out the angle of the spindle arms stands in for the speed of the engine as much as the angle of their joints does. As does the speed of the spindle, the flywheel's rotation speed, the height of the sliding collar *etc.*

All of these elements go into states that depend upon the engine speed, and all of these are specifically designed to have a causal influence on the valve flap. In fact, many of these elements would actually qualify as playing a triple role, serving as a state that is represented, a representation of some other state, and a representation user, *all at once*. (Ramsey, 2007, p. 212)

Before evincing some positive considerations concerning the sufficient conditions for representation, I want to draw some general lessons here. The beginning of one is appositely expressed by Grush when he writes:

It is one thing to have a system such that representational explanations of its behavior are natural and fruitful, and then be in a position of trying to provide a theory of representation in order to make sense of such explanations. It is quite another when there is a system whose operation admits of fruitful explanation without representation talk, and then to grasp at straws concerning how one might be able to finagle a representational analysis of some of its states anyway because one is ideologically committed to the idea that all problem solving requires representation. (2003, p. 66)

The same point should be well taken for DST also. Ideology should not lead theory. But the more general point, at least as concerns representation, is that the issue is not so much whether a system does represent at all, or whether it could represent. The point is whether, on a case by case basis, one is justified in identifying a particular state as a representation, or in explaining a particular instance of behaviour by positing a representation. Every representation posited must have an explanatory

payoff for the case in hand. Call this the *modesty constraint*. Whilst the job-description challenge serves as a means to evaluate whether a state or process is actually functioning as a representation, the modesty constraint serves to curb the positing of representations in the first place. It is an axiological constraint, similar to the more general value of parsimony, in that it dictates that caution against positing unjustified representations is a virtue.

Some insightful thoughts along the lines of the modesty constraint are expressed by Brian Cantwell Smith in his (1996) discussion of *inscription errors* or *instances of pre-emptive registration*. The error comes in both a metaphysical and a methodological version. The second is closest to my concern, but as the methodological version apes the metaphysical, I will cover that first. It is

[...] a tendency for a theorist or observer, first, to write or project or impose a set of ontological assumptions onto a computational system (onto the system itself, onto the task-domain, onto the relation between the two, and so forth) and then, second, to read those assumptions or their consequences back off the system, as if that constituted an independent ontological discovery or theoretical result (B. C. Smith, 1996, p. 50)

As Smith has put it (in conversation, see Clapin, 2002, pp. 266 - 267), the concern is any piggy-backing of assumptions about representations on assumptions about object identity (see also Smith, B.C., 1996, pp. 50 - 54). Hence, in metaphysical version, the real gripe is with assuming object identity.²²¹ However, despite these very general worries, Smith does license a shred of inscribing practice, when he says in a footnote that “inscription *per se* is not an error. In any situation, more or less “writing on the world” is invariably necessary”. This opens the way for a more methodological take on the error, which is then “a failure to recognize a particularly blatant dependence of a claim or result on the original inscription, especially when that inscription is not appropriately warranted – e.g., in a case of chauvinism, projection, or naiveté” (ibid., p. 50). Thus, whilst accepting that we may inevitably commit the metaphysical inscription error, there might still be some hope that we can avoid its methodological ancestor.

²²¹ As Dennett describes: “The Granddaddy case of pre-emptive registration is imagining we can parse the universe primordially into objects” (2002a, p. 225). The difficulty is that the token object assumed to have been identified at one point and reidentified at another, may not have been. It might equally be the reinstantiation of some type. Indeed, it might be that any project to discern individuals is doomed to grim failure, as “[t]here may not be any compelling reason to believe that there is even a metaphysical fact of the matter” (Smith, B.C., 1996, p. 55).

To give some examples of the ancestor, witness Drew McDermott engaging in some friendly ridicule of a number of his colleagues (and to some degree himself) for the attribution of wishful mnemonics:

A major source of simple mindedness in AI programs is the use of mnemonics like “understand” or “goal” to refer to programs and data structures. The practice has been inherited from more traditional programming applications, in which it is liberating and enlightening to be able to refer to program structures by their purposes. Indeed, part of the thrust of the structured programming movement is to program entirely in terms of purposes at one level before implementing them by the most convenient of the (presumably many) alternative lower-level constructs (McDermott, 1976, p. 4)

The illicit slide is to identifying some part of the model as some mental state or other. For in doing so, one jumps the gun on the explanation of that mental state. As McDermott complains with a pinch of sarcasm:

If a researcher tries to write an “understanding” program, it isn’t because he has thought of a better way of implementing this well-understood task, but because he thinks he can come closer to writing the first implementation. If he calls the main loop of his program “UNDERSTAND”, he is (until proven innocent) merely begging the question. He may mislead a lot of people, most prominently himself, and enrage a lot of others (*ibid.*)

As McDermott advises: “What he should do instead is refer to this main loop as “Goo34”, and see if he can convince himself or anyone else that Goo34 implements some part of understanding” (*ibid.*). The error is an artefact of overenthusiastic theorising. It is still very easily found in contemporary literature, especially where box-and-arrow diagrams are concerned, as these naturally invite optimistic labelling. For instance, the literature on agentive experience is riddled with examples like Figure 33:

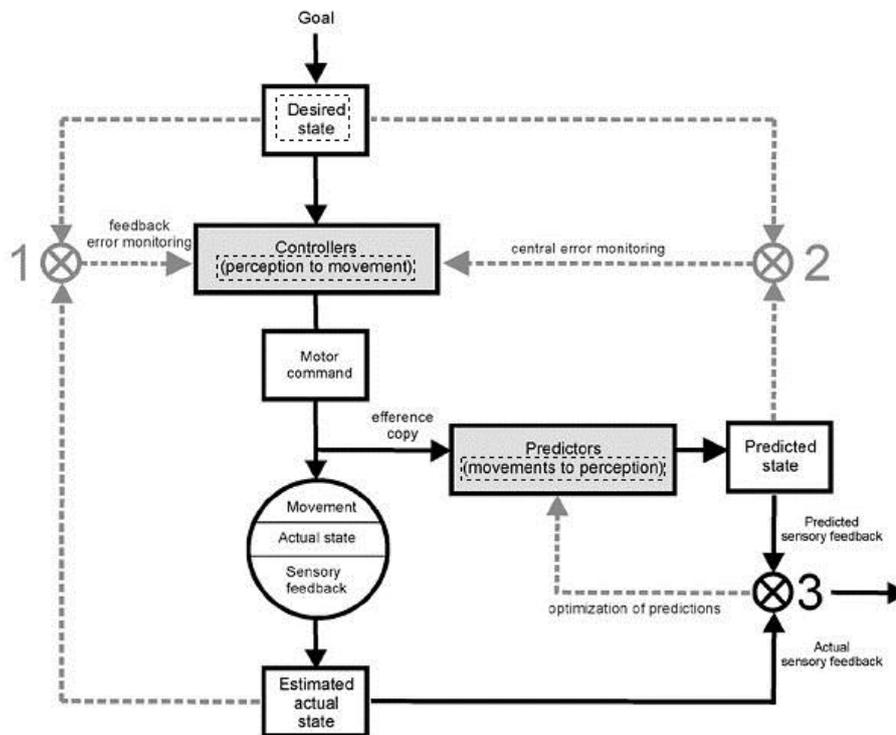


Figure 33 – Optimistically labelled comparator model

Optimistic labels within solid boxes are surrounded with dashed boxes. From Synofzik et al. (2008)

Again, calling whatever is going on in those boxes ‘desired’, or saying that the predictions made by such and such component of the model concerns the relation between movement and ‘perception’, is getting a little ahead of oneself.²²²

However, all of the above should not obscure (in fact it should motivate) the fact that some minimally sufficient ground for representation is needed. Several authors have been inspired by a simple faux-evolutionary story that is somewhat suggestive about the conditions under which a system would require the use of representations. For instance, Gerard O’Brien and Jon Opie (2004) muse upon various ways in which Nature might furnish an organism with the capacity to seek the good and avoid the bad in its environmental niche. The simplest means would be to blindly bounce in complete hostage to fortune. A slightly more sophisticated and slightly less dangerous means would be to exploit ambient radiant or mechanical energy to

²²² In Synofzik et al.’s defence, they have clearly inherited these optimistic conventions from the diagrams in Frith et al.’s papers (2000a, p. 1773; 2000b, p. 359).

provide cues about the state of the environment prior to immediate contact. However, unreliable or latent receipt of such cues would expose the organism to many of the dangers inherent in blindly bumping into potentially nasty elements of its environment. A third strategy proves much more effective:

Instead of responding directly to the information impacting on its sensory surfaces, a creature can use it to construct internal models of the environment – on-board states that “stand in for” or “represent” external objects, relations and states of affairs. These internal representations, rather than the information-laden signals from which they were constructed, can then be pressed into service to shape behaviour. Such a decoupling of behaviour from direct environmental control confers great benefits, since internal models of the environment can have a stability and definiteness that is lacking in the signals that impact on a creature’s sensory surfaces. They also enable a creature to respond to features of the world that are not immediately present, to use past experiences to shape present behaviour, to plan for the future, and, in creatures such as ourselves, to be sensitive to very abstract features of the world. (O'Brien & Opie, 2004, pp. 1 - 2)²²³

The authors’ suggestion is that in this last case, the organism’s adaptive engagement with its environment is facilitated by representation. The clear pay-off in terms of behavioural flexibility is intended to motivate the very idea of systems representing at all. In several articles, Rick Grush has developed ideas from control-theoretic approaches to sensorimotor control (see §7.1) to provide a general account of representation in respect of roughly this motivation.²²⁴ To recap some key ideas, recall that control systems have at least two components: a controller and a plant. In a feed-back system, the controller receives signals from the output of the plant and sends control signals according to the relative disparity between output and target state. However, incoming peripheral sensory signals are ambiguous (Latash, 2008a, pp. 258 - 260) and cannot travel fast enough to influence the ongoing stream of motor signals at the right time (Grush, 1997, p. 21 n13; Latash, 2008b, pp. 70 - 72). Nev-

²²³ Cf. Dennett (1996, pp. 88 - 90), Clark & Grush (1999, p. 7), Metzinger (2003a, pp. 47 - 49). For an especially rich discussion, see B.C. Smith (1996, pp. 213 - 276).

²²⁴ I say ‘roughly’, because a distinctive feature of Grush’s theory of representation is that states of the environment are represented as interacted with. See *e.g.* Grush (1997, pp. 18 - 19).

ertheless, smooth sensorimotor control is achieved.²²⁵ Grush argues, on the same lines as described in §7.1, that the reason for this is because the system runs an *emulation* of the plant. Emulators enable the system to not only accommodate signal delay and unreliability, but also to discover how the plant will change over time, without any obligation to implement such changes (Grush, 1997, pp. 10 - 11). These capacities come in virtue of driving a *faux* control process alongside (or in absence of) the actual control process. Hence, the controller can interact with an emulation of the plant, or it can interact with the plant itself (see Figure 34).

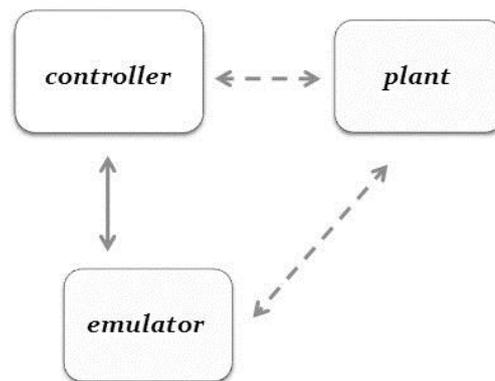


Figure 34 – Simple schematic for emulation control

Double arrows indicate causal interactions.

Dashed double arrows indicate intermittent causal interactions.

Emulation fulfils the basic criterion of having a representational job-description. Furthermore, it does so modestly (there is a clear explanatory justification), by avoiding pre-emptive registration (as a methodological folly) and optimistic labeling. Speaking more generally, the emulation theory can be described as a *resemblance theory of representation*.²²⁶ A famous (if short) critique of resemblance

²²⁵ Grush sees forward models as subordinate to emulators as a superordinate category (2007b, p. 410). Forward models, as I described them earlier, model the sensory-consequences of particular motor signals. In Grush's terms, described thus, they are *modal emulators*. However, forward models could conceivably model changes in the state of the plant as abstracted from any sensory consequence measured. They would thus be functioning as *amodal emulators* (Grush, 2004, pp. 387 - 389).

²²⁶ It ought to be noted that Grush does not ever explicitly describe the theory as a resemblance theory. It might be that he intends emulation to be understood as a *suis generis* form of representation. However, resemblance is certainly broader category than emulation, and the latter can be usefully brought under the former to clarify at least a version of emulative representation.

comes from Nelson Goodman.²²⁷ He pejoratively refers to it as “the most naive theory of representation”, where “*A* represents *B* if and only if *A* appreciably resembles *B*” or “*A* represents *B* to the extent that *A* resembles *B*” (Goodman, 1969, p. 3). He continues unsympathetically:

Some of the faults are obvious enough. An object resembles itself to the maximum degree but rarely represents itself; resemblance, unlike representation, is reflexive. Again, unlike representation, resemblance is symmetric: *B* is as much like *A* as *A* is like *B*, but while a painting may represent the Duke of Wellington, the Duke doesn't represent the painting. Furthermore, in many cases neither one of a pair of very like objects represents the other: none of the automobiles off an assembly line is a picture of any of the rest; and a man is not normally a representation of another man, even his twin brother. Plainly, resemblance to any degree is no sufficient condition for representation. (Goodman, 1969, p. 4)

Goodman's points are well taken. No one should claim that resemblance itself is sufficient for representation, any more than one should claim that nomic-dependence is sufficient for representation. The extra required is provided by adopting a triadic analysis, according to which the emulator produces representations of the plant to be consumed by the controller (see Figure 35).

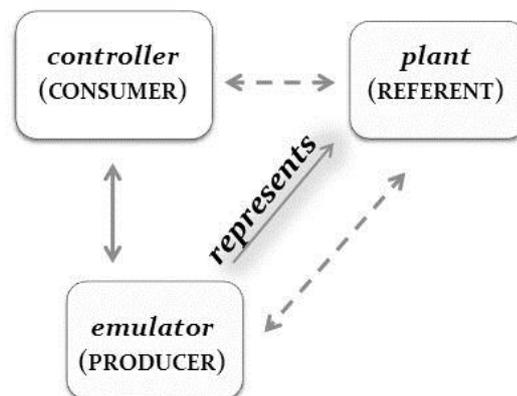


Figure 35 – Emulation and representation

The triadic analysis applied to the emulation schematic

Now, to finally return to the broader context: I think that this is the basic framework for representation that global and local views should share. From this very basic sketch the emulation theory could be developed in various ways, each of which may

²²⁷ For a more general treatment, see Cummins (1989, pp. 27 - 34).

serve a global or local view's purposes. But let me leave the reader with some further specification to indicate the general line. According to one formulation, the emulator functions as an *articulated model*. The components of an articulated model, called *articulants*, are functionally organised such that each articulant corresponds to a significant element (a state variable or a parameter) of the system modelled, such that the interaction of the articulants is isomorphic to the interaction between the variables of the MSS (2004, p. 379).²²⁸ Grush describes the basic idea with considerable clarity in one of his early papers (see also Figure 36). To begin with he characterises the system to be modelled “as a dynamical system with N parameters, e_1, e_2, \dots, e_n ”. A proportion of these, “ e_1, e_2, \dots, e_i ” will be *input parameters*, in that their equations of evolution “will include one or more parameters of the controller”. Others, labelled “ $e_{i+1}, e_{i+2}, \dots, e_{i+k}$ ” will be *output parameters*, in that their parameters show up in the equations of evolution for one or more of the parameters of the controller. An articulated emulator for this system would take “ $e^*_1, e^*_2, \dots, e^*_n$ ” as inputs, and “ $e^*_{i+1}, e^*_{i+2}, \dots, e^*_{i+k}$ ” as outputs. On the assumption that the dynamics of the emulator and plant are formally equivalent, then any given articulant e^*_x , represents parameter e_x in the plant (Grush, 1997, pp. 16 - 17).

²²⁸ Grush uses the word “analogous” where I have used “isomorphic”. Isomorphism is sometimes used as a means to precisify the concept of resemblance between *structures*. Cummins provides a nice outline of what it is for two structures to be isomorphic:

The idea is that there is a mapping between the two structures such that (1) for every object in the content structure C, there is exactly one corresponding object in the representing structure R; (2) for every relation defined in C, there is exactly one corresponding relation defined in R; and (3) whenever a relation defined in C holds of an n-tuple of objects in C, the corresponding relation in R holds of an n-tuple of objects in R. (1996, p. 96)

Isomorphism as described here is a form of what O'Brien and Opie call *second-order resemblance*, a situation in which “the *relations* among a system of representing vehicles mirror the *relations* among their objects” (2004, p. 10). On some views, this results in an extraordinary degree of representational capacity. For instance, according to Cummins (1996, p. 96), any element of a representing structure can represent an element of the represented structure, and the same for relations and states of affairs that hold true of multiple elements of that structure.

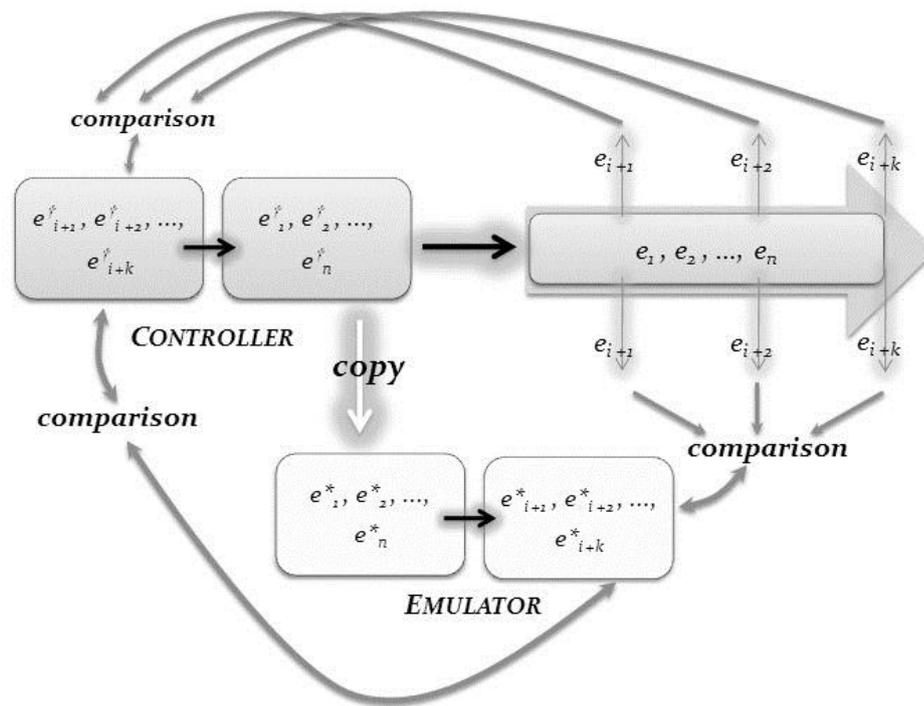


Figure 36 – Articulated emulation

General schematic for a control process employing an articulated emulator. Elements e_n^* represent elements e_x whereas elements e_n^t do not.

Furthermore, application of certain points of earlier discussion provides a strong rationale for ruling out the claim that dynamic elements of the controller represent the plant. Say the controller implements a mapping from $e_{i+1}^t, e_{i+2}^t, \dots, e_{i+k}^t$ to $e_1^t, e_2^t, \dots, e_n^t$. In such a case, e_x^t does not represent e_x , for several reasons. Firstly, it would be puzzling to work out how e_x^t is being employed as a representation. And what would the consumer be? Not the plant. Perhaps the emulator, but the key issue here is what justification there would be for claiming that e_x^t functions as any more than an element in a causal process. Furthermore, any attempted justification is likely to violate the modesty constraint. For unless it were *denied* that e_x^* represents e_x , the claim must be that e_x is being represented twice over, but with the very same justification in each case – promiscuous indeed.

Conclusion

I conclude in two sections. First, I present what I believe to be the relatively novel results of each chapter. Second, I discuss what I believe to be the most important issues that the dissertation has left open.

Some results of the discussion

Chapter 1

The ontological neutrality of the direct object of experience: Either sense-data are the categorical posits of sense-datum theory, or their ontological status *qua* direct objects of experience should not be prejudged. I argued that there is much reason to think that the ontological status of sense-data cannot be sufficiently clarified to meet the first option.

Chapter 2

Two-dimensionality & the visual-field: Several famous means of arguing that the objects of visual experience are only ordered on two-dimensions and/or that visual experience is indirect are unsupported by the very sources that they appeal to. This is despite the fact that a description of the spatiality of visual experience can be artificially limited to two-dimensions, and that the psychology of vision fruitfully employs the concept of a two-dimensional visual field.

Chapter 3

The nature of sensation in Berkeley's theory of vision: Berkeley's theory of vision depends upon the assumption that visual sensation is impoverished in conveying spatial dimensions. However, if Berkeley thereby intends to make claims about visual experience on this basis, he does so only by conflating perceptual sensation and mere sensation.

Perceptual sensation: A sensory experience of a given mode, in virtue of which a perceptual experience occurs and is an instance of that mode.

Mere sensation: A sensory event that is necessary for the occurrence of a perceptual sensation. In vision mere sensations come in at least three varieties

- energetic impingement of light on the retina
- unconscious sensation of light
- sensory experience of light

Chapter 4

Four senses of the word ‘phenomenology’:

Phenomenology_D: A description of conscious experience or the act or project of describing it.

Phenomenology_U: An umbrella term for conscious experience.

Phenomenology_M: A conscious experience conceived as having some definite metaphysical status.

Phenomenology_T: Transcendental phenomenology, associated with the transcendental reduction and transcendental idealism.

Chapter 5

A spectrum or scale of sensory experiences: Illusions, hallucinations, dreams, and sensory imaginings subjectively indistinguishable from instances of perception can be conceived either as situated on a spectrum or at the apex of a scale, where that situation or height is distinctive of perceptual experience.

Chapter 6

A description of the experience of particular objects as mind-independent: Although it is crucial to the direct realist conception of perceptual experience that the objects of perceptual experience seem to be particular and mind-independent, there is a distinctive lack of further specification in the literature. By drawing mostly on Husserl’s early work, particularly his *Thing & space* lectures of 1907, it is possible to articulate the claim that perceptual experience seems to be of mind-independent particular objects in sixteen inter-related claims.

Chapter 7

The concept of a structural affordance: Affordances can be analysed as relations. The canonical affordance relation between an agent and its environment can be further analysed as a second-order relation prior to which is a first-order relation, dubbed ‘structural affordance’. This latter is an affordance between a bodily agent and the properties of its body in virtue of which basic actions are possible.

Structural affordance theories of kinaesthetic experience:

SA₁: A theory of the spatial content of bodily experience; specifically, the experience of parts of the body as parts of an integrated whole, dubbed ‘body-mereological experience’. Body mereological experience is to be explained by representation of parts of the body that exploit the structural unity of the body.

SA₂: A theory of the structuring role of kinaesthesia in perceptual experience. Kinaesthesia is re-described as the anticipation of a pattern of kinaesthetic experience associated with a type of basic action, 'dubbed phenomenal grooves'. Phenomenal grooves are to be explained by kinaesthetic ability, the ability to anticipate the phenomenal grooves of a type of action in virtue of anticipating the structural affordances of a type of action.

Chapter 8

A dilemma for the bodily self thesis: The bodily self thesis holds that bodily subjects of experience exist *qua* bodily selves. Two imagined scenarios force incompatible responses from a defendant of the bodily self thesis. The first claims the experience of disconnected parts of the body is possible. The second claims that simultaneous perceptual experience of one subject from several disconnected perspectives is possible. If response to the first involves stipulation that the bodily self is materially unified, then the second case is unanswerable. If response to the second case involves stipulation that the bodily self can be a scattered material object, then the first case is unanswerable.

Chapter 9

Embodiment of body representation: A body representation is embodied if and when reference to the actual body and/or its properties and/or its relations is indispensable in an explanation of how the representation achieves its function.

Local representation of the body through exploitation of structural affordances: A local theory of body representation claims that a system could, in each case in which it represents the body, represent individual parts of the body only and their properties of being causally interactive with other parts of the body. Such a theory would thereby forego the need to represent the body as a whole, by exploiting the fact that those very same parts possess property of being causally interactive with the body as a whole.

Some issues left open

As with any finite study, there are many issues left open by this dissertation, and I will not cover them all. But I will cluster two that stand out particularly into two sets of remarks.

Perceptual experience & perception

The descriptions of perceptual experience discussed at various points in this dissertation have been treated as the conceptions of professional philosophers engaged in discussion of the nature of perception. I have taken on the task of describing, defending and clarifying a particular conception that manifests itself in a set of shared ideals ensconced within the philosophy of direct realism. However, there is a clear sense in which that task is incomplete. For what has at no point been established is whether that conception has any bearing on what is putatively being thought about and discussed: perceptual experience. Indeed, this is just an aspect of a more general issue left wide open. Do claims made about perceptual experience have any bearing upon perceptual experience itself?

Naturally, the question presupposes that perceptual experiences do exist. Indeed, few go so far as to deny this. I think a fairly standard view is that this point is not open to real dispute, neatly expressed by Searle when he says:

It is a bit difficult to know how one would argue for the existence of perceptual experiences to someone who denied their existence. It would be a bit like arguing for the existence of pains: if their existence is not obvious already, no philosophical argument could convince one. (1983, p. 44)

For some though, denial of the existence of perceptual experiences is actually motivated by the very claims that philosophers make about them. For instance, Alex Byrne (2009) notes that according to some versions of the transparency thesis attention to perceptual experience itself is impossible, for all one ends up attending to is the world. This might not immediately suggest reason to question the existence of perceptual experience in general. But if all one has to individuate experiences is attention to the world, it might suggest scepticism about the possibility of distinguishing distinct, punctate occurrences of perceptual experience. Developing this worry into a positive claim, Tye suggests the “simplest hypothesis” to be that for each extended period between states of unconsciousness, there is just one experience unified over time (2003, pp. 85 – 108). To which a sceptic might respond: “One experience too many, perhaps: a simpler hypothesis is that there are *no* experiences” (Byrne, 2009, p. 435).

However, if being a sceptic means denying the existence of perceptual experiences *tout court*, then Byrne does not count. His point is rather that accounts of the metaphysics of perception can get along fine without positing the philosophical notion of a perceptual experience as a particular mental event:

Obviously there are experiences: watching the final inning was a thrilling experience, and eating the crackerjack was an unpleasant one, for example. However, to conclude from this that there are ‘visual experiences’ and ‘gustatory experiences’ in the special philosophical sense is just to ignore the fact that ‘experience’ in its philosophical use is not a harmless extension of ordinary usage. (*op. cit.*, p. 433)

But then again, ‘perception’ is hardly a harmless extension of ordinary usage either. And on some views, these harmful extensions are absolutely intertwined. Witness, for instance, Dretske’s proclamation that: “Seeing a piano being played is constituted, in part, by a visual experience, hearing by an auditory experience. Until these experiences occur one has not seen or heard the piano” (Dretske, 1995, p. 9). Now there is certainly a use of the term ‘perception’ which allows for the possibility that it might occur without an accompanying experience (*cf.* Marcel, 1983), but if ‘perception’ in its harmful philosophical usage is a term of art in the first place, then the issue is merely in a choice of words.

Say then, that one admits that perceptual experience exists only insofar as perception does. This brings one directly back to the first issue of whether claims made about perceptual experience have any bearing upon perceptual experience itself. Here again it is not hard to find claims to the effect that there are certain points at which dispute cannot be taken seriously, even amongst those somewhat sympathetic to expressions of scepticism. An example offered by Bayne & Spener is that of looking at a page such as the one you are seeing now:

Is it reasonable to doubt the deliverance of introspection in this instance, i.e. that it visually appears to you as if there is a white surface with black marks before you? Surely not: this introspective judgement might not be infallible, but it is one in which a high degree of confidence would be entirely warranted. What holds here holds of countless other introspective judgements that one might make [...] introspective judgements concerning which serious doubt seems perverse (2010, pp. 7 - 8)

Although the *prima facie* unassuming nature of their description might suggest something that can hardly be disputed, no reason is given for why one should favour this over the description that, *e.g.*, it seems just as if you are looking at the words; or the words on the page; or at the dissertation you have in front of you. A reason could

probably be provided, roughly along the same reasons provided by sense-datum theorists, but denial in this case would perhaps not be so perverse.

I think that this is a major outstanding issue, and I cannot see how it would be resolved. Admittedly, in some ways it is just an aspect of the more general and thoroughly treated problem of the relationship between consciousness and introspection (see e.g. Hurlburt & Schwitzgebel, 2007). But what makes this particular issue especially pressing is the fact that if the claims are radically misguided, the consequence is that an entire range of disputes in the philosophy of perception are rendered insignificant. Indeed, the methodology of many of the sections in **Part I** and **Part II** was to extract claims about perceptual experience by understanding their broader philosophical significance for the project of direct realism and its defence. If it turned out that those claims are mere ‘fictions’ (as Dennett (1991) might say), then the proclamation that direct realism is not merely naïve but false (or alternatively, that it vindicates the world view of the naïve) becomes simply hot air in the seminar room.

Local & global views on kinaesthetic ability

Although I believe the problem of mapping conceptions of perceptual experience onto actual perceptual experience to be rather vexed, in **Part III** I largely ignored that issue. I turned instead to a discussion of how one might explain a core feature of that conception (the structuring role of bodily experience) by identifying naturally occurring mechanisms. It might be a glaringly obvious fact to the reader that, despite somewhat optimistic remarks at the end of chapter 7, it has certainly not been established how this would be done in the end. But this is merely to acknowledge the fact that there is plenty of interesting work to be done here.

Structural affordances, phenomenal grooves and kinaesthetic abilities are defined in such a way that in identifying their realisers, one would be identifying the realisers of Husserlian kinaesthesia as detailed in chapter 6. The discussion of body representation in chapter 9 is intended to lay the groundwork for that project. The hope is that a fruitful controversy could emerge over whether the existence of structural affordances results in exploitative representational strategies. Potentially, I believe that both the local view and the global views discussed there could (upon further specification) serve in explanations of kinaesthetic ability. However, in concluding the thesis I want to acknowledge some of the problems faced by a defendant of the local view.

In §7.4 I gave an example of a study by Fournoret & Jeannerod which provided a proof of concept for phenomenal grooves, despite the fact the idea of a phenomenal groove is perhaps slightly contrary to their claims. A similar situation confronts us in

discussion of a recent study by Kannape, Schwabe, Tadi, & Blanke, (2010). By drawing on an impressive variety of tools, these researchers were able to study the effects of angular biases introduced during the execution of full-body movements towards visually specified targets. Their participants were adorned with infra-red markers to facilitate motion capture, and presented with a projection of a three-dimensional avatar (sharing their skeletal structure) whose movements were coupled to their own. Several targets were randomly projected in the room, and the task set was to simply move to the location of the target. However, in 75% of the trials the experimenters would introduce a deviation of 5 - 30° in the movements of the avatar, resulting in various degrees of compensatory movement according to the extent of the bias and the orientation of the avatar. As with the Fournieret & Jeannerod study, the sensorimotor bias in itself is interesting. But the bias is even more interesting in conjunction with the pattern of participants' responses to the question posed to them in each case: "Did the movement shown on the screen correspond to the movement you just performed?" (Kannape et al., 2010, p. 1631).

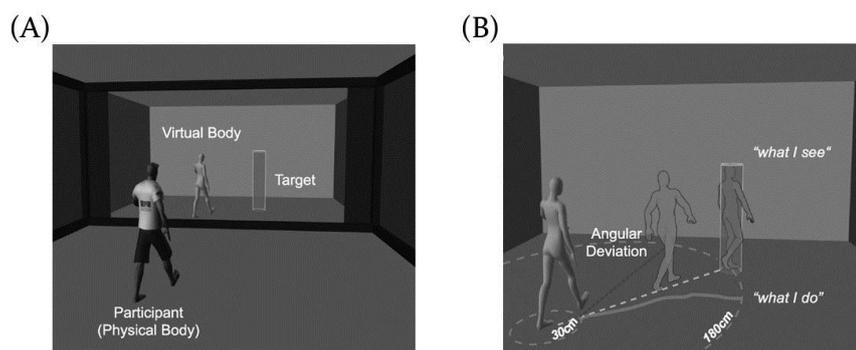


Figure 37 - Motor biases induced by movement of an avatar

- (A) Participant in tracking arena with avatar and target visible in projected virtual room
- (B) Virtual room and avatar with target, deviation and compensatory movement shown

In their results the authors report that "deviations of 5°, 10°, and 15° lead to many erroneous self-attributions" but these were found to be "decreasing in magnitude with increasing angular deviation" (Kannape et al., 2010, p. 1631). However, as broached above, one could alternatively claim that deviations below 15° all fall (to a greater or lesser degree) within the phenomenal groove of the action specified by the task.

Now consider how global and local views might explain what is going on here. Each might claim that representation of the body enables kinaesthetic abilities. Thus the agent would be able to anticipate the phenomenal grooves of the types of action she performs in moving towards a particular target. An important feature of the study is that the actions that the subject is required to perform involve translatory movements of the body as a whole. On the global view the parameters of these movements can be represented straightforwardly; at least, if it is possible to represent any global properties of the body, it must be possible to represent these. However, the local view would have to tell a rather more complex story. Somehow the activity of each part would be represented such that the system exhibited the same behaviour as it would if it were representing global properties of the body. Again, what I mean to point out is that there is all the work to do here. What needs to be shown is how structural affordances actually fill in the gaps left by LB-reps. In short, it needs to be shown how LB-reps can only represent the *P* properties of a given structural affordance and yet enable the anticipation of *W* properties.

But note, even if that could be shown, it is not at all clear that this would be a sufficient explanation of phenomenal grooves. For even if we assume that structural affordances exist and that their *W* properties can be anticipated by the agent without being represented, there is the further task of explaining how kinaesthetic abilities are realised. Perhaps this could be resisted by claiming that anticipation of structural affordances just is anticipation of phenomenal grooves. But that would just leave a mystery as to why this is so. This is a problem for any local view on body representation that tries to explain the putative structuring role of Husserlian kinaesthesia; it is also a problem for any view that tries to explain body-mereological experience. But a global view need not face the same kind of problem, for it can readily draw upon the resources of an extensive theory of subjective experience, the self-model theory of subjectivity (Metzinger, 2003a). To my mind, this opens up tantalising prospects for future research into the viability of both global and local views on body representation, for the implications of structural affordances for either is yet to be understood.

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